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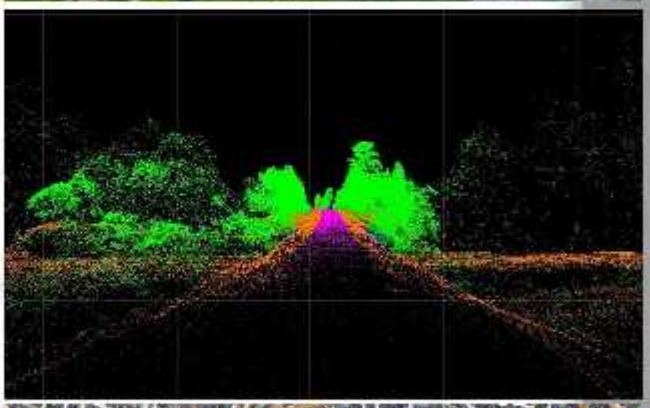

Baseline Study for Sri Lanka National Spatial Data Infrastructure Project (NSDI)

(ICTA/GOSL/CON/CQS/2016/28)

FINAL REPORT

May 2017

GREENTECH CONSULTANTS

.

BASELINE STUDY FOR NATIONAL SPATIAL DATA INFRASTRUCTURE

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Abbreviations and Acronyms

ADB	Asian Development Bank
AGA	Assistant Government Agent
CCT	computer compatible tapes
CDMPS	Centre for Disaster Management and Public Safety
CEA	Central Environment Authority
CORS	Continuously Operating Reference Stations
CRS	Centre for the Remote Sensing
DIFROL	Dirección Nacional de Fronteras y Límites del Estado.
DMC	Disaster Management Centre
DMEM	Disaster Management & Environment Management
DMZ	DeMitilarized Zone
DSDs	Divisional Secretariat Divisions
ERIM	Environmental Research Institute of Michigan
EUREF	European Reference Framework
FD	Forest Department
FGDC	Federal Geographic Data Committees
FGDC	The Federal Government Data Committee
FIG	International Federation of Surveyors
FTP	File Transfer Protocol
GAO	Government Accountability Office
GIS	Geographic Information Systems
GNSS	Global Navigational Satellite System
GPS	Geographic Positioning System
GSDI	Global Geospatial Data Infrastructure
GSMB	Geological Survey and Mines Bureau
GTZ	German Technical Co-operation
HTTP	The Hypertext Transfer Protocol
ICA	International Cartographic Association
ICTA	Information and Communication Technology Agency
IRDP	Integrated Rural Development Programme
ID	Irrigation Department
ISDE	International Society for Digital Earth
ISPRS	International Society for Photogrammetry and Remote Sensing
IT	Information Technology
JBGIS	Joint Board of Geospatial Information Societies
LAN	Local Area Network
LGN	Lanka Government Network
LiDAR	Light Detection And Ranging
LIS	Land Information System
LUPPD	Land Use Policy Planning Department
MASL	Mahaweli Authority of Sri Lanka
MD	Ministry of Defence

MOOC	Massive Open Online Courses
MOU	Memorandum of Understanding
NARA	National Aquatic Resources Research and Development Agency
NAT	Network address translation
NBRO	National Building Research Organization
NGAC	National Geospatial Advisory Committee
NGO	Non Governmental Organization
NORAD	Norwegian Agency for International Development
NPPD	National Physical Planning Department
NSDI	National Spatial Data Infrastructure
NWS&DB	National Water Supply and Drainage Board
OMB	Office of Management and Budget
PDRAs	Provincial Road Development Authorities
PHDT	Plantation Human Development Trust
RIS	Regional Information System
SDGs	Sustainable Development Goals
SDI	Spatial Data Infrastructure
SEG	spatial enablement in government
SIDA	Swedish International Development Agency
SIIRM	Spatial Information Infrastructure for Reconstruction Monitoring
SLSDI	Sri Lanka Spatial Data Infrastructure
SNIT	National System of Territorial Information Coordination
SSSRSP	Swiss Sri Lanka Satellite Remote Sensing Project
TEC	Total Elevation Content
UAVs	Unmanned Aerial Vehicles
UDA	Urban Development Authority
UIM	Urban Information Models
UN GGIM	United Nations Global Geospatial Information Management
UN-ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
VHR	Very High Resolution
WB	World Bank
WMO	World Meteorological Organization
VGA	Video Graphics Array
UN- REDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries

CHAPTER 1 - INTRODUCTION TO THE STUDY

1.1. Introduction

According to the Federal Geographic Data Committee (FGDC), The National Spatial Data Infrastructure (NSDI) is described by Executive Order 12906 ("Coordinating Geographic Data Acquisition and Access") as "the technology, policies, standards, and human resources necessary to acquire, process, store, distribute, and improve utilization of geospatial data". The NSDI has enabled the facilitation of seamless data development, information sharing, and collaborative decision making across multiple sectors of the economy.

The Sri Lanka Spatial Data Infrastructure (SLSDI) Road Map (November 2014) recommends the establishment of a governance model to lead the reform in spatial data exchange across government. It would enable:

- *Accurate nationwide representation of the landscape that is readily accessible and easily integrated with economic, social and environmental geographies;*
- *Greater efficiency and productivity in the management and sharing of spatial data; Evidence-based decision making in government, business and the wider community through access to integrated spatial information;*
- *Spatial solutions readily available and widely used across Sri Lanka in response to emerging opportunities.*

The Information and Communication Technology Agency (ICTA) of Sri Lanka is conducting a comprehensive baseline study to assess the present situation of collection, storing and usage of National Spatial data across its organizations, and evaluate the overall readiness of the staff and organizations to adapt to and ensure effective use of the system.

Progressive, effective and efficient decision making is one of the key factors for a productive government service delivery process. This involves integration of citizen requirements to achieve national objectives. This will enable ICTA to establish a solution and way forward for the establishment of National Spatial Data Infrastructure (NSDI) infrastructure. The NSDI is a centralized platform for sharing government spatial data across the organizations and supports the government organizations to make operational decisions more effective and timely using real-time evidence.

The baseline study to assess the present situation of collection, storing, and usage of national spatial data across the organizations, overall readiness of the staff, organizations to adopt and effective use of the system for NSDI in Sri Lanka, is an imperative requirement prior to establishing an NSDI solution for Sri Lanka.

1.2. Background to the NSDI Program and Current Situation

The Ministry of Lands is currently the main stakeholder for NSDI whilst the Department of Surveys, Land Commissioner General, Ministry of Environment, Ministry of Wildlife, Ministry of Agriculture and Ministry of Disaster Management are the other stakeholders regarding spatial information in Sri Lanka.

Spatial information is presently collected by various government organizations outside the above mentioned organizations. However there has not been a consideration of the expectations and/or requirement of other government organizations. The spatial data collected by these organizations may not be accessible to others, and there is no collaboration across the other organizations in the government sector. Meanwhile, the data in closed systems accessible to the other organizations in the government sector has resulted in repetition of data collection by several organizations, which is considered a waste of resources. Some of these organizations utilize advanced systems and technologies to collect such spatial information, which may possible to share with other government organizations for the effective use of public resources. Therefore, it is important to collect, store and use spatial information in a collaborative manner across the government organizations.

Under the present infrastructure facilities available and national potential for spatial data, it is possible to create a platform to share spatial information between organizations as well as among the broader community. The facilitating role of ICTA is instrumental in order to establish a National Spatial Data Infrastructure solution to collaborate and share such spatial information across the government organizations which will lead to the optimization of the public resources. The baseline study to establish NSDI will assess the present situation of the collection, storage and usage of spatial data across the organizations and human resource capacities in such organizations.

1.3. Objectives of the ICTA NSDI Program

Information technology is central to reshaping the way organizations collaborate and coordinate with each other to deliver better services to the community. The Sri Lankan Government has a key role to play in this regard. It has enormous holdings of spatial information collected by various government departments, with the majority located at the Survey Department. Sri Lanka has the potential for better services and their delivery and readily accessible spatial information will facilitate natural resource monitoring, flood mitigation, management of public infrastructures, coordinated national projects and disaster preparedness among other benefits. This is an important way to support and serve the national interest.

Despite the huge potential Sri Lanka has in this realm, spatial information is not able to be easily shared between organizations at the present time, nor is it accessible to the broader community; resulting in the benefits of this information not being realized nor taken advantage of. Spatial data sets are collected by a number of government organizations to facilitate conduct of an organization's business with no consideration of other possibly relevant organizations' objectives (despite the similarities and interconnectedness among these organizations). The management of data in closed systems and resulted in numerous stores of information that may have similar details and usage creating inefficiencies in time, effort and money. In addition to creating a costly overhead for government, current practice has seen organizations develop their own data standards and product specifications. This has also resulted in inconsistent spatial information that requires additional reprocessing for usage.

In order to facilitate access, delivery and sharing of spatial information; nations around the world are developing National Spatial Data Infrastructures (NSDI). A NSDI is an initiative that creates an environment where government organizations can cooperate, and thus improve,

the transparency, management and exchange of spatial information. Integrated spatial information can be accessed and viewed online by the population without delving into its source by the relevant organization responsible for that information. The proposed Sri Lanka Spatial Data Infrastructure will include a National Map Portal that provides access to spatially referenced data for all levels of government, the private sector, non-profit organisations, academia and the community.

The ICTA NSDI Program seeks to establish a solution to Sri Lanka's unique NSDI infrastructure profile. However, prior to this step a comprehensive baseline analysis of the current situation regarding the collection, storing and usage of National Spatial data across the organizations and overall readiness of the staff and organizations to adopt and effective use of the system is deemed necessary.

1.4. Objectives of the NSDI Baseline Study

The Consultants of the ICTTA NSDI Baseline study met with the representatives of ICTA in order to gather details on the requirements of the study and engaged in several collaborative discussions with the ICTA and members of the Review Committee.

The abstracted objectives of the study as per the Terms of Reference are;

I: Identify variables/ indicators and collect necessary data on the present situation of collection, storing and usage of spatial data, identify stakeholders and types (data providers, data users) of organizations

II: Assess the available hardware infrastructure, available infrastructure (in use), data, data formats, and software use, guideline standards, and policies

III: Identify the capacities of the management and operational staff of data custodians, providers, users and people who are generating spatial data, readiness of individuals, and organizations, assess the knowledge, skills, attitudes and expectations of officials of stakeholder organizations on the effective use of spatial data across the government, understand the willingness of the staff of stakeholders to effectively collaborate with the initiative.

IV: Draw/identify the desired and improved future situation (in the year 2020) by analyzing case studies and international best practices and make recommendations on potential use of spatial data (to develop mobile apps etc. through public private partnerships) to improve life of citizens.

1.5. Scope of NSDI Baseline Study

1.5.1. Study Methodology, Sample Frame and Research Instrument

A comprehensive literature review was conducted. A suitable evaluation methodology for the study, suitable variables to be used to achieve the objectives of the study, evaluation tools/ instruments, and time schedule for the baseline study were initially discussed with the ICTA and Review Committee.

The total number of organizations to be surveyed as the 'study population' was determined after proposing the most suitable sampling approach to acquire the necessary information from the institutions.

A mixed methods approach to obtain the relevant information was utilized entailing two questionnaire surveys, Focus Group Discussions and Key Informant Interviews. A detailed description of the methodology including quality control measures can be found in Chapter 3 of this report.

1.5.2. Pre testing and Implementation

The Consultants continued to refine the data collection instruments in consultation with the ICTA and Review Committee. Enumerators were assigned to brief participating institutions and ensure questionnaire completion.

1.5.3. Data Entry, Processing, Analysis and Reporting

The information obtained from the data gathering were analyzed by the Consultant team and presenting the findings from the baseline report to the client.

A detailed outline of the methodology utilized is explained in Chapter 3 of this report.

CHAPTER 2 – GLOBAL PERSPECTIVE OF NSDI/GSDI AND INITIATIVES OF SRI LANKA

2.1 Introduction

The first generation of Spatial Data Infrastructure (SDI) development has emerged since the mid-1980s when the USA and Australia started to develop the data access relationships, which became the precursor to the development of NSDI initiatives. At this time, countries developing SDI on any jurisdictional level had only very limited ideas and knowledge about different dimensions and issues of the SDI concept, and little experience of such development.

Spatial Data Infrastructure (SDI) is about the facilitation and coordination of the exchange and sharing of spatial data between stakeholders in the spatial data community. With this objective in mind, many countries are developing SDI to manage and use their spatial data assets more efficiently. These countries are finding it necessary to develop SDIs to assist in decision-making that has an important impact within their national boundaries. Over the past few years, many countries have spent considerable resources on debating optimal National Spatial Data Infrastructure (NSDI). One of the main elements of a NSDI is evolved with the **national spatial data clearinghouse** (McLaughlin 1991, Clinton 1994, FGDC 1997, 2002, Coleman and McLaughlin 1998, Onsrud 1998, Groot and McLaughlin 2000, AUSLIG 2001). The national clearinghouse is the access network of an NSDI that facilitates access to the spatial data. It provides complementary services and improves the exchange and sharing of spatial data between suppliers and users (1).

Crompvoets et al. has pointed out that amounts of colossal money are spent in management and coordination costs, GIS and Internet application development, training, hardware, network server, standardization activities, legal environment creation, and metadata preparation. Viewing the core components of SDI as indicated in Figure 1, it covers policy, access networks, technical standards, people (including partnerships) and data, Rajabifard et al. (2002) suggested that different categories could be formed based on the different nature of their interactions within the SDI framework. Considering the important and fundamental role between people and data as one category, a second can be considered consisting of the main technological components: the access networks, policy and standards. The best example of access network is the clearinghouse. The nature of both categories is very dynamic due to the changes occurring in communities (people) and their needs, as well as their ongoing requirement for different sets of data.

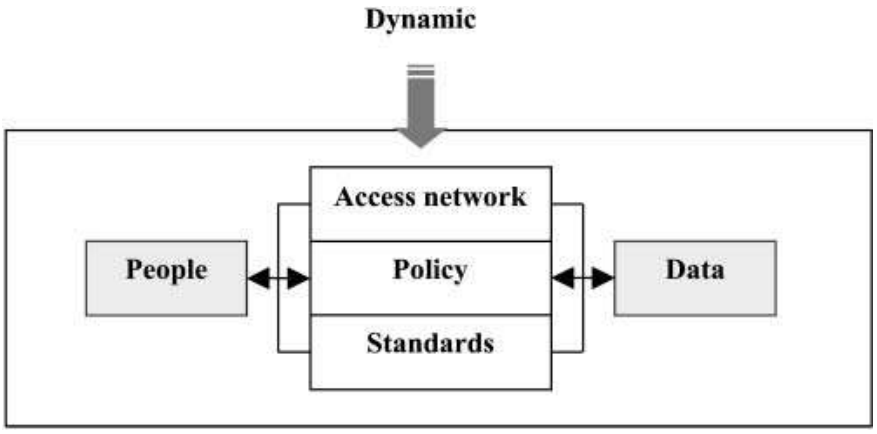


Figure 2. 1 Nature of and relations between SDI components (Source: adopted from Rajabifard et al.2002).

The transition to the second generation can be marked by a change in focus on SDI development by several countries (Ex. Australia, USA, Canada) involved in developing the concept from the beginning. This led to a rapid increase in the number of countries becoming involved in SDI development, fostered by the definition of an SDI community where experiences was shared and exchanged. This shows the continuum of strategic spatial data development.

The second generation started around 2000 when some of the leading countries on SDI development changed their development strategies and updated their conceptual models. In second-generation SDI, the strategy for SDI development was changing towards a more **process-based approach** (Rajabifard et al. 2003). This approach focuses on the creation of a suitable infrastructure to facilitate the management of information assets instead of the linkage to existing and future databases.

The second generation of SDI development characteristically falls into two groups: those countries that started to develop an SDI initiative during the period of the first generation and are gradually modifying and upgrading the initiative, as well as those countries that have recently decided to design and develop an SDI for their respective countries and/or have just commenced doing so (Lance and Hyman 2001, Wehn de Montalvo 2001).

The distinguishing features of the second generation include leverage of the experiences, expertise, social capital of SDI development and the development of clearinghouse systems derived from the first generation. For the first generation, **data** were the key driver for SDI development and the focus of initiative development. However, for the second generation, the **use of that data** (and data applications) **and the need of users** became the driving force for SDI development. Introduction of web services is the main technological indicator of second generation SDI because such services were partly able to fulfill the needs of users and improve the use of data.

2.2 Definition of NSDI

The concept of SDI can be defined as an integrated, multileveled hierarchy of interconnected SDIs based on partnerships at corporate, local, state/provincial, national, regional (multinational) and global levels. This enables users to save resources, time and effort when trying to acquire new datasets by avoiding duplication of expenses associated with the generation and maintenance of data and their integration with other datasets.

A **spatial data infrastructure (SDI)** is a data infrastructure implementing a framework of

geographic data, metadata users and tools that are interactively connected in order to use spatial data in an efficient and flexible way.

The National Spatial Data Infrastructure (NSDI) is described by Executive Order 12906 by President Clinton's Office- 1994 ("Coordinating Geographic Data Acquisition and Access") as "**the technology, policies, standards, and human resources necessary to acquire, process, store, distribute, and improve utilization of geospatial data.**" The NSDI has become a critical vehicle for facilitating seamless data development, information sharing, and collaborative decision making across multiple sectors of the economy (2).

Spatial data, also defined as geospatial **data**, is information about a physical object that can be represented by numerical values in a geographic coordinate system.

Generally speaking, spatial data represents the location, size and shape of an object on planet Earth such as a building, lake, mountain or township. Spatial data may also include attributes that provide more information about the entity that is being represented.

Microsoft introduced two spatial data types with SQL Server 2008: geometry and geography. Geometry types are represented as points on a planar, or flat-earth, surface. An example would be (5, 2) where the first number represents that point's position on the horizontal (x) axis and the second number represents the point's position on the vertical (y) axis. Geography spatial data types, on the other hand, are represented as latitudinal and longitudinal degrees, as on Earth or other earth-like surfaces.

Another definition is "the technology, policies, standards, human resources, and related activities necessary to acquire process, distribute, use, maintain, and preserve spatial data".

A further definition is given in Kuhn (2005) is "An SDI is a coordinated series of agreements on technology standards, institutional arrangements, and policies that enable the discovery and use of geospatial information by users and for purposes other than those it was created for" (3).

The spatial data infrastructure concept continues to evolve as it becomes a core infrastructure supporting economic development, environmental management and social stability in developed and developing countries alike. Due to its dynamic and complex nature it is still a fuzzy concept to many, with practitioners, researchers, and governments adopting different perspectives depending on their needs and circumstances (Williamsons et.al.)

Understanding of SDI process began on the 19th and 20th November, 2001 when the Department of Geometrics at the University of Melbourne, convened the International Symposium on Spatial Data Infrastructure to discuss the issues and challenges facing SDI development at local, state, national, regional and global SDI initiatives.

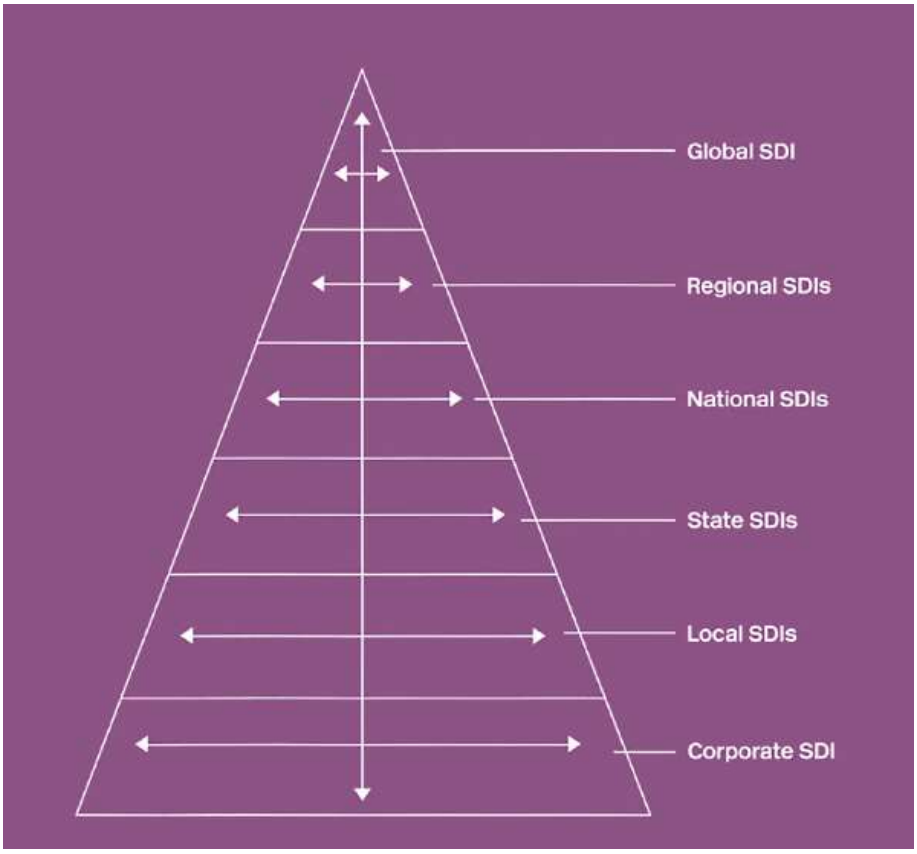


Figure 2. 2 Hierarchy of Spatial Data Infrastructure
(Source: Developing Spatial Data Infrastructure from Concept to Reality; Ian Williamson, Abbas Rajabipard and Mary Ellen F-Freenay)

Figure 2.2 represents that the hierarchy of spatial data infrastructure which is having broad systems at Corporate SDI level but narrowing down at Global SDI characterizing that detailed data evolved with corporate level and generalized data at a Global level.

2.3 Initiatives of Sri Lanka in Establishing NSDI

The understanding of the historical background related in capturing spatial data and its evolutionary process is important in the context of addressing the most pressing issues in establishing NSDI in Sri Lanka. The significant features of the mapping and extracting related other information in representing geographic features was limited in early days.

Sri Lanka was completely aerial photographed at the scale of 1: 40,000 in 1956 by Hunting Survey Corporation of Canada. Subsequently Survey Department acquired photographs using the department owned air craft, with a country coverage at the scale of 1:10,000 (coverage 5%), 1: 20,000 (coverage 100%) & 1:40,000 (coverage 70%). For the aerial photography and photogrammetric data capturing the department used Cessna air craft with 'WILD RC2O aerial camera, nine analogue plotters with digital encoders, two analytical plotters and eight digital photogrammetric workstations.

The Survey Department has played a leading role in most of the national development activities in Sri Lanka during this period and the heavy use of aerial photography made during planning and project implementation of surveys for Land Settlement, Land Development, Land Reform, Accelerated Mahaweli Development Project and River Valley Development Project at Galoya Irrigation Project.

The American series of LANDSAT satellites started in proving high quality multi spectral image data since 1972 and improved versions of LANDSAT 4 and 5 launched in 1982and 1985 respectively have Multi Spectral Thematic Mapper (MSS-TM) sensors on board has made many changes in the field of Remote Sensing as the data is provided in digital form and the satellite has the capability of frequent visits on the same track to provide temporal data to monitor the changes of the phenomenon on the earth.

The potential application of LANDSAT data for the fields of Geology (for mapping for oil and gas and mineral exploration; Agriculture (Crop monitoring and yield forecasting); Cartography (mapping of areas below 1:50,000 scale); Environmental (Environmental audit and pollution monitoring); Forestry (Woodland mapping and species identification); Planning (land use analysis and change detection at regional level); Utilities (Highways, power and water resources management); marine (Coastal zone management and bathymetric mapping) etc were examined at various levels.

The change of technology from Computer Compatible Tapes (CCT) to CD-ROM by a ground receiving station format from initial LANDSAT 1-3 against LANDSAT 4 & 5 had facilitated the reading of the data by normal computers, enabling processing of images using image processing software suitable to the application. The Enhance Thematic Mapper Plus (ETM+) sensor on LANDSAT 7 had a number of enhanced features with eight bands with new panchromatic band with 15 meter resolution, Thermal Infra-red band with increased resolution from 120 meters to 60 meters and providing all other bands with 30 meter resolution provided enhanced opportunities for the applicant to engage in generation more appropriate results in the above fields.

The introduction of many Earth Resources Satellites (ERS) by commercial operators in different nations provided increasing opportunities to the users with very high resolution images from SPOT, IRS to IKONOS, QuickBIRD, Geo EYE, WorldVIEW. These completely revolutionized the spatial data industry in the world as well as in Sri Lanka from the year 2000 onwards together with professional image processing software facilities and Global Positioning System Technology.

The examination of historical perspective indicates that the presence of clear cut milestones in the whole spatial data generation in Sri Lanka extends at five stages during:

- Early 1990s
- 1990 – 2000
- 2001 -2011
- 2012 -2016
- NSDI Project Proposed by ICTA in late 2016

2.3.1 Early 1990s

Sri Lankan Experience in Remote Sensing

"The dire and urgent need for development was most apparent during the period between 1980 to 1990 which was mostly concentrated towards the need to increase the rate of growth, the need to improve the quality of life and the need to immediately help fulfill basic human and community needs became most apparent and urgent in Sri Lanka like in the other developing countries, In order to achieve such urgent objectives, these countries had to undertake a fast but well controlled development effort. For this purpose, the policy makers, planners, and

developers in these countries including Sri Lanka looked into reliable and up to date information on the natural resources available to study, assess and then go into the procedures of policy making, planning, programming project execution, monitoring and evaluating in order to conserve, develop, manage and make optimum use of the resources of countries concerned, in this context, Remote Sensing in general, and Satellite Remote Sensing in particular, appeared to provide the means to assess and map the natural resources. It also appears to provide the means of monitoring the progress of the developmental activities, as well as a method for regularly assessing the utilization of the resources.

The LANDSAT system has resulted from the vast amount of multi-disciplinary effort that was invested in space-research. Unlike most other developments which were problem- specific or need – specific, the LANDSAT programme was perhaps an effort to utilize space technology for one down-to-earth application. Hence, it turned out to be "a solution looking for a problem". This Remote Sensing Programme has brought together scientists from a variety of disciplines to carry out investigations and conduct research for applications in earth resources and environmental studies. The capacity of this system to provide regular and repetitive data acquisition at very low additional cost provided a new multi-temporal dimension to assist in meaningful studies.

The publications describing the results of such investigations conducted in many countries have claimed successful applications in Geology, Marine Surveillance, Land Use Mapping, Flood Monitoring, Fisheries, Cartography, Forestry and many other fields during this period. Such research and development efforts have resulted in a multitude of peripheral systems to support, process, analysis and present the data obtained from LANSAT system. The third of these satellite series was in operation in 1982 and more such satellites were planned by NASA in the United States and by similar organizations in Europe and in other countries.

The approaches towards Remote Sensing in Sri Lanka were initially, the ERTS/LANDSAT Program went through a "hard-selling" campaign. Various publications claimed tremendous capabilities in mapping the physical resources and entire region of the world in "next-to-no-time". The impression was created that the new products could be done in more-or-less push-button type of operation giving almost instantaneous results. Claims as to their accuracy and value were made without much scientific proof. The popular news media such as daily newspapers and periodicals over-simplified the operative details. New discoveries of petroleum and other underground mineral resources were credited to this new and evolutionary technology. This "hard-sell" campaigned was perhaps necessary at that stage and was also perhaps the result of sensationalism by the news media world-wide. It had its benefits, in the way of bringing together scientists of many countries to carry out research and investigations on processing this data and on possible applications. It also had the benefit of informing the policy makers and resource managers about the capabilities of this new technology.

With these developments, Satellite Remote Sensing investigations and studies concerned in Sri Lanka as early as 1972 within the National Survey Department, and a certain amount of interest spread in other organizations, including the National Science Council. The Survey Department formed a very small group of technical personnel bringing together people with experience in Resources Surveys, Photo-interpretation, Computer Systems and Computer Programming.

In this endeavor, the first project was a principal investigator proposal submitted to NASA in 1972/1973 to utilize ERTS/LANDSAT visual imagery to survey and monitor the agricultural resources in Sri Lanka. This project resulted in introducing the new medium of LANDSAT imagery to the working group and also resulted in an understanding of the possible applications

and above all the limitations and areas of confusion in interpretation; mainly due to limitations in both spatial and spectral resolution. This was especially so in areas of having complicated land-use practices.

The second project, (financed with USAID funding), was successfully able to develop the in-house capability of processing the LANDSAT data in both the photographic and digital modes. The photographic processing of black-and-white enlargements, multi-band composites and facilities for producing 3-band colour composites on transparencies and on colour prints were installed. The most significant development was achieved in evolving the capacity for digital processing of computer compatible tapes (CCT) in a small capacity general purpose computer. Simple digital processing algorithms were introduced and computer print-outs of processed data were made available. This development however, had serious constraints in the long time delay in obtaining the Computer Compatible Tapes.

At this stage, many of the members of the working group attended seminars and study tours abroad on LANDSAT applications and on Remote Sensing Techniques. It was clear that during this period many organizations in developing countries were going into rather expensive programmes in this field acquiring sophisticated equipment for processing and analysing the data.

A thorough review of such developments in other countries and the study of the Scenario revealed that the country had to act with caution as seen that sophisticated and expensive equipment being poorly utilized, poorly maintained and being allowed to depreciate due to lack of maintenance and repair (What is happening in today also the same experience in almost all the organizations whose assets are in idling situation without programme for proper maintenance). Many such systems were out-dated within a short time of their being put into operation. At this stage, the technology was still developing fast and there was a proliferation of equipment, some of which turned out to be of marginal value.

As far as Survey Department and other key agencies were concerned much on that and decided to keep in mind that Sri Lanka as a small country (8 LANDSAT frames cover 90% of the country) and cannot afford to go into heavy investment on such sophisticated and dedicated systems which have very restricted applications by that time. This was more so, in the case of dedicated digital processing systems. Therefore the approach made was to adopt available equipment and to go for simple techniques or equipment which had wider applications (eg. In photo-interpretation, etc). Regarding the digital processing and analysis techniques, SD had to resort to general-purpose computers producing computer grey maps and simple digital analysis techniques. In this regard, it was suggested the exploitation of micro-processor technology to fabricate and interactive digital processing.

The last suggestion was again sponsored by a USAID Grant. The Environmental Research Institute of Michigan (ERIM) was awarded the contract by SD to put together such a system based on concepts and requirements presented. Basically, this consists of a CCT reading device and a programmable micro-processor unit couple to a colour TV display and storage system. The proposal provides a fast mechanism to process, enhance and analyse selected parts of LANDSAT scenes with sample training set data inputs and suitable algorithms. The bulk processing and presentation of analysed data of large areas was to be done on the main general-purpose computer. This experiment turned out to be successful. The recent developments (1982) in micro- processor technology and their price competitiveness have enabled the small-time user with a powerful, yet inexpensive, tool for sophisticated digital processing of such data.

Another investigation in Sri Lanka that was in operation in later part of 1990s was the 'Swiss/ Sri Lanka Satellite Imagery Interpretation Project' sponsored by the Government of Switzerland and assisted by the University of Zurich. In the first phase of this project, the technique for the interpretation of rice growing areas was developed. The problems of spectral confusion causing interpretation errors with other similar features was resolved by adopting a masking techniques to accurately define the known areas where the fields are prepared for irrigated rice. The project expected to provide first input for season by season rice-yield estimates. It was shown that for good interpretation LANDSAT data at the beginning and middle of each rice growing season was much essential. This last requirement was not always easy to satisfy, due to heavy cloud cover during the major growing seasons, due to the uncertainty of obtaining of LANDSAT coverage with the shifting period of scattered cultivation, compounded by tape- recorder operating problems and non- availability of sufficient recorder space on board the satellite. The later constraint was due to Sri Lanka as not being covered by a LANDSAT ground receiving station. The problem was later resolved with the Indian Receiving Station going into operation.

However the Swiss Sri Lanka Satellite Remote Sensing Project (SSSRSP) developed a network of User Organizations and provided the basic training for aerial photo interpretation to explore the usefulness of application of aerial photographs to extract specialized thematic data such as forestry, tea cultivation, paddy cultivation and rice yield forecasting, urban planning, Mahaweli development, Chena cultivation, land use mapping, coastal zone inventory etc., coupled with newly generated satellite images in certain fields.

The Centre for the Remote Sensing (CRS) was established in 1980 with the commencement of the Swiss/Sri Lanka Satellite Remote Sensing Project. Satellite Remote Sensing technology was introduced to Sri Lanka Survey Department in late 1970's. The Sri Lanka Centre for Remote Sensing of the Survey Department was the focal point of the Satellite Remote Sensing under the UN-ESCAP since 1996.

The extended facilities provided by the SSSRSP to many of the organizations who have engaged with on-the-job training have organized their own centres within their mother organizations for mapping using aerial photographs and satellite images. The main organizations benefitted include; Upper Mahaweli Forestry Project, Forest Department, Tea Research Institute, Urban Development Authority etc.

As the gap was increasing due to many reasons attributed to a lack of a National Program, lack of facilities and trained personnel and funding constraints the Survey Department organized a workshop on "Coastal Zone Inventory using Remote Sensing Techniques to inform all personnel involved in resource management in Sri Lanka regarding the recent developments, techniques available etc on the directives made by H.E. the President, Mr J. R. Jayewardene to the National Science Council (NSC) and the recommendation made by the Committee appointed by NSC organizing series of workshops to introduce the technology to a wide range of Sri Lankans who were associated with resources management during this period.

Major outputs of the SSSRSP were the completion of Forest Cover mapping of the Country and Detailed Land Use Mapping on a District basis at the scale of 1:100,000. Although these data set provided hard copy maps these two data sets provided country wide current spatial information base for planning purposes with statistical data base for each land use category by Assistant Government Agent (AGA) Divisions presently known as Divisional Secretariat Divisions (DSDs).

One of the major milestones in this endeavor was the organization of Fourth Asian Conference on Remote Sensing in Sri Lanka in 1983 which was provided an opportunity to share the experience gained and research studies conducted by the Sri Lankans using aerial and satellite

remote sensing with the larger participants from the region.

Application of Geographic Information Systems

Survey Department entered the mainstream of developments in computer assisted technology for mapping in 1992 at photogrammetric branch for data collection. The GIS branch was established in 1999 and started with digitizing printed 1:50,000 & 1:10,000 scale topographic maps in order to create the digital topographic database. Then the existing digital data of 1:10,000 were started by converting into GIS format with different layers. With these data, the Survey Department has established digital topographic vector databases for GIS applications and supplied to the users. The digital topographic vector databases comprise of eight different data layers that was vary slightly depending on the scale. The data file contains eight different layers of point, line & polygon geometry including administrative boundaries, buildings, transport, hydrology, terrain, land use, toponomy & utility.

The databases in GIS format were organized in the form of tiles as shown in the grid index for topographic mapping. The data could be obtained either as separate tile in the form of original data format, or as shape files or as DXF files. The digital topographic data was available for use in GIS applications, in the scales which reflect their level of accuracy and best scale for use.

In addition to the creation of topographic data base, the special work attended by the branch to satisfy the needs of the different users. Preparation of 2K contour data for Moragahakanda/Kalu ganga development project using engineering survey data, Maps for the EIA report of 2nd international airport on request of CECB, oil exploration maps for Petroleum Corporation, GIS for greater Colombo area (98 sq.km), DEM for flood mitigation studies for JICA projects, Preparation of Aeronautical Chart and the map showing territorial zone for DECOM project, updating global map data for ICSGM and working with Mini Projects for different government institutions with collaboration of GIC, AIT, Bangkok were main activities among the work done by GIS Branch for external organizations.

The GIS branch of the Survey Department had the capacity to do the GIS related work based on the user demand.

Along with the SD two other organizations added basic GIS software facilities in 1990 for basically land use mapping by Land Use Planning Project of the Ministry of Agriculture and Land Use Division of the Irrigation Department.

Table 2. 1 GIS Units/ Centres which were operated in Early 1990s

Institution	Facility Available	No of Licensed S/W	Scale
1.Centre for Remote Sensing, Survey Department	PC ArcINFO	Three	Small
2.Land Use Planning Project, My Agriculture, Lands & Forestry	PC ArcINFO	One	Small
3.Land Use Division, Irrigation Department	PC ArcINFO	One	Small

Source: Compiled by L.H.Indrasiri, GTC based on distributor contact details

The information reflected in Table 2.1 shows that the number of organizations involved in the application of GIS software facilities were limited due to the main reasons of:

- Lack of knowledge and trained staff

- Lack of awareness on geographic information systems
- Lack of awareness of the available GIS related software
- Limited use of computer applications for mapping
- Non availability of source data such as digitally preprocessed images for required applications
- Heavy cost involved and importation difficulties to small extent coverage
- Non availability of reseller or distributor in Sri Lanka
- Difficulties of allocation of funds by the organizations.

However this situation was gradually changed with the focus on the satellite remote sensing technology, potential application development with the creation of awareness through local seminars and workshops, gradual focus on use of computer for various purposes, etc.

The Ministry of Finance and Planning initiated a programme called Integrated Rural Development Programme (IRDP) which was later undertaken by the Regional Development Division of the Ministry of Finance, Planning, Ethnic Affairs and National Integration at the early 1990s. The common driving theme was the improvement of the living standards of the rural poor and the contribution to the economic development of the country.

Kurunegala IRDP was the first to be implemented in 1979 with financial assistance from the World Bank. The second one was Matara IRDP and the third was Hambantota IRDP with the funding from Swedish International Development Agency (SIDA), and Norwegian Agency for International Development (NORAD) respectively.

During 1979 – 1994 about 18 IRDP's have been started in 15 districts. This continued enthusiasm for the IRDP program was uncontested its effectiveness as strategy for funding.

The main successive factors of the IRDP programme was the:

- Simple approach
- Flexible programmes objectives
- Popular participation
- Political recognition
- Use of local resources
- Improved project management
- Effective coordination and Monitoring
- Regular follow up and a flexible approach to planning and to implementation.

The programme was implemented with a strategy for inducing broad based multi sectoral flow of funds to under developed districts in order to mitigate inter- regional disparities.

In order to analyze the resources and needs of each district on a sectoral and sub sectoral basis and identification of problems and gaps a systematic data collection was made using GIS. Therefore it provides assistance to refocus the planning concern from just sectoral issues include spatial and specific target group issues

The flexible approaches and concepts of rural development such as social mobilization, rural enterprises development, micro credit delivery system, village level planning, and divisional level planning for factual areas were spun for a heavy flow of innovations.

The total IRDP programme was implemented with multilateral; World Bank (WB), Asian Development Bank (ADB), Industrial Fund for Agro Development (IFAD) and by bilateral

funding arrangement (NORAD, FINNIDA, SIDA, JICA, GTZ and Netherlands).

As a part of development of capacities of existing institutional, a set up of GIS based planning was made in each of these projects:

-Gampaha IRDP (JICA)
-Kalutara IRDP (FINNIDA)
-Kandy (GTZ)
-Matale (World Bank)
-Nuwara Eliya, Ratnapura and Mullaitivu (Netherlands)
-Hambantota and Mneragala (NORAD)
-Trincomalee, , Polonnaruwa, Batticaloa, Ampara (World Bank and ADB)
-Anuradhapura and Matale (SIDA/IFAD)
-Vavuniya and Mannar (World Bank)
-Puttalam (UNICEF)
-Kurunegala and Badulla (IFAD)
-Galle (ADB)

Colombo, Jaffna and Kilinochchi Districts were not taken up by this program.

2.3.2 Years 1990 -2000

During the period of 1990 to 2000, a strong Provider and User Group was formed around Swiss Sri Lanka Satellite Remote Sensing Project and Centre for Remote Sensing of the Survey Department as well as establishing two major satellite based mapping projects at the Forest Department and Upper Mahaweli Forestry Project at Ministry of Mahaweli Development by gradually grasping the potential areas of satellite remote sensing applications.

During this period the technology enhancement of LANDSAT satellite program such as introducing ETM+ and offer new panchromatic band with 15 meter resolution and the introduction of medium resolution images by various other countries like France by SPOT 2, 3 and 4, USA by IKONOs with one meter resolution was able to transform the major applications of general mapping to cartographic mapping and to apply into many disciplines which were not being able to use the previously available images due to its limited resolution.

Table 2.2 shows the available common satellite data types, their major applications and most appropriate output scales using different types of source data generated by different satellite systems using this period.

Table 2. 2 Most Common Satellite Data Types, related Major Applications and Most Appropriate Output Scales for Optical Data

Legend

General Mapping		Land Use		Environment		Geology			
Cartography									
Optical Data									
Scale (1:)	2.5 Mn	1.0 Mn	500,000	250,000	100,000	50,000	25,000	10,000	2,500	Year of Acquisition
AVHRR/ SPOT Veg										1979
Resurs -01										
LANDSAT MSS										1972
LANDSAT TM										1982-84
LANDSAT ETM+										1999
SPOT XS, XI/ IRS LISS										1986-1990
SPOT Pan										1993-1997
IRS Pan/ Russian data										
IKONOS										2000

Source: Infoterra, Satellite Data solution Company, 2001, UK

The technological innovation and enhancing the resolution and orientation towards earth resourcing from LANSAT series to IKONOS images expands the application levels in next stage after year 2000. The optical and radar image data helps many of the organizations to re-orient the application development to enhance the business processes.

Although many of the organizations involved in mapping during this period were concentrated only on general mapping but the Urban Development Authority which was exploring the possibilities in using large scale images of any form of aerial photography or satellite images had confrontation with new commercially available IKONOS images with 1.0 m resolution of its panchromatic band and 4 meter resolution of its Red, Green, and Blue band provided pan sharpened images at 1.0 meter digital images. As the data provides in colour, VHR digital data the project implemented at the time by the UDA with World Bank funding was able to enhance its urban detailed mapping program at the scale of 1:5,000 scale.

Table 2.3 provides the details on the application of radar images available during this period.

Table 2. 3 Most Common Satellite Data Types, related Major Applications and Most Appropriate Output Scales for Radar Data

General Mapping		Land Use		Environment		Geology				
Cartography										
Radar Data										
Scale (1:)	2.5 Mn	1.0 Mn	500,000	250,000	100,000	50,000	25,000	10,000	2,500	Year of Acquisition
Radarsat(ScanSAR & Narrow mode)										1995
Radarsat (ScanSAR & Narrow mode)										1995
Radarsat Std (Wide mode)/ ERS-1,2/JERS										ERTS-1991, JERS-1992
Radarsat(Fine mode)										

Source: Infoterra, Satellite Data solution Company, 2001, UK

During this period, nearly 49 organizations added GIS software facilities to involve with spatial data usage or to generate thematic spatial data related to enhance their business functions as indicated in Table 2.4. The individual application specified their needs and the guidelines they followed for extraction of data for general applications. The status of these organizations is given below with regard to the basic facilities available with the organization.

Table 2. 4 Status of Functionality of GIS Centres/ Units during 1990 and 2000

Scale	Nos	Percentage
1. Small Scale	46	93.90
2. Medium Scale	2	04.10
3. Large scale	1	02.00
Total	49	100.00

Source: Compiled by L.H.Indrasiri, GTC based on distributor contact details

Accordingly, 93 percent of GIS units were in small scale and 4 percent were medium type organizations. Only one large scale GIS Centre existed at that time -which was the UDA GIS Centre of the Urban Development Authority. The medium scale GIS Centres that operated during the period were:

- Environment & Forestry Division, MASL
- International Water Management Institute

Provincial Level Spatial Information System Development

The decentralization of administrative functions and the delegation of a wider range of development planning and development coordination tasks to the provincial and the sub-district level under the 13th Amendment to the Constitution of Sri Lanka which created a heavy confrontation of newly established Provincial Councils at their planning cells with unfamiliar tasks assigned to them by the Government in their involvement in the formulation of Provincial Development Plans elaborating medium term " inter sectoral" development and building up of a supportive data base for respective planning areas.

The intention of the overall programme was to formulate medium term development plans on the basis of the realistic analysis of physical and human resources, were supposed to provide a framework of action which allows both the public and the private sector make more rational identification of development and investment priorities while at the same time facilitating coordination of development activities. The authorities in contrary to their traditional task of identifying, implementing and monitoring of individual sector projects they lacked practical

experience in the field of formal "regional" and "physical planning".

It was recognized that the planners need a comprehensive spatial data base reflecting the diversity of both the social and economic as well as the physical conditions of the planning area in order to elaborate the medium term development plan with socio-economic factors such as family income, availability of social services or population growth rates to physical conditions such as rainfall, soils and topography to be related to the above factors. The traditional economic planning made by the Ministry of Finance and Planning under various development plans formulated by them such as Ten Year plan, Five Year plan, Rolling Plan, were unsuccessful due to the high dependency of economic targets without its due relationship to its spatial aspects. The physical planning or spatial planning up to the 1990s were very weak and not recognized, and the relationship of economic targets into spatial terms by the Economists and considerable regional disparities with regard to natural and socio-economic living conditions stressed the need of understanding the development issues in terms of spatial planning. The Government realized to a certain extent, that the decisions are to be made on geographic locations with an area identified for the tasks proposed in relation to the functional pattern and its relationships with the land use and population concentration.

In this regard, the Accelerated Mahaweli Development Programme which was more focused on river basins and its sub catchment under the Central Government the realization of regional development was expected along with the inputs provided by the Provincial Councils which were established in 1987 taking into consideration of human and socio-economic elements where this matching process to combine both physical and socio economic information were made under an integrated planning approach in Mid 1990s.

In this regard, the Regional Development Division of the Ministry of Finance, Planning, Ethnic Affairs and National Integration had already implemented 18 Integrated Rural Development Programme covering 15 Districts in almost all the Provincial Council Areas with some exceptions at district level. These programmes were implemented by Provincial Planning Units of each province. The spatial database development was made by North East Provincial Council which was established at Trincomalee, Central Provincial Council at Kandy, Uva Provincial Council at Badulla and Moneragala, North Central Provincial Council at Anuradhapura.

During the period between 1990- 2000 the regional administration, development planning and central government mediation were in a better position due to the newly established Economic Regions overlapping political boundaries.

Regional Development Ministries that were to concentrating the development of specifically designated contiguous areas of the country were:

Regional Development Ministries	Coverage
Ministry of Western Region Development	Cover all Western Province (3 districts)
Ministry of Southern Region Development	Cover all Southern Province (3 districts) - Ratnapura Distrct of Sabaragamuwa Province - Moneragala District of Uva Province
Ministry of Central Region Development	Cover all Central Province (3 districts) Cover all North Central Province (2 districts)
Ministry of North Western Region Development	Cover all North Western Province (2 districts)
Ministry of Eastern Development	Cover all Eastern Province (3 districts) Kegalle District of Sabaragamuwa Province

The Enterprise Development, Industrial Policy and Investment Promotion were involved in formulation of Four Year Development Program covering:

- Home Resources Development
- Youth Affairs
- Social Services
- Human Settlements
- Environmental Management
- Agriculture & Livestock
- Services
- Economic Development
- Health
- Women Affairs
- Probation & Child Care
- Rural Development
- Industrial Infrastructure
- Land Development
- Transport Infrastructure

The most significant database in overall context was the Central Province Regional Information System (RIS) which was developed to facilitate the provincial planning with relevant database (MS Access) linked to GIS (Atlas) which was the first and only provincial wide digital planning database identified in Sri Lanka. It was developed on the basis of latest information technologies by offering a wide range of some economic indicators on small area level (Grama Niladhari).

The functions of each division stressed the need of having essential and periodic effective spatial data exchange system as a single authority alone, could not be tasking for such a single system as it is divided among many specialized institutions. It was emphasized that systematic information exchange is an essential element of an integrated planning approach. It is in this context Provincial Planning and Monitoring Divisions and the Planning Cells of the DSs on the sub-district planning level became the principle partners in providing the essential data.

RIS was developed between 1995 and 1997 as a joint effort by the Provincial Planning & Monitoring Division and the Kandy Regional Rural Development Programme, with substantial contribution from Kandy, Matale and Nuwara Eliya District Offices of the Department of Census & Statistics.

The main objectives of the RIS were:

- To facilitate development planning
- To promote investment in the province by providing every area to digital demographic and economic data.

During 1993- 1997 period many Provincial Councils urged to establish their GIS based Regional Information Systems to facilitate Integrated Regional Rural development Projects. Central Province, Eastern Province, Southern Province, Uva Province were so active in establishing the basic units under the Planning & Monitoring Division with the external support made by international donor community and foreign Governments.

The spatial information system of RIS was developed by incorporating following principles:

- Data generation through existing primary statistics of the Department of Census & Statistics and supplemented by statistics from other sector agencies
- All statistical data geo referenced based on the latest administrative units (GN and DS Divisions)
- Emphasized on visualization of statistical data in the form of graphs and thematic maps to improve information sharing and information analysis
- Accessibility of information be improved through public displays, contributions, comments and inquiries from third parties be encouraged

- A regular and systematic information exchange flow with adjacent planning areas and the superior planning level should be established (horizontal and vertical information exchange).

These international funding arrangements were made the system in place and engaged in the formulation of regional development plans. Some of the regional plans produced by these Provincial Councils were Madyama Lanka Development Plan with the assistance of GTZ, Germany, Southern Area Development Plan by JICA, Japan, North Central Province Development Plan by SIDA, Sweden.

Central Province Regional Information System was developed using ATLAS-GIS with the technical coordination by Justus- Leibig University of Germany. Design Characteristics and Operational Procedure of the Regional Information System was developed on MS Access database and linked to data table and queries to ATLAS-GIS in 1997 under the Regional Rural Development Project Kandy by a joint Sri Lankan- German aid project covering 33 DS Divisions of the province. The database covers entities of Districts, DS Divisions, GN Divisions, Enterprises (Trade license Records) and Projects. The most important data set was the enterprise data with 12 attributes derived from Enterprise Inventory of 1994.

The main output of the project was:

- Madyama Lanka Development Plan
- 15 sector reports
- Statistical Handbook
- Central Province Planning Atlas highlighting spatial aspects of location, distribution, and functional relationships (natural resources, land use pattern, central place hierarchy, settlement structure and traffic flows.
- Establishment of the Central Province Social and Economic Information Centre

The significant feature of the field of spatial data and the GIS operation was the non-availability of academic level training or educational programme related to GIS or Remote Sensing at any university in Sri Lanka within this period.

Urban Development Authority as a major coordination body in planning and operation of large scale development programmes of the country had filled the gap by providing basic five day training programme on "Introduction to GIS and use of Arc View Software" for the staff of Government organizations, Universities, Local Authorities, Authorities, Boards, private sector organizations, defence establishments, and students as well as public at large. The most active GIS centres during this period are indicated in Table 2.5.

Table 2. 5 GIS Units/ Centres which were established between -1990 -2000

Institution	Facility Available at the Inception	No of Licensed S/W	Scale
1.EMSO Ltd	PC ArcINFO	One	Small
2. Forest Department	PC ArcINFO	One	Small
3. Regional Development Division, My of Policy Planning	Arc VIEW1	One	Small
4. Geological Survey & Mines Bureau	UNIX Arc VIEW 1	One One	Small

Institution	Facility Available at the Inception	No of Licensed S/W	Scale
5. Institute of Surveying & Mapping, Diyatalawa	UNIX Arc VIEW 1	One One	Small
6. Small & Medium Town Development Project, Urban Development Authority	PCArcINFO	One	Small
7.Environment & Forestry Division, MASL	PC ArcINFO UNIX	Three Three	Medium
8. Department of Geography, University of Colombo	PC ArcINFO	Five	Small
9. Department of Geography, University of Peradeniya	PC ArcINFO	One	Small
10.Water resources Board	ArcVIEW 1	One	Small
11.South Asia Co-operative Environment Programme	PC ArcINFO Arc VIEW1	One Two	Small
12. Malaria Research Unit, Faculty of Medicine, University of Colombo	PC ArcINFO Arc VIEW1	Three One	Small
13. Department of Wild Life Conservation	Arc VIEW1	One	Small
14. Department of Town & Country Planning, University of Moratuwa	PC ArcINFO Arc VIEW1	Six One	Small
15. National Building Research Organization	PC ArcINFO Arc VIEW1 Spatial Analyst	One One One	Small
16. Tea Research Institute	ArcVIEW	One	Small
17.Irrigation & Community Development Project	PC ArcINFO ArcVIEW 11	One One	Small
18.Central Environmental Authority	PC ArcINFO ArcVIEW 1	Three One	Small
19.Sri Lanka Telecom	PC ArcINFO ArcVIEW 11	One One	Small
20. International Water Management Institute	PC ArcINFO ArcVIEW 11 NT ArcVIEW 111 Spatial Analyst Spatial Analyst 3D Analyst ILWIS	Three Two One One One One One One	Medium
21. GTZ-CARP Office, Agriculture Research Management Project	ArcVIEW 11	One	Small
22. Ruhunupura Project, Urban Development Authority	PCArcINFO ArcVIEW 111 Spatial Analyst TIN 3.1	One Two One One	Small
23.North-East Provincial Council, Trincomalee	ArcVIEW 111	One	Small

Institution	Facility Available at the Inception	No of Licensed S/W	Scale
24.Department of Geology, University of Peradeniya	PC ArcINFO ArcVIEW111	Two One	Small
25.National Aquatic Resources & Development Agency	PC ArcINFO ArcVIEW111 Map Object ArcINFO NT Spatial Analyst	One One One One One	small
26. National Water Supply & Drainage Board	PC ArcINFO ArcVIEW	One One	Small
27. Natural Resource Management Centre	PC ArcINFO Arc VIEW111	One One	Small
28.Post Graduate Institute Archaeology	PC ArcINFO	One	Small
29.UDA GIS Centre, Information Systems Division, Urban Development Authority,1998	ArcINFO NT ArcVIEW 111 PC ArcINFO ArcScan/NT Spatial Analyst 3D Analysts Network Analyst Image Analyst ArcPress ERDA-Professional ArcINFO 8	One Eleven Five One Five Five Two Six Six One One	Large
30.Agrarian Services Department	PC ArcINFO	One	Small
31. Dept of Engineering, Mathematics & Philosophy, Open University	PC ArcINFO	One	Small
32. Geo Technical Engineering Division, NBRO	ArcVIEW 111 Spatial Analyst 3D Analyst	One One One	Small
33.Faculty of Agriculture, University of Ruhuna	PC ArcINFO ArcVIEW 111	One One	Small
34. Department of Geography, University of Kelaniya	PC ArcINFO ArcVIEW 111 ATLAS GIS	Two One One	Small
35. Traffic Management Division, Colombo Municipal Council	ArcVIEW 111	One	Small
36. Department of Agricultural Engineering, University of Peradeniya	PC Span PC ArcINFO ArcVIEW	One One One	Small
37.Faculty of Graduate Studies, University of Colombo	ArcVIEW 111	One	Small

Institution	Facility Available at the Inception	No of Licensed S/W	Scale
38. Department of Geography, University of Sri Jayewardenepura	ArcINFO /NT PC ArcINFO ArcVIEW 111 Network Analyst Spatial Analyst 3D Analyst	One One One One One One	Small
39. GeoInformatics (Pvt) Ltd	ArcVIEW 111	One	Small
40. Resettlement & Rehabilitation Authority of the North	AtlasGIS ArcVIEW 111 DAK	One Five Two	Small
41. Traffic & Planning Division, Road Development Authority	ArcVIEW 111 Spatial Analyst	One One	Small
42. Sustainable Colombo Project, Colombo Municipal Authority	ArcVIEW 111	One	Small
43. GIS Unit, Survey Department	UNIX DAK	One Six	Small
44. Arthur C. Clarke Centre for Modern Technologies	ArcVIEW 111	One	Small
45.Department of Animal Production & Health	ArcVIEW 111	One	Small
46. Ground Water Section, National Water Supply & Drainage Board	ArcVIEW 111	Two	Small
47. Department of Census & Statistics	PC ArcINFO ArcVIEW 111	One One	Small
48.Centre for National Physical Planning	ArcVIEW 111 Image Analyst PC ArcINFO	One One One	Small
49. Mapping Branch, Survey Department	UNIX	One	Small

Source: Compiled by L.H. Indrasiri, GTC based on distributor contact details

These programmes covered basic principles of GIS, spatial data sources, data collection processes, with practical orientation of using them together with programme conducting using ESRI certified Arc View Trainers and GIS Centre staff covering introduction to the software, major components covered from selection of data sources, geo referencing, on screen digitization, attribute data tables and query building, cartographic processes in map presentation of the results. All these training programmes were conducted free of charge with the dedicated inputs from the GIS Centre staff and contribution made by the UDA providing all the resources of the UDA GIS Centre.

2.3.3 During 2001- 2011

The current status and usage of geospatial technologies in Sri Lanka during this period was widely expanding in every other area in its application. It is applied in His Excellency the President's office to the local administration level, Most of the Government

administration, planning, infrastructure provision and community development organizations, Education and research Institutions including almost all the university system and even private international school level, as well as in every discipline including land surveying, irrigation, agriculture, conservation of environmental sensitivity, mining and infrastructure provision, international missions and private sector agencies in its various areas they involved in.

In the early 2000, only about 70 agencies involved in this technology application in Sri Lanka and only one large scale centre and about 10 medium scale centres were in Sri Lanka. Except one or two faculties of the entire university network did not use this technology and none of the infrastructure agencies or the private sector applied. However the situation has drastically changed over the last ten years and end of the decade Sri Lanka has vastly attracted to this technology in many areas of its application. Nearly about 49 education and research institutes applied the technology and establish various kinds of GIS installations. Out of all about 22 large scale installation was available in different departments or faculties of the universities and they presently conduct programs from short courses for introduction to GIS and Remote Sensing to graduate studies and post graduate studies to the level of Masters programme. Various other faculties incorporated this disciplines in their university degree and post graduate programmes. About 24 small scale centres were actively involved in this process. The balance was in medium scale centres.

The details of the education centres are as follows:

- University of Colombo (Faculties of Geography, Medicine, Graduate Studies)
- Open University (Faculties of Engineering Department, Engineering Technology, School of Computing. Zoology)
- University of Kelaniya (Faculties of Geography, Zoology)
- University of Moratuwa (Faculties of Town & Country Planning Department, Mobile Communication Research Laboratories, Department of Civil Engineering, Architecture, Transport and Logistics management, Department of Earth Resources)
- University of Peradeniya (Faculties of Dental Science, Geography, Department of Civil Engineering, Centre of Environmental Studies)
- University of Rajarata (Faculties of Social Science)
- University of Ruhuna (Faculties of Agricultural Engineering, Geography, Fisheries)
- University of Sri Jayawardenepura (Department of Forestry, Geography, Zoology)
- University of Sabaragamuwa (Departments of Social Science & Language, Surveying Science, Geoamatics)
- South Eastern University (University Park, Department of Geography)
- University of Jaffna (Department of Geography)
- Surveying and Mapping Institute
- Post Graduate Institute of Archaeology,
- Post Graduate Institute of Agriculture Peradeniya,
- Post Graduate Institute of Science, Peradeniya
- Eastern University (Department of Zoology)
- Overseas School of Colombo,
- Arthur C. Clerk Centre for Modern Technologies,

The main research centres were active during this period was:

- Sri Lanka Association of Advancement of Sciences,
- National Aquatic Resources and Development Agency
- International Water management Institute
- Coconut Research Institute, Tea Research Institute, Rubber Research Institute
- National Building Research Organization

The application of geoinfomatics in the development process was undertaken by the entire public institutional network in Sri Lanka in its various sector activities. This process is covered central government administration to the local government administration and national level organization to the local level project offices those who have undertaken foreign funded projects. With the innovative approach incorporated into the GIS application software packages and the technology innovative involved in satellite remote sensing to produce very high resolution satellite images in multispectral form had very much assisted to expand its applications. With the integrated approaches made with the GPS technology and widely developed information and communication technology provided added advantages to almost all sector agencies to revisit the technology application and thinking on how best they could utilize the technology for advancement of their sector participation in the national development.

When considering the scale of facilities in each of these organizations totalling 106 in such installation majority of them were in small scale centres to facilitate their own mapping and presentation of the results. Total of 96 installations are coming under that category and about 9 centres are to the scale of medium in size. Only one installation was considered as large which the Urban Development Authority of Sri Lanka was.

The private sector involvement in application and using of the technology by foreign missions were gradually entered into the fields as most of the missions, expertise and consultants came with the vast knowledge in application of GIS and Remote Sensing to work in various mission activities and projects. During this period there were number of such organizations limiting only to 12 were existed of which two institutes were involved in providing services required to the industry. 10 out of 12 are very small however one large and one medium scale centres also existed by that time. The locations of such centres are given below:

International Missions

UNWFP, IUCN, JICA, WHO, TEDHA, Consortium of Humanitarian Agencies, UNDP, UNHCR, UNICEF, USAID,

Private

Centre for Information Resources Management, Nestle Lanka, CIC Fertilizer Pvt Ltd, Lion Brewery, James Finlay Company. Wild Life Conservation Society

Table 2. 6 GIS Units/ Centres which were established between -2000- 2011

Institution	Facility Available at the Inception	No of Licensed S/W	Scale
1.Corporate Planning Division, National Water Supply & Drainage Board	ArcVIEW 111	Two	Small
2. Planning Unit, Uva Provincial Council, Badulla	ArcVIEW 111	Two	Small
3. Planning Unit, Uva Provincial Council, Moneragala	ArcVIEW 111	One	Small
4. GTZ-EFWRDP Project, Kandy	PC ArcINFO	One	Small
5. Southern Province, REEP Project	ArcVIEW 111	One	Small
6.. Sri Lanka Third Water Supply Sanitation Project	ArcVIEW 111	One	Small
7. Department of Social Science & Languages	PC ArcINFO	Two	Small
8.Centre for Environmental Studies, Peradeniya	PC ArcINFO ArcView	Five Five	Small
9. Coconut Research Institute	ArcVIEW 111	One	Small

Source: Compiled by L.H. Indrasiri, GTC based on distributor contact details

Three major incidences occurred during this period such as, cessation of hostilities by peace talking process (2003), Tsunami devastation (2004) and liberation of North and East from LTTE (2009) which was created a major vacuum of spatial data so as significant emphasis made on having well organized spatial data generation and sharing among interested parties.

In filling the vacuum following major inputs were made by UDA GIS Centre in facilitation of the Government development and securing the nations from natural and man-made disasters:

- Acquisition of 1 meter resolution IKONOS satellite images covering Colombo, Gampaha, Kalutara, Matara, Trincomalee districts and coastal DS Divisions in Galle District in 2000 and Ampara, Batticaloa, Mullaitivu and part of Anuradhapura Districts in 2001 has changed what was existed cartography mapping process in Sri Lanka
- Development of Draft National Standards for spatial database development and sharing in 2000
- Digitization of 92 topographic maps of the scale of 1:50,000 and developing of spatial data base in shapefile file format
- Development of GIS based Environmentally Sensitive Area Mapping of Sri Lanka in 2001
- Development of digital database on Grama Niladhari Division Boundaries of Sri Lanka and linking to Census of Population and Housing 2001
- Establishment of Urban e_Net (One Stop Shop) Office at the Board of Investment of Sri Lanka in collaboration with UDA in 2001 for sharing spatial data for project formulation, formulation of development planning, granting of on-line planning approval and clearances for development proposals to facilitate international and local investors interested in making foreign direct investment
- Establishing Two City Net Offices; one in North of Colombo and one in South of Colombo for On-line Planning Approval and Clearance System for the Colombo Municipal Council in 2001 and applying the same technology for system development in 11 local authorities located in Colombo Core Area
- Signing of Tripartite Agreement for spatial data sharing among USAID, UNDP and its Sister Organizations and UDA in 2002
- Physical planning for boosting of development of major war affected cities in Northern and Eastern Provinces during peace keeping process in 2003.

Immediately after the Tsunami devastation there was a significant amount of responsibility with the UDA for rehabilitation and reconstruction of Tsunami affected areas. The detailed levels of spatial databases were limited in affected areas and stressed the necessity in finding quick and more accurate data for planning and designing of urban and rural areas, infrastructure facilities and identification of lands for relocation and reconstruction of housing units. Massive requests and deployment of rescue teams demanded available maps and other spatial data for which UDA GIS could provide satellite based GIS solution.

- Natural disaster and emergency preparedness planning after catastrophic Tsunami Devastation in 2004
- Vulnerability analysis of natural and man-made disasters in 2005

The vacuum database were filled with satellite based planning after the end of the civil war in 2009, and following are some of the inputs made by UDA GIS Centre:

- Technology driven defense operations during 2006 – 2009 to STF, SL Navy, SL Air Force and SL Army by sharing technology, human resources, digital databases, training of officers and navigational cross verification of accuracies of target references.
- Required inputs at initial arrangement to establish national spatial data infrastructure system after obtaining Cabinet Approval in 2007 by sharing available and on-going digital spatial databases
- Cessation of hostilities, conflict affected area planning, rehabilitation and reconstruction as well as resettlement of Internally Displaced Persons in Eastern and Northern Provinces after 2009.
- Formulation and gazetting of UDA Declared Area Development Plans (Trinco Metro Urban Area, Greater Vavuniya, Greater Matara, Greater Galle, Jaffna MC, Chavakachcheri UC, Haputala UC, Moneragala PS, Kararagama PS, Kilinochchi, Mannar, Mullaitivu, Point Pedro, Nallathanniya etc.
- Establishment of Web Geo Portal for spatial data sharing in 2008.
- GIS based Integrated Strategic Environmental Assessment in Northern Province, Uva Province and Gampaha District in 2009, 2011, 2012 respectively of the initiatives made by UDDP, CEA, DMC with the other government organizations.

Urban Development Authority was in a leading position in creating geo-spatial data in mass scale irrespective of the area of interest using various sources namely, VHR Satellite Remote Sensing, GPS, GIS and also stepping into the application development as well as creating an environment for sharing of costly geo-spatial data among users to facilitate, promote, and integrate business and economic development of the country. This had become a corporate responsibility of the UDA as the Government of Sri Lanka utilized foreign direct loan facilities to develop necessary geo-spatial data. The facilitation for this environment was basically depending on by developing a National Spatial Data Infrastructure (NSDI) which is in primary stage by that time.

In 2007 Ministry of Nation Building and Estate Infrastructure Development and the Ministry of Lands and Land Development in collaboration with German Technical Co-operation (GTZ) made an attempt in preparation of a National Policy on the Use of Spatial Data for which a National Workshop was convened. As a part of whole process a questionnaire survey was conducted to obtain the information related to each organization those who were dealing with spatial data as well as GIS related works. The outcome of the survey was discussed at this workshop which had a large gathering of stakeholders representing different organizations who were using spatial data. The summary of discussion under the topics is provided in Table 2.7.

Table 2. 7 Summary of National Workshop on National Policy on the Use of Spatial Data – December 2007

Necessity and importance of having NSDI	Major themes on spatial data and NSDI						Stakeholders
	Collecting	Storing	sharing	updating	Pricing	Policy	
- **There were several attempts to develop a national policy on spatial data enabling to establish National Spatial Data Infrastructure since 1994** - **Geographical Information System is a very important tool in development planning, monitoring and evaluation**	- Uncoordinated creation of different GIS data by various organizations leads to difficulties in data sharing and data handling due to different data specifications and accuracies - An essential component of NSDI is the uniform spatial referencing system.	- We keep some of the data ourselves assuming that they are critical or sensitive but sometimes better information can be found openly and freely on some web sites and free downloads are available today. - Data quality has to be definied and made available to users through Meta data.	Need a methodology on how data could be shared and developing the data with standards	To have a policy of updating base data produced by Survey Department	Cost the data produced.	- Development of a spatial data clearing house is also an integral factor in NSDI - Problems like language use are also important. A common language has to be used in this context.	- More than 75 agencies in Sri Lanka were involved in GIS by 2007 - The National Mapping Organisation should play a key role in ensuring that an accurate and up to date geo-spatial framework data is developed and maintained

Necessity and importance of having NSDI	Major themes on spatial data and NSDI						Stakeholders
	Collecting	Storing	sharing	updating	Pricing	Policy	
- **Lack of information has delayed many projects, development activities and land alienation programmes for the general public** - **There are many countries which have already started to establish Spatial Data Infrastructure for the countries, so there are many models we can refer to.**	- If base data is not of the same standard it cannot combine the data of another user - Base data collection policies and institutional arrangements that facilitate the availability of access to spatial data - Two types of data namely the location data and attribute data where mainly the location data incur a cost for production - Quality assurance of collected data is needed - Collecting of data can be very costly therefore it may be appropriate for a	- Three level of data; public domain where institutions could freely share their data, raw data or basic data with value added and sold at a price since it also comes with certain knowledge base, general data which can be shared over internet - All spatial data should have meta data - Stressed for having quality assurance of storing data - The preparation of a catalogue of available spatial data is also important - Most spatial data systems in Sri Lanka are	- Data sharing has become very convenient but it is not as simple as it looks like. Therefore an agreement is necessary among all involved parties such as data providers, software developers and data users - Only the government organizations with legal mandate to provide fundamental data to users. - There is no use of keeping data in secret unless in very sensitive cases - Sharing means both ways and due credit	-	- About 70% of the costs go to GIS system - Data is not freely available in India, Germany , England but most of the data in America is free - Policy on data pricing should be introduced	- A national policy should address the core principle to ensure compatibility; - Reduce the duplication of efforts and to improve the quality of data. - if we have national policy donors as well as other institutions will be compelled to follow the policy - The National Spatial Infrastructure should be a collection of policies, technologies and institutional arrangements that facilitate the availability of access to spatial data and only be maintained and enhanced through a collaborative effort of stakeholders - For the formulation of policies of data exchange, it has to define the policy and the administrative arrangements of	- **Powerful Steering Committee** with not more than five to six members, composed with the Ministry of the Nation Building and the Ministry of Land and the Survey General as obligatory members and two major users and the academia. - ICTA should be made to be a member of the Steering Committee - **Task force** with six to eight members drawn from major users, data producers and two members from the academia - The users should be educated on

Necessity and importance of having NSDI	Major themes on spatial data and NSDI						Stakeholders
	Collecting	Storing	sharing	updating	Pricing	Policy	
- **Many donor funded projects were implemented and sustainability of those systems has been a major issue after com[letting the project.**	user to pay a reasonable amount for what he is getting.	generally built as standalone systems. - The modalities of cataloguing the data and meta data to be maintained at the national clearing house of spatial data - It is not a depository but in a clearing house you can see where what data is available, what the quality of the data is and what the source of the data is given in clearing house.	should go to the original data provider when value added products are developed. Associated legal issues also have to be taken into account very seriously. - **Data cleaning house**: The only place a user should visit to get the data. One will be directed to other sites by the clearing house if necessary. - All these activities should take place in cyberspace. - the major technical obstacle to data sharing			building, maintaining, accessing and applying standards and data sets - Should consider the appropriate copyright policies because data is costly. - Policy on spatial data leads to reliability and accuracy of data. - The legal issues related to data sharing should be looked into in the formulation of the policy - National policy should consider the compatibility between the datums and what the final datum - GIS day allocated for the schools at national level so that the children from all parts of the country will become aware of the importance of spatial data and GIS. - Spatial boundaries of Government systems should have a uniform data base	the use of maps and also to look at the source and the reliability before they use maps - Mandate – provide sustainability of the system - North and East Provincial Councils active in the establishment of the Centre for Information Resource Management - Bimsaviya: The Survey Department hosts the collected database and the Registrar General hosts the ownership information. This formulates the land hub in the e-Sri Lanka programme.

Necessity and importance of having NSDI	Major themes on spatial data and NSDI						Stakeholders
	Collecting	Storing	sharing	updating	Pricing	Policy	
			resides on the lack of application of the national standards for spatial data			- Investigate the models of other countries - Policy should be flexible with the Rapid changing nature of GIS	- International Water Management Institute was sharing its data freely. About 90% of the data was shared except the data that they need to go through licenses like satellite images

A steering Committee and a Task Force were appointed and worked on developing the policy for the use of spatial data in Sri Lanka.

With the development of GIS technology, a large number of map users was engaged in developing their map layers and found that there was quite an amount of duplication efforts in map digitization and map preparation under GIS system.

GTZ the main sponsors of this endeavor, stressed that GIS and related tools make spatial data easily accessible and have proven to be especially valuable for development planning, monitoring and decision making. However their usefulness often confined to single projects if the exchange of spatial data is technically restricted. The national workshop aimed at overcoming these obstacles by facing a country wide regulatory framework for spatial data. The policies framed were expected to provide a legal basis for GIS users, developers and all organizations interested in sharing or buying relevant datasets.

The outlined draft policy covered the following key fields:

- Introduction
- Goals and Objectives
- Policy Statements
- Data Standards
- Copyright
- Pricing of Spatial Data
- Security of Spatial Data
- Promotion of the use of Spatial Data in Development Planning
- Promotion of the use of Spatial Data in the Universities and in Schools for educational purposes
- Establishment of a National Information Centre for Spatial Data
- Appointment of a National Steering Committee to oversee the implementation of the Policy

Although the intended Cabinet Approval could not be obtained due to various administrative reasons, the interest of the participants and the main providers has not dropped and the proposal in establishing NSDI, which was taken up again in a new form of facilitation of the spatial data sharing process in Sri Lanka by UDA GIS Centre with the Spatial Information Infrastructure for Reconstruction Monitoring (SIIRM) Project was jointly implemented with the Survey Department.

In order to enhance this process UDA officially commissioned a Web Geoportal. A geoportal is a type of web portal that is used to find and access geographic information and associated geographic services (e.g., display, editing, and analysis) via the Internet. Geoportals are important for the effective use of geographic information systems (GIS) and are a key element of Spatial Data Infrastructure (SDI) (Crompvoets, 2016).

Over the last two decades, many governments and private companies have invested tens of billions of US Dollars in the development of geographic information, largely to serve specific communities (Ex. Agriculture, urban/rural planning, and mining) within local, state, national, international, and even global contexts. The focus has increasingly shifted towards a platform for integrating geographic information by means of SDIs. SDIs facilitate access to existing geospatial data and services necessary to successfully use GIS. Moreover, SDIs facilitate the

exchange and sharing of geospatial data between stakeholders within the geographic information community. This community mainly includes mapping agencies, universities, governmental and nongovernmental organizations, and private companies.

In this context, Geoportals are considered as gateways to SDI. They are not a repository where data are simply stored, but can be seen as a one-stop shop for geospatial data, sourced from numerous agencies. The performance of geoportals can vary enormously depending on numerous factors, such as the functionalities offered, the quality of the information offered, and a user's capacity.

The installation of the Web Geoportal and sharing spatial data between existing server configuration arose so many technical and technological issues which were critical to be addressed for the effective operation of the system. However, in order to provide a fully operational status for the web-portal, internal systems had to be made compatible to facilitate this process addressing the content compatibility of following main components:

- systems integration
- data integration
- infrastructure integration
- facility integration
- enhancing internet capacity
- creating available data compatible with the new system, quality assurance and updating of existing data for the web internet application, software application and regionalization for easy tracking.

The contribution made by the UDA GIS Centre in operationalize the NSDI principles in Sri Lanka was materialized by establishing UDA Web Geoportal for sharing spatial data developed under the SIIRM Project at the scale of 1:20,000, 1:10,000 and 1:5,000 scale covering about 15,000 sq.km area of the country. VHR satellite images of SPOT 5, QuickBIRD, Digital Elevation Model developed and seven GIS application modules were among other latest spatial data released through the Geoportal. Standard Meta Data, Policy Documents and Standards were backed by the geodatabases released to the users.

In addition to that national level coverage of Grama Nildhari divisions administrative database, land use layer of Sri Lanka, environmental sensitive areas of Sri Lanka, Urban, and rural settlement structure, 2001 demographic data base and many more were added to the system in parallel.

The overall system architecture was designed to facilitate the proposed environment and examine the requirements for further improvements in connection with installation of fire walls, improve the network capacity, addressing internet related issues etc. Further, it has identified that the system improvement needs training, investment and database administration of sites. These challenges were faced by the UDA in creating enabling environment for the availability of geo-spatial data and sharing them for improving the business and economic development in Sri Lanka.

Addressing the Issues for Better Future Outlook

The following sections illustrates the issues concerned with the existing systems and the situation still after enhancing under the SIIRM project for improving operational capacity.

A. Systems Integration

The prevalent facilities in the UDA GIS Centre in 2007 were mainly linked to the Arc View 3.2a with limited facilities to Arc GIS for GIS work and ERDAS Images Professional 8.4 & 8.7 Prof for remote sensing. The project enhanced its capacity by adding 10 ArcGIS licenses for GIS and GeoView and ERDAS for remote sensing. In order to address the issues connected with RDBMS, Oracle Standard 10g compatible with ArcGIS Server 9.2 (including ArcSDE) license were added.

Table 2. 8 List of Software available at UDA GIS Centre -2008

Software (or extension)	Version	No. of Copies	Year
GIS			
ArcGIS - ArcInfo	Fix 9.2	4	2008
ArcGIS - ArcView	Floating 9.2	3 + 3	2008
3D Analyst	Floating 9.2	1	2008
Network Analyst	Floating 9.2	1	2008
ArcPAD	7.01	3	2008
Map Publisher	7.5	1	2008
Arc Info	7.2.1	1	1998
Arc Info	8	1	2000
Arc View	3.1	2	1998
Arc View	3.2a	15	1999
PC Arc Info	3.5.2	5	1999
Image Analysis	1.0	6	1999
Arc Press	1.0	5	1999
3D Analyst	1.0	5	1999
Arc Scan	1.0	1	1999
Network Analyst	1.0	2	1999
Spatial Analyst	1.0	5	1999
Arc GIS	9	5 (Temporary Licenses)	2005
Database			
Oracle - standard	10g	1	2008
ArcGIS Server – standard enterprise	9.2	1	2008
CAD			
AutoCAD	2004	4	2005
Remote Sensing			
GeoView	6.5	2	2008
ERDAS Image Analyst	9.2	1	2008
ERDAS Imaging Professional	8.4	1	2000
ERDAS Imagine	8.7 Prof	5 (Temporary Licenses)	2005
Graphic design			
Adobe Creative suite – standard edition (Photoshop + Illustrator)	CS3	2	2008
Photoshop	7	10	2006
CorelDraw	12	7	2006
Frontpage	2000	2	2002
Microsoft			

Software (or extension)	Version	No. of Copies	Year
MS Office	2003	5	2006
MS Office	XP	9	2002
MS Office	2000	3	2002
OS			
Windows XP	Pro SP2	16	2008
Windows XP	Pro	13	2005
Windows 2003	Server	2	2005
Windows 98	Win98	5	2005
Windows NT	Server	3	1999
Other			
Roxio Toast (backup)	8	2	2008
NORTON SYMANTEC Corporate Edition (Antivirus)	8.1	1	2000
MS Project	98	1	1999

Source: Urban Development Authority

In connections with hardware and servers the hardware infrastructure added in 1999/2000 was replaced in 2004/2008 in order to integrate the system with the workstation and servers provided under SIIRM Project.

Table 2.9: UDA GIS Centre Hardware Facilities -2008

Hardware	description	Quantity	OS	Processor	Year
Server					
GIS Server	HP Proliant ML 570 G2	1	Win 2003	2699 Mlz	2005
Exchange Server	HP Proliant ML 350 G5	1	Win 2003	IntelXeon 1.6GHz	2008
Proxy Server	HP Proliant ML 350 G5	1	Win 2003	IntelXeon 1.6GHz	2008
IS Server	HP Proliant ML 350 G5	1	Win 2003	IntelXeon 1.6GHz	2008
FIN Server	Compaq Proliant ML 350 G2	1		P III	2002
Workstation					
	HP XW 4200 HE	7	WinXP	3.0 GHz / P IV	2005
	Fujitsu	2	WinXP	2.0 GHz / P IV	2002
	IBM	2	WinXP	2.0 GHz / P IV	2002
	ICM	4	Win98	P III	1999
Laptop					
	Toshiba Satellite	1	WinXP	Pentium IV	2002

Source: Urban Development Authority

Table 2.10: Table 2. 9 SIIRM Hardware added after 2007

Hardware	Description	No	OS	Processor	RAM	Hard Disk
Server						
	HP Proliant DL 580	1	Win server 2003	dual core Xeon 7120	2 Gb	3*146 Gb
	HP Proliant DL 320s	1	Win server 2003	dual core Xeon 3060	2 Gb	2*80 Gb 4*500 Gb
	HP Storage Works MSA 20	1	Rack		/	10*500 Gb
Tape Drive						**(tape)**
	HP Storage Works Ultrium 460	1			/	200 Gb / 400 Gb
Other						
	External Hard Drive	2				
	Switch DLINK	2				
Workstation						
	Workstation HP Xw8400	5	XP Pro	Core 2 DUO Xeon 5160	2 Gb	250 Gb
	Screen LP2065	5				
	Workstation HP Xw4400	11	XP Pro	Core 2 DUO E4300	2 Gb	160 Gb
	Screen LP1740	11				
Macintosh						
	Mac Pro	2		dual core Xeon 3Ghz	4 Gb	750 Gb
	Apple Cinema Display 20" A1081	4				

Source: Urban Development Authority

In order to add large volume of available satellite images and geo spatial data added to the system it was compelled to add 3 more new servers to enhance the functionalities of mapping web portal, database and image storage in addition to three new servers added to the centre in 2007 by replacing the old servers which were functioned for exchange, proxy and mail as well as well as GIS Server and Finance Severs by increasing the capacity up to 5.5 tb in hard disk capacity.

The other facilities and equipment which were installed to the network infrastructure was the printers, plotters, scanners, GPS and ancillary facilities mainly to facilitate both internal and external user requirements.

B. Facility Integration

In order to provide easy access and sharing the facility within the organization, UDA Network Management Unit created an "internal LAN". The LAN, which was in operation, provided access to each division heads, senior staff and common access to others for different server environment to share data. The staff provided internet facilities by 128 kbps leased line up to March 2008.

UDA GIS Centre operates its network with a very narrow band width at the initial stage and increased up to 256 kbps since March 2008 along with the replacement of three old servers. The replacement were delayed for more than four years due to various reasons such as changes of the senior managers, difficulties to comprehend and convince to the members of the Board of Management and the limited interest shown by top management for integration of functions of UDA. Decision making is very important to make the drastic changes at any given time either to the introduction, replacement or enhancement of the existing technology environment which was compelled to go along with the advancement of the technology.

With the introduction of the new system it had to justify that the current infrastructure requires a minimum of 512 kbps internet access to assure the publication of the web-geo portal online as well as to actively interact with UDA Website. However entire premises of UDA was wired to utilize a capacity of 1 gb and all new workstations and new servers are equipped with network cards of 1gb.

GIS implementation follows a common platform in the absence of web based GIS during that period. As the web provides new patterns for the implementation of sharing the data model, process model, work process, cartographic process and meta data within multiple departments by accessing different servers to extract data which is in other words spatial data infrastructure. In order to facilitate this task, the UDA workflow had to be organized in a centralized architecture, where a single server was used to simplify the access and sharing as well as to improve the security checks and updating data.

The three tier architecture of the server side application introduced with Arc GIS Server 9.2 was identified to upgrade to 9.3 (in 2008) which was enhanced jus after couple of months to 9.4 where it needed to touch with software upgrading all the times to provide efficient platform to multiple server system to provide facility to:

- large organizational set-up GIS
- server supports web clients\mobile clients
- integrate imagery
- simple geo-browsing (navigate and quarrying)
- easy integration with other enterprise systems

The implemented client-server configuration of UDA at the time was:

Web Server ⇨ Arc GIS Server 9.2 Internet Infrastructure Service (to be upgraded to 9.3)

Data Server ⇨ Oracle 10g, Arc SDE 9.2

Image Server ⇒ Geo-database (QB, SPOT 5, IKONOS, IRS, Landsat, Scan Images etc.

The aim of this facility was to make the GIS Server federated so that services could be "mashed –up". Therefore it would create open geography for everyone where web GIS would move us into a new era when it was available.

C. Creating Compatibility of Available Data for New System

It was imperative to review the existing data bases, its quality, compatibility and level of updating in order to release them to the proposed system. While the technology would support this, the level of other associated factors influenced the implementation of such a system required in order to achieve good results within a short period of time. Normally successful implementation requires:

- good understanding
- strong support from internal management
- proper planning
- technology architecture
- Government inputs.

The creation of an integrated working environment is essential in order to implement the process with the production coming from SIIRM Project for Southern and Eastern Provinces. But the data for rest of the regions had to be transformed/ updated into compatible ways for which the staff inputs from the GIS Centre were positive. However, it was identified that it is necessary to enhance their knowledge and understanding of the overall changes that are proposed to the system. A considerable amount of effort and time is required to structure to attend national to local level as the data needs are authentic and complete. Nonetheless, the transformation of existing data to ensure compatibility with the system, which requires considerable time and guidance to the workforce was a major challenge to an organization that had large stocks of spatial data and to direct the entire staff to work with great confidence and proper understanding.

Another issue identified was the infrastructure availability in the centre which was considered as inadequate to attend to the defined tasks in relation to the number engagement. As the new system under SIIRM provided the latest software facilities with hardware infrastructure most of the staff still preferred to use the old versions of ESRI software as they were familiar with old version, and learning becomes a laborious task until they gradually adopt to the system. This makes the time taken for the process of compilation double in an environment where it needs to be expedited for developing the products from new environment. It could be identified as duplication and redundancy of work which needs to be addressed in a proper manner to expedite the process.

In order to address the issue, the division attempted to introduce shift work or sharing the facilities among the staff but it may not be possible with the existing administrative structure of the organization so as personal problems had be addressed before the technology problem solve unless make extra financial benefits gain by changing the work flow without affecting to all staff.

The other issue in connection with staff was the knowledge and training they obtained far with the new changes. The training although provided periodically to upgrade and enhance their working and technology knowledge but still requires to provide in house-on the job training related to the system changes with the technology enhancement and new software and equipment introduced. Although everybody is not focused to every other aspects of the training work specialization was considered essential initially making challenges to the administration to line up the replacement needs in case the staff motivated to new opportunities created outside the organization.

Infrastructure Integration

In order to implement the proposed Web GEOportal and the total system the SIIRM Project added new hardware infrastructure which consists of web server, data server, and image server with the following capacities.

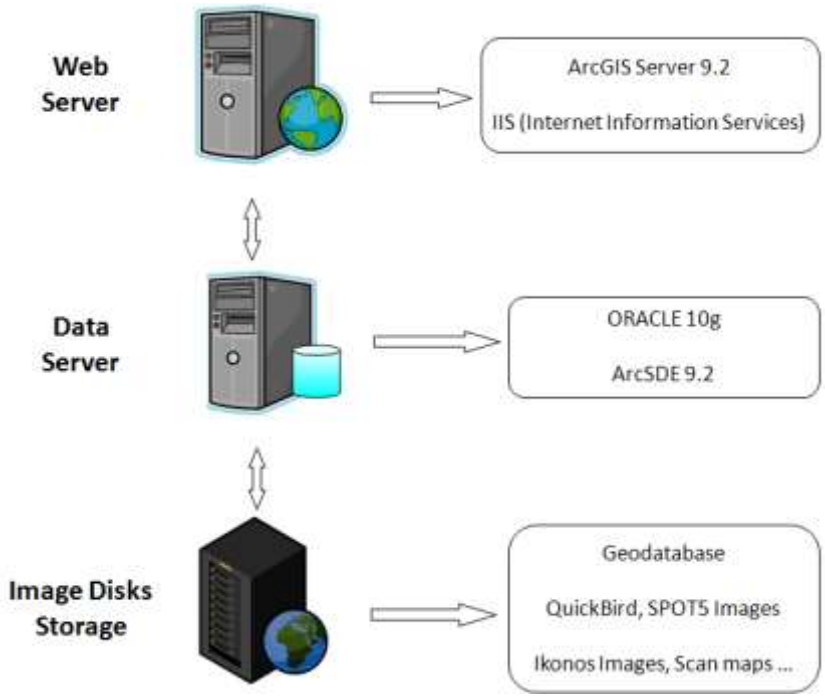


Figure 2. 3 New Hardware Infrastructure added to UDA GIS Centre

As per the calculation made for capacity management, to memory to store the available data to image server was full before its planned period although the full capacity of 10 of the 12 drives, and 2 more hard drives were added from the web server array. The image disk storage possesses a RAID-5 array with final disk space capacity increased up to 5.12 Tb, but this was not adequate for the system although it provided the possibility of moving 1 Tb additional disk space from web server to the GIS server for the working disk space which was planned to implement later. If the system functioned as planned, it would have difficulties to manage data storage within one year.

This situation is only for the area coverage of 15,000 sq. km of area in the Eastern and Southern Provinces. The UDA is planning to have joint programmes with some of the large scale data users in future to facilitate their enterprise Geo spatial data needs.

It was proposed to provide access to four categories of users through web server to the Data server connected to the exchange server. They were:

Externally for Web	Access the Geo Portal (internet) through a browser
Internally for Web	Access the Geo-Portal and develop web application (intranet) through a browser
Internally for Database	Access the data server through GIS desktop or develop software applications
Internally for maintenance	Administrator accesses the server directly.

In this case internal connection was proposed to access the Geo-Portal and the UDA Official Web site through a Web Browser as the existing leased line was only 256 kbps in 2008 due to security reasons. It was proposed to have either:

-1 additional leased line of 256 kbps or more with a router
-2 broadband connections of 512 kbps or more with two modems.

Router and modems was proposed to install between internet and an "internet firewall" . The selection to be based on reliability for the enterprise level applications from leased line internet service providers basically from SLT or Dialog. This broad band internet connection was needed to supplement the leased line when traffic is congested on the leased line in order to offer continuous service to end users/ clients through the Geo-Portal.

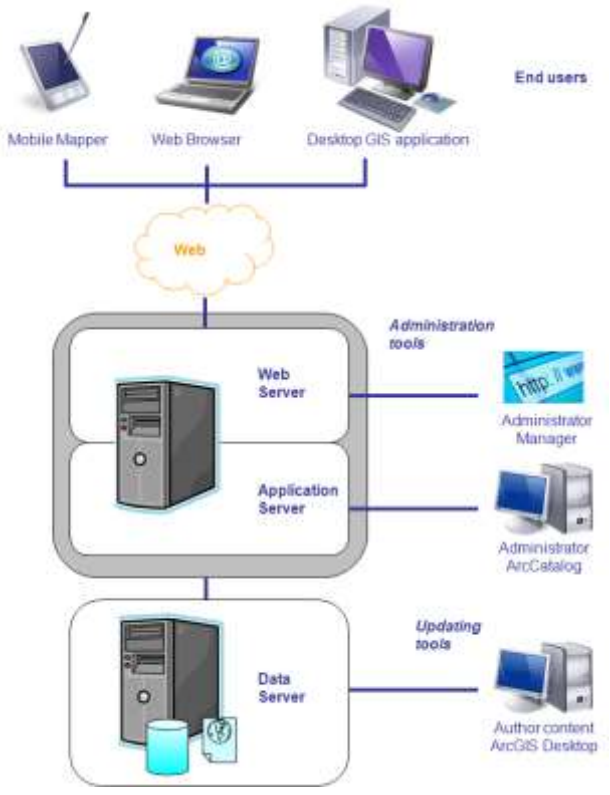


Figure 2. 4 Configuration of Web Geo Portal of UDA

Instead of sharing existing facilities, the network architecture has to be maintained as two separate configurations with the changes made for the UDALK domain created in April 2008 with the replacement of three functionally inefficient servers by considering the feasibility,

security data flow, performances, administrations and the cost for new equipment and maintenance.

The proposal was yet to be taken for implementation during this period until the proposed system was in place and check their functionality and performance. Until such time, a "DeMitilarized Zone" (DMZ) was created as an intermediate Secured Intranet network configured between internal network (inside) and internet (Outside) in a different subnets. This was because DMZ configuration was easy to set up and secured for internet, intranet, the clients, and the server connections which will be attended by external firewalls.

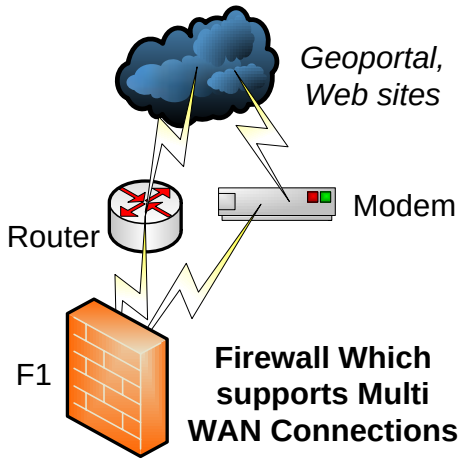


Figure 2. 5 Configuration with Internet connections and multi-WAN firewall

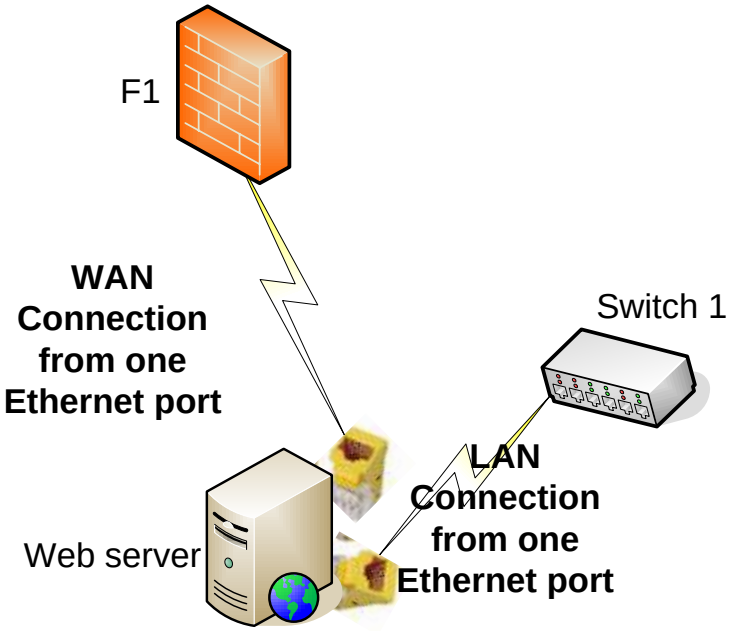


Figure 2. 6 Configuration for Web Server connection to Internet

Connection between DMZ Zone and UDA Existing Domain

In order to secure the system and to protect the DMZ, a new firewall (internal firewall) was installed and configured between UDA network (UDALK domain) and SIIRM servers. This internal firewall was physically connected between DMZ switch and an existing D-link switch (already provided by SIIRM) after the firewall in UDA network.

The DMZ was a different subnet to the UDA LAN and the Internal Firewall act as a NAT router connecting them. In fact, the Internal Firewall will create a DMZ to the UDA GIS LAN similar to the DMZ created by the external Firewall (Internet).

This internal firewall would control the access to the Web and Data servers:

- For Intranet applications (and Geo-portal), HTTP requests to be authorized only to the Web Server (port 8081 for example). The HTTP access (Geo-portal and Web applications) from UDA GIS Centre was similar as an Internet access from user point of view, but it serves better performance as it stays in the same internal network.
- For client – server connection to the geo-database (from ArcGIS Desktop 9.2 and developed GIS applications), TCP requests to be authorized only to the data server (5152 for example, 5151 will be used by the web server). The access to Oracle/SDE database (and Image disks storage) would be controlled by the firewall but also with user rights management in Oracle.
- For maintenance or administration purpose, a direct access to the OS will be required, for example to maintain the image files. This access should be authorized through FTP protocol.

This all new protection systems were introduced in order to open up the network configuration of UDA for the purpose of business development with other partners.

The final architecture was an integrated solution by taking into account, the main aspects from GIS Centre situation, and provided sufficient performance and security:

- GIS Centre has one UDALK domain, which comprises of 7 servers, an existing internet connection (leased line) with ISA Server used as firewall and a gateway,
- ICTA during summer 2008 connected UDA head quarter to LGN (Lanka Government Network) which was part of e-governance program in Sri Lanka. UDA connected to other selected government offices (nearly 300) through a dedicated and high-secured network call LGN. ICTA has installed a CISCO Firewall in UDA for this purpose (model: Cisco ASA 5505 with only two security interfaces).
- SIIRM Servers have to be secured in a separate network, managed by a DMZ zone on a different subnet. The DMZ was composed by Web server, Data Server, Image Disks Storage and one switch. It was connected to Internet with an external firewall (multi-WAN) and to UDALK domain with an internal firewall.

The configuration for the internal firewall proposed is presented below:

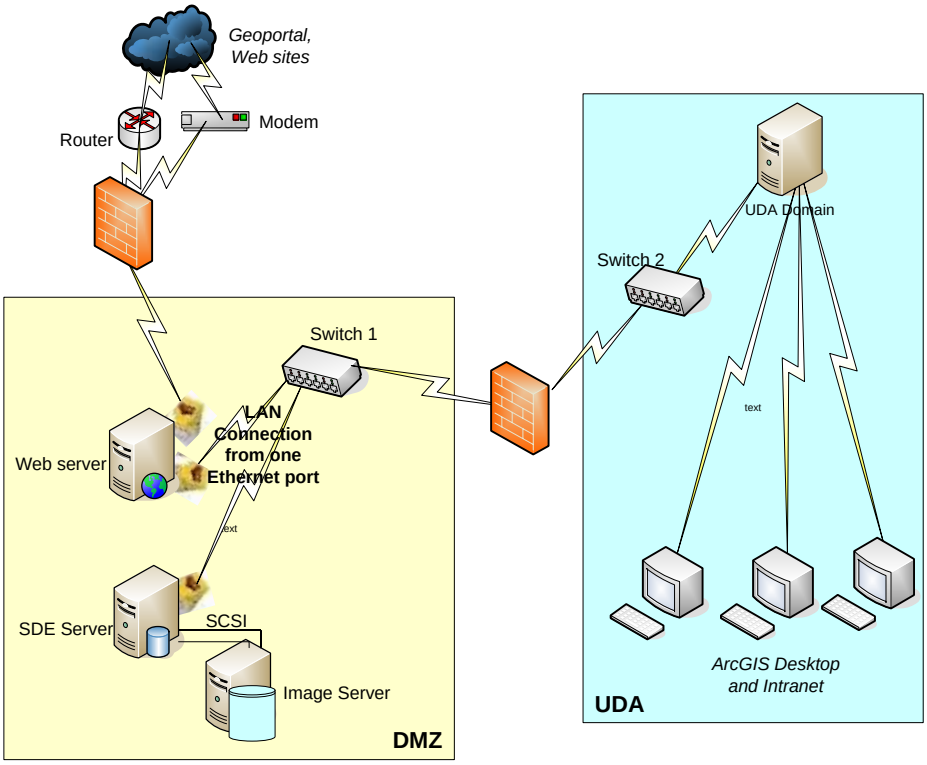


Figure 2. 7 Scheme of architecture for DMZ zone and UDA network

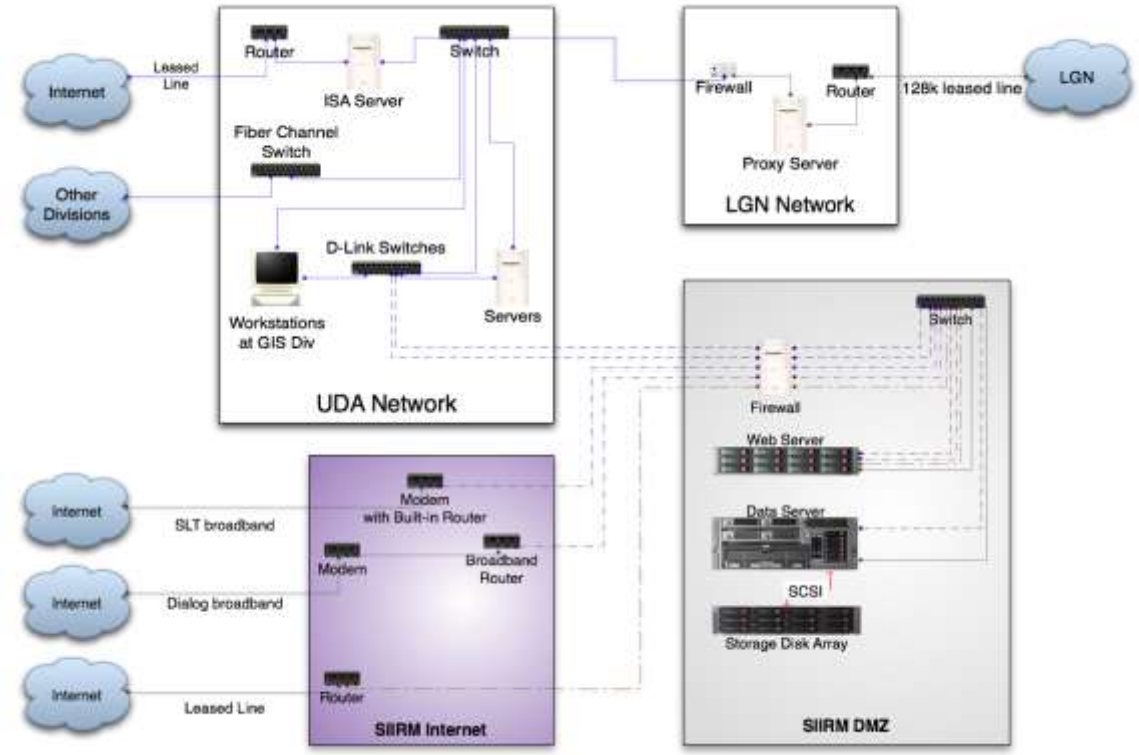


Figure 2. 8 Scheme of final network architecture

All these technical and technological issues were addressed in order to couple the existing and new system configuration to facilitate spatial data sharing among organizations. With the introduction of all these new measures a new working process also introduced to the internal users which were a direct access to data only through Oracle/SDE Geo-database on Data Server and only with ArcGIS Desktop 9.2 (ArcInfo or Arcview level) and developed GIS applications.

In terms of other organization users, with ArcView3.2, had to access images files and shape files on another server, as in this case working on the Data Server directly was not be allowed to access:

A "Working Disk Space" was implemented on one of the UDA Servers in the UDALK domain but strongly recommended the use of the GIS Server.

During this period File Server was allocated for the GIS Centre (named "GIS Server") and it was used by the Database Administrator to copy/store satellite images and shape files data. This server had a total capacity of 1 Tb, but additional disk space provided to reach 2 Tb (two 3.5" 500 GB SATA drives) and RAID-0 disk array was created for backups.

Therefore, Database Administrator had to extract data from Data Server (shape file for vector, TIF/ECW for images) and copy them to this working space. All users with ArcView 3.2 then were able to work in UDALK network for their specific tasks and projects. Once user's work was completed, the Database Administrator has integrated created/updated data (from shape file) into Oracle/SDE geo-database and attempted to work with GIS Centre managers to define the necessary working procedures related to this new organisation.

In case of image files on Data Server (satellite images in TIF/ECW, scanned maps, etc.), only Database Administrator was able to maintain these files, while coping as a new file on the Data Server, or copy it to the working space for a specific task managed through FTP access.

The greater advantage of this Data Access policy provided a few users to work on the Data Server, as such, security was higher as Busnet protocol remained close. Busnet was usually used with windows explorer, but is easily hacked and represent a critical issue in term of security.

A decentralized architecture for the new GIS Units at Provincial Sub Offices, in Trincomalee (Eastern province) and Matara (Southern province) was introduced to have a copy of Oracle/SDE geo-database in term of data and ArcGIS Desktop with developed GIS applications to access same. As no server was installed, the database format will be different (personal geo-database or file geo-database), in order to be stored directly on the standalone workstation.

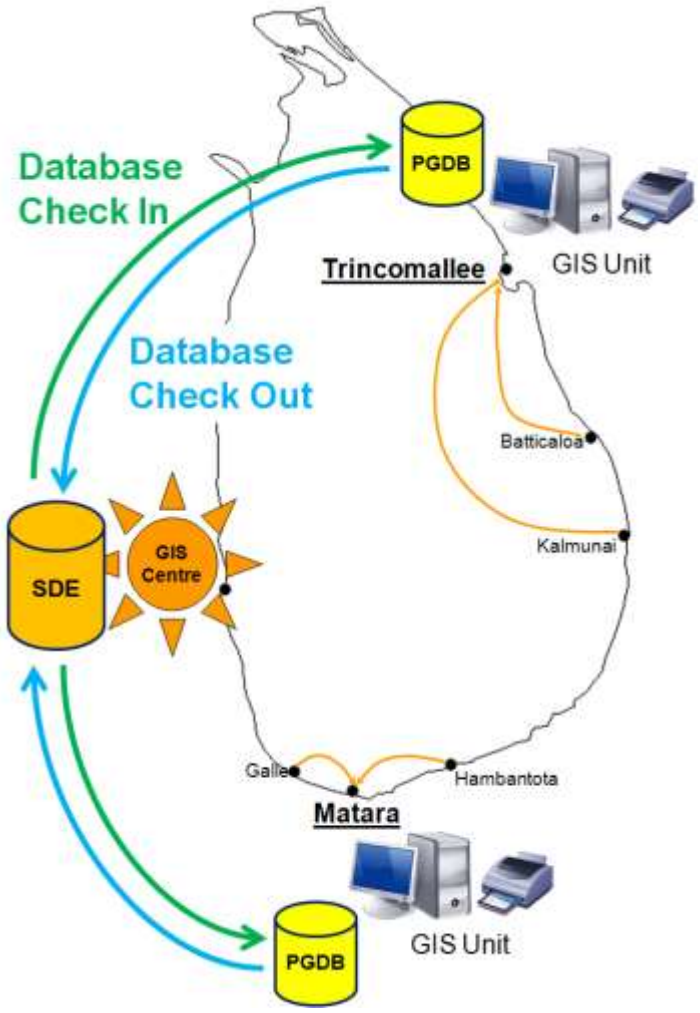


Figure 2. 9 Decentralized Architecture for the New GIS Units at UDA Regional Offices

How THE UDA GIS Centre was encouraged to Develop Business through UDA WEB Geoportal

One of the main concerns of the UDA GIS Centre in 2008 was how to make way for GIS to create business value for the organization with end-to-end process covering relevant business benefits, capital and operational budget, benefits delivering road map, organizational structure with Return on Investment with financial analysis.

In this context the proposal for sharing geo-information through a Geo-Web Portal was implemented after resolving numerous issues and questions on why invest or reinvest in GIS Technology made if all these spatial data released to the users freely with keeping extra burning to the organization for acquisition, development and sharing source data development of spatial data and application development and what values could be generated when this investment made for the UDA as an organization running on its own earnings without having any backings from the Government or extended funding source.

Primarily the Board of Management questioned on:

- When could we deliver the benefits after the new investment package implemented?
- How could we identify the recipients of the benefits and measures proposed?

- How could the UDA actively participate in on-going operational system in long term sustenance?
- What is the level of investment needed to keep the replacement for sustainable operations?
- If the system IS open for sharing with the others who are going to deliver the benefits,
- What resources are additionally required; both internally and externally to realize the expected benefits?
- Finally Board may ask the investment in GIS to provide any financial or other values to the UDA and is it worthwhile in expanding the system when time comes if the present strength weakened?

In brief it was programmed to implement the overall system inculcating the IT strategies with business strategies and IT processes by reflecting business processes to accrue benefits to the society by expediting the public dealing on development projects.

In the present context the main issues faced by all the users irrespective of their status as public or private, national, regional or local; enterprise or individuals is the difficulties in accessing and obtaining large scale digital geo-spatial data which will be addressed by the present initiative of UDA.

Facilitating all the lead authorities to schedule their information collection, analysis and sharing with the new system people who have obtained all such services involved with corporate support system by providing valued service to public those who are looking expeditions, transparent approval processes and services affecting to them. The most important aspect was the facility provided for business processes re-engineering program of all these organizations with outlook of geography in its decision making.

Private sector participation in the use of spatial data to provide more spatial orientation would facilitate their decision making process in novel way. Especially banking sector, industrial sector, agriculture and agro-processing industry, distribution and marketing service providers could be couple these data bases with IT structure in pace of their organizations to go for geo-spatial data initiatives.

Figure 2. 10 Home Page of UDA Web GeoPortal

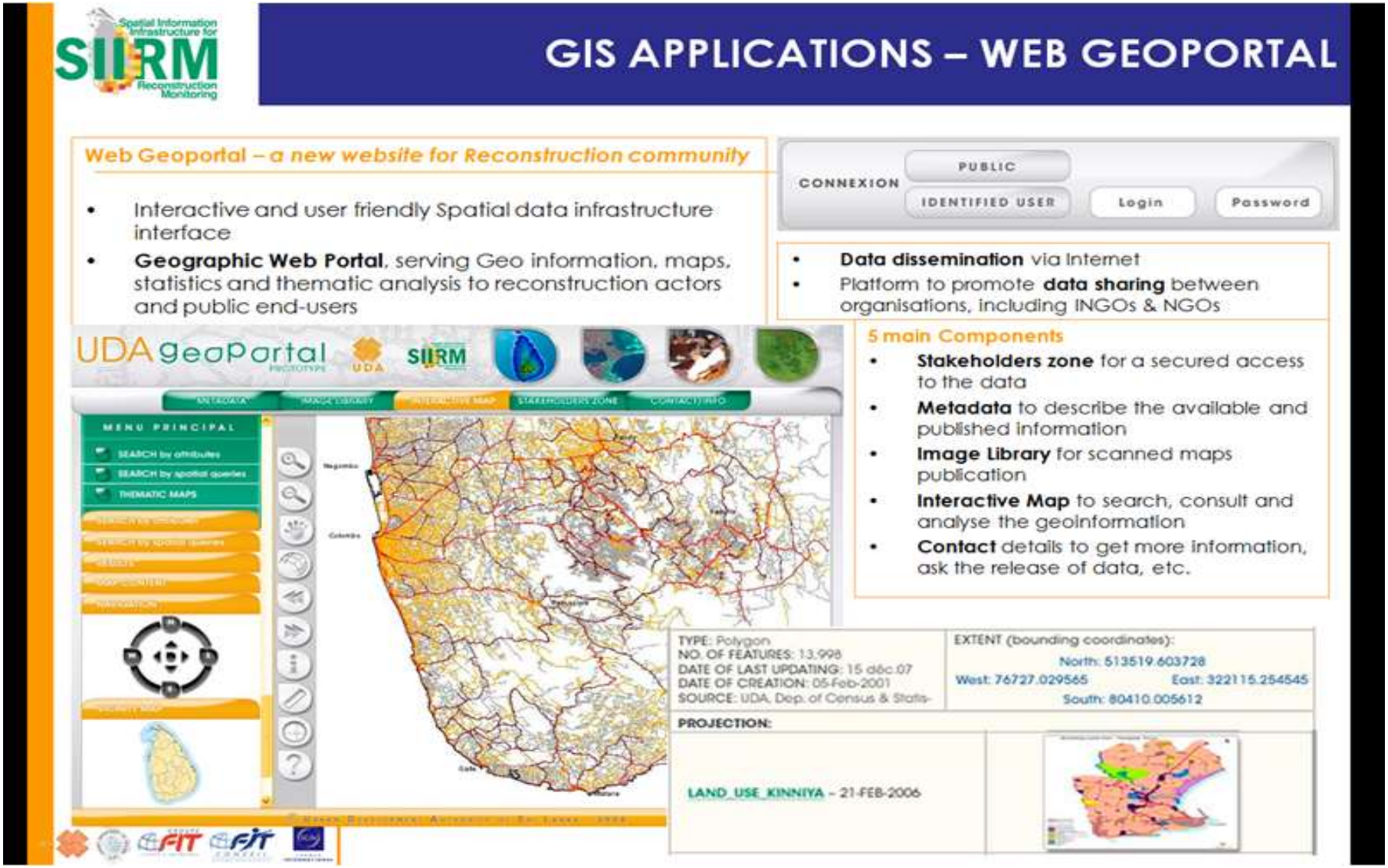


Figure 2. 11 Web GeoPortal Application Window

2.3.4 Years 2012 - 2016

During this period, the country was exposed to large number of physical development programmes throughout the country in relation to the development projects in road sector, ports, housing, urban development, tourism, fisheries, agriculture etc. This was possible after the completion of prolonged resettlement of internally displaced persons affected by the 30 year long civil war. In order to identify the needs of lands for various development purposes digital database on land bank started in compilation under the Ministry of Land with the participation of LUPPD, SD and other connected organizations. Moreover, the flood devastation that occurred in 2011 and 2012 placed the country in a more critical situation as the disaster impact was widely spread throughout the country, so the need for a well-developed spatial data base on disaster related fields was highly stressed.

The third major attempt in establishing NSDI was rescheduled under the Ministry of Lands where they were initiated a program to examine the ways and means of understanding the present status of spatial data generation and availability of such data for sharing across government organizations. The additional Secretary of Land who were entrusted to implement BimSaviya Program of the Ministry of Land take the lead role and invited the organizations that were involved in spatial data generation and use for facilitation of core business functions of the organizations.

The nominations were received from main organizations representing key functional divisions especially from human resource management, legal, information technology and GIS as the main components of NSDI implementation program rests within individual organizations have direct links with each of them. The program was facilitated by Korean Government and Sri Lanka Smart NSDI Road Show seminar which on " Latest Technology for Efficient and Effective Use of Geo Spatial Data" was held on 10th December 2014 at Kingsbury Hotel which was hosted by Korea Cadastral Survey Corporation and SPACE_N Program with the extended support of Survey Department.

The seminar was welcomed by the Surveyor General, SD who took a lead role from its beginning in NSDI establishment and presentation was made elaborating functionality of Korean NSDI and supported activities like KOMSAT and SI Imagery Services.

Sri Lankan presentations discussed the:

- Land Administration System and Title Registration System in Sri Lanka
- Existing constraints against efficient and effective use of spatial data in Sri Lanka.

The Korean collaboration illustrated the system in practice in Korea on the themes of:

- Spatial Information Policy in Korea
- Surveying industry and systems in Korea
- GNSS/CORS and Practical Use
- Remote Sensing & 3D Modelling with UAVs application
- Application based Aerial Photography
- KOMSAT and SI Imagery Services
- Urban Planning Information System in Korea
- GIS and ITC application for LIS and Water Resource Information management
- Space information based integrated Control System
- Spatial Information Open Platform (V_World)
- Land Administration System

The overview on spatial information policy and its composition of framework data, utilizing geospatial information, global partnerships and new growth engine was exposed to the participants in order to rethink about reframing Sri Lanka NSDI.

The significant milestone of the Korean involvement shows that the Government has a National Spatial data Infrastructure Act, National Spatial Data Industry Promotion Act, Survey and Cadastarl Record Act and also a National GIS Project.

Composition of Framework data had 21 frame work and over 1.1 Mn types of thematic maps in Mapping Data with:

- 3D geospatial information on 10-50 cm resolution
- Renovation of cadastre (covering 38 Mn parcels over 20 years which was made renovation of cadastral maps produced since 1910 (over 100 years)
- Total integration system of NSDI (The program has 76 systems integrating 25 organizations.
- Korea land System (The real estate, cadastral and urban planning information requirements were facilitated 14 works and served for 48 public services)
- Integrated Facility Management System (seven integrated system like water supply, sewer, electricity, gas, telecommunication, oil pipelines, heat etco operated by 124 organizations covering 300,000 km (8 times around Earth)
- Open Platform Service (V_ World) provided 49 national information containing 8 layers of 3D maps, 19 kinds of 2D maps, 22 kind of attribute information.
- Big Data – converted to centralized information
- 3D and Indoor spatial Information Service
- Global Partnership implemented 63 Nations overseas projects and 20 nation with MoUs
- Support in Geospatial projects is having business in 63 countries worldwide
- New Goth Engine (geo spatial infrastructure in blue ocean)

In the Sri Lankan context, similar efforts were made in different periods by different organizations but the progresses of such systems were somewhat questionable on various grounds. Bim Saviya Land Title registration is implemented with high priority during some period and low priority in other periods and was unable to address the most needed areas for the facilitation of high-end development.

The integrated Utility Management System based on GIS was introduced to Sri Lanka in 1994 with funding arrangements made by the World Bank but the key organizations were not ready to grasp the project as many of them not heard the word spatial data and GIS at that time.

In addition to that the Global Navigational Satellite System (GNSS)/ Continuously Operating Reference Stations (CORS) System installation and operation within Korea has shows that it has practical use in agriculture, construction and operations, geospatial natural resources, transportation, utilities and government. If the system installed by the Government the reference station works for 24x 365 and continuously observes GNSS signals provide advantages to have only one GNSS receiver and 1 person for sampling while precise coordinates computed by country with public confidence in an economical manner. It stressed that the service and use cases covers:

- Coordinate monitoring
- Weather forecast
- Bridge monitoring

- Total Elevation Content (TEC) map

Although CORSnet is in operation in Sri Lanka they are mostly concentrated in Colombo so that it needs to expand nationwide by upgrading the management system, ensuring power supply, internet communication and cooling system.

After having the exposure of the systems in operation in Korea a group of representatives of various organizations had a study tour in Korea. However the program could not be implemented further ahead due to the procurement issue on system development so as the proposals were standstill again.

The major project undertaken by the centre was the development of spatial database for local authorities of the Colombo District where the spatial database made to enhance the local authority level location details related to building data, road network, water network etc.

In 2014 another round of discussion started in establishing Sri Lanka Spatial Data infrastructure (SLSDI) with the proposal made in the Draft Report with Road map including Disaster Management & Environment Management (DMEM) pilot project to Disaster Management Centre. The consultant working in the project proposal; Dr Lesley Arnold outlined the proposal and submitted on 26th November 2014 which has number of steps towards achieving the short term and long term strategic goals in the SLSDI Strategy.

The key priorities identified by the plan was

- Setting up the NSDI Office and committees
- Understanding SLSDI Stakeholder Needs
- Developing the requirements design for National Map Portal
- Developing the spatial data sharing policies
- Drafting and implementing the Spatial Data Management Charter
- Developing the Spatial Data Framework document as a common government resource
- Conducting an inventory of all fundamental and DMEM data themes
- Piloting the DMEM Thematic Area

Pilot aims to deliver early results building up of technical and policy skills required for implementation an ongoing implementation of SLSDI. It was aims to establish a means of on line access to fundamental data themes and DMEM data themes.

The high level SLSDI Road Map as given in Figure 2.12 drafted over a period of three years for the purpose of planning, data and technology, data acquisition, compliance, communication and piloting. During the period of data and technology stage it was planned to deliver national map portal, catalogue, and data warehousing by getting requirements for the technology correct in the first instance. Data inventory and gap analysis is suggested to understand current government capabilities and plan for future needs as the Road map stressed the input on understanding future needs and setting government priorities.

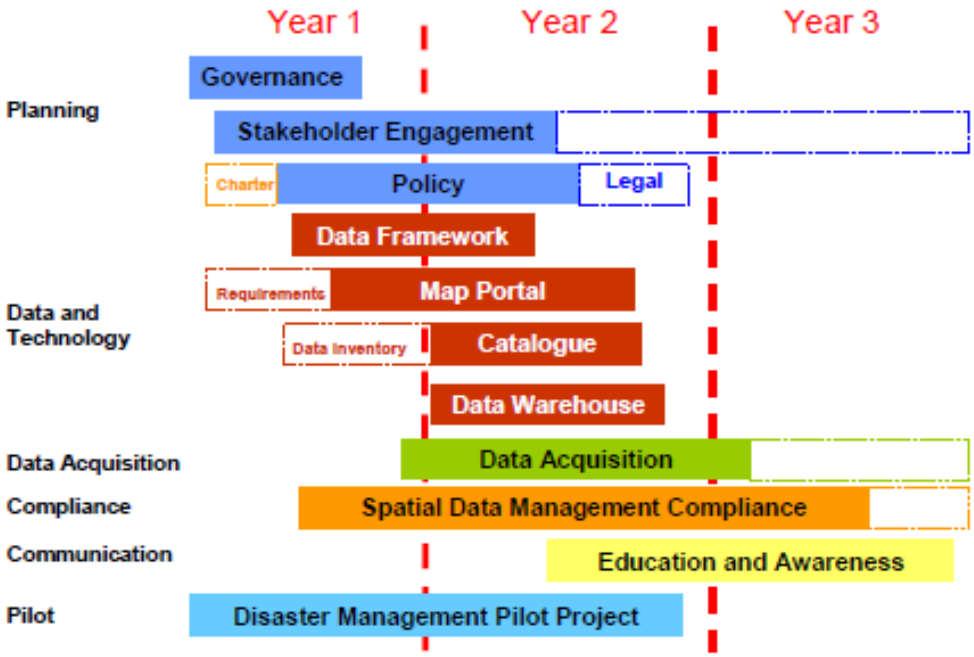


Figure 2. 12 High Level SLSDI Road Map

The SLSDI document spelt out the aims and strategic goal as follows:

The vision for the Sri Lanka Spatial Data Infrastructure is to achieve:

"Sustainable development through effective use of spatial information for evidence-based decision making"

This vision is expected to be realized through four strategic goals. These goals are directed towards achieving:

- An accurate nationwide representation of the landscape that is readily accessible and easily integrated with economic, social and environmental geographies.
- Greater efficiency and productivity in the management and sharing of spatial data.
- Evidence-based decision making in government, business and the wider community through access to integrated spatial information.
- Spatial solutions readily available and widely used across Sri Lanka in response to emerging opportunities.

New governance model was proposed for effective and sustainable data sharing across institutions and to meet accountability and outcome provisions of government.

Ten integrated strategies were also proposed for delivery. Communication and coordination aspects are also stressed with policy and standards, data and technology and education and awareness. The integrated strategies identified were:

- Stakeholder Engagement
- Legal and Policy Framework
- National Map Portal

- Spatial Data Framework
- National Spatial Data Catalogue
- Spatial Data Warehouse
- Spatial Data Management
- Spatial Data Acquisition Program
- Disaster Management Pilot
- Education and Awareness Programs

The pilot was expected to become one of the integral strategies. The relationship between the SLSDI and DMEM Pilot Project Road Maps indicated that:

Table 2. 10 Relationship between the SLSDI and DMEM Pilot Project Road Maps

No	SLSDI Major Projects	DMEM Pilot Project Activities
1.	**SLSDI Governance** Establish the NSDI Office, Steering Committee, NSDI Council and Subcommittees	**DMEM Project Governance** Establish the lead agency and DMEM Project Team
2.	**SLSDI Stakeholder Engagement** Explore, analyse and document stakeholder requirements and aspirations	**Project Planning** Develop the DMEM Project Plan with input from stakeholders
3.	**Legal and Policy Framework** Identify laws and policies that encourage the effective management and exchange of spatial data	**Draft SLSDI Policy** Draft policy and case study policy compliance
4.	**National Map Portal** Build a system that enables people to view layers of integrated spatial data produced by government sector agencies	**Disaster Management Channel (Optional)** Implement predefined views for the disaster management community
5.	**National Spatial Data Framework** Create a nationally recognised authoritative source of spatial data themes	**DMEM Thematic Area Data Inventory** Identify and list critical data sets for the DMEM Thematic Area
6.	**National Spatial Data Catalogue** Develop a library of metadata to enable people to search and query spatial data sets	**Data Storage Solution** A secure data storage environment for DMEM data
7.	**Spatial Data Management Charter** Develop a set of common principles for the management and exchange of spatial data	**Data Management Process** Develop processes aligned to best practice management and exchange of spatial data
8.	**National Spatial Data Acquisition Program** Develop a program for spatial data collection, procurement and management	**DMEM Spatial Data Acquisition Plan** Develop a yearly plan for procuring and collecting spatial data for DMEM Thematic Area
9.	**SLSDI Education and Awareness Program** Encourage people to change their perceptions and behaviours towards the use of spatial data	**DMEM Education and Awareness Program** Demonstrate the value and capabilities of integrating spatial data to SLSDI Community

Source: Sri Lanka Spatial Data Infrastructure Road Map, 2014

The SLSDI Governance Model proposed is as follows:

Figure 2. 13 SLSDI Governance Model

The objectives of the NSDI Governance Strategy suggested in the SLSDI Report covers:

The objectives for establishing the NSDI Governance structure are:

- Provide a forum for the effective management and sharing of spatial information across the government sector.
- Provide a focal point for strategic national imperatives as well as institutional requirements.
- A governance model that is easily accessible and credible to participating institutions.
- A model that is driven from the top, so that participating institutions are well supported and guided in their daily tasks and decisions where the SLSDI mandate is concerned.
- Alertness to inter-agency cost-shifting where SLSDI programs and projects complement changing cross-government practices.

National Spatial Data Framework is proposed to have three priority tiers of information:

- Fundamental data themes that support multiple purposes
- Specific business application data layers, such as flood
- Socio- economic layers, such as census data

The SLSDI proposed 14 fundamental data themes and these themes will be a priority for the National Map Portal. These Data Themes are the responsibility of the Ministry of Land and Land Development, Survey Department etc which includes:

- Administrative Boundaries
- Geodetic Network
- Cadastre (Future data set)

- Transportation
- Utility
- Hydrography
- Land Use
- Place Names
- Imagery
- Buildings
- Topography
- Elevation
- Reserves
- Street Address (future data set).

The objectives for establishing the NSDI Data Framework are:

- To understand the range of spatial data sets currently collected by government
- To define data custodians for each data set to ensure the responsible management and ongoing integrity of the data sets
- To understand the gaps in data coverage and quality.

The present status of the SLSDI project is limited only to implement the DMEM pilot project with the technical assistance of the UNDP at Disaster Management Centre. Fundamental data framework is also in the stage of assessment and establishment of GeoPortal is in progress.

The main project is scale down due to the involvement of the Information and Communication Agency in the implementation of the Sri Lanka National Geopatial Data Infrastructure Project in 2016.

2.3.5 NSDI Project Proposed by ICTA

National Spatial Data Infrastructure (NSDI) Project of the Information and Communication Technology Agency (ICTA) has emerged due to lack of a centralized platform for sharing government spatial data as all previous attempts were not materialized due to various reasons. The project proposed that centralized Spatial Data Infrastructure makes the decision making process more efficient with real-time evidence. Therefore, effective and efficient decision making is considered as one of the key factors for a productive government service delivery process and to ensure the good governance. Please refer to Chapter one for a background to the NSDI Project.

There is a significant paper trail of agreements that need to be processed before data sets can be transferred from one organization to another. Manual data sharing procedures contribute to delay in sharing, and the effort required to manually integrating and updates from one agency to another are labour intensive and time consuming.

It is in this context ICTA has drawn up a comprehensive plan in developing NSDI enabling to create awareness and make way to share the available spatial data using a common platform. The Goals, objectives, outputs and outcomes of the proposed SLNSDI programme is as follows:

Goal

To optimize the land usage and evidence based decision making across the country including domains such as Agriculture, Wildlife, Disaster Management, Railway, Education, Road Development as well as all sectors including government, private, industrial, agriculture and so on

Objectives

- Integrating government services, establish a common platform to address all spatial data requirements as per the national digitalization policy
- Eliminate duplication and waste of resources in matters connected with spatial data
- An accurate nationwide representation of the landscape that is readily accessible and easily integrated with economic, social and environmental geographies
- Single Window for the service about spatial data and related equipment.
- Greater efficiency and productivity in the management and sharing of spatial data
- Establish relevant standards, policies, and services to share spatial data
- Evidence-based decision making in government, business and the wider community through access to integrated spatial information.
- Spatial solutions readily available and widely used across Sri Lanka in response to emerging opportunities

The main output expects from the SLNSDI Project are:

- Develop comprehensible National Spatial Data Infrastructure Datasets
- Centralized Spatial Data Center
- National map portal
- National spatial data policy and legal framework
- Thematic area wise spatial data sets
- Shared GIS services
- Common infrastructure for national geographical information requirements
- Develop the potential mobile applications to improve the day to day life of citizen

The final outcomes of the project involves in

- Enhance usage of spatial data of the innovative application developers
- Improved evidence based decision making at all levels of management
- Fully satisfaction of consumers and all users of spatial data
- Improved collaboration of stakeholder engagement & management
- Improve capacity of stakeholders through awareness programs
- Improve employees' supportive tasks through behavioral changing and attitude changing.
- Multiplication of the citizen participation

ICTA has drafted the logical model of NSDI Program, Road Map and Governance model as shown below. Accordingly the program has number of major components like:

- NSDI Map Portal
- Metadata Portal

- Spatial Data Infrastructure Management System
- Information Classification
- Content Management System
- Spatial/ Geospatial Applications and Services

Accordingly ICTA has already launched four studies in connection with NSDI under different consultancies including:

- NSDA Baseline Study
- Requirement Study
- NSDI Policy & Procedure Study
- Information Classification

In addition to that another study on Legal Background Study and Change Management Study is yet to be started in understanding the present situation of NSDI in Sri Lanka as shown in Figure 2.14. The relational model as show in Figure 2.15 shows how these studies are connected each other in classification of information in terms of its spatial characteristics.

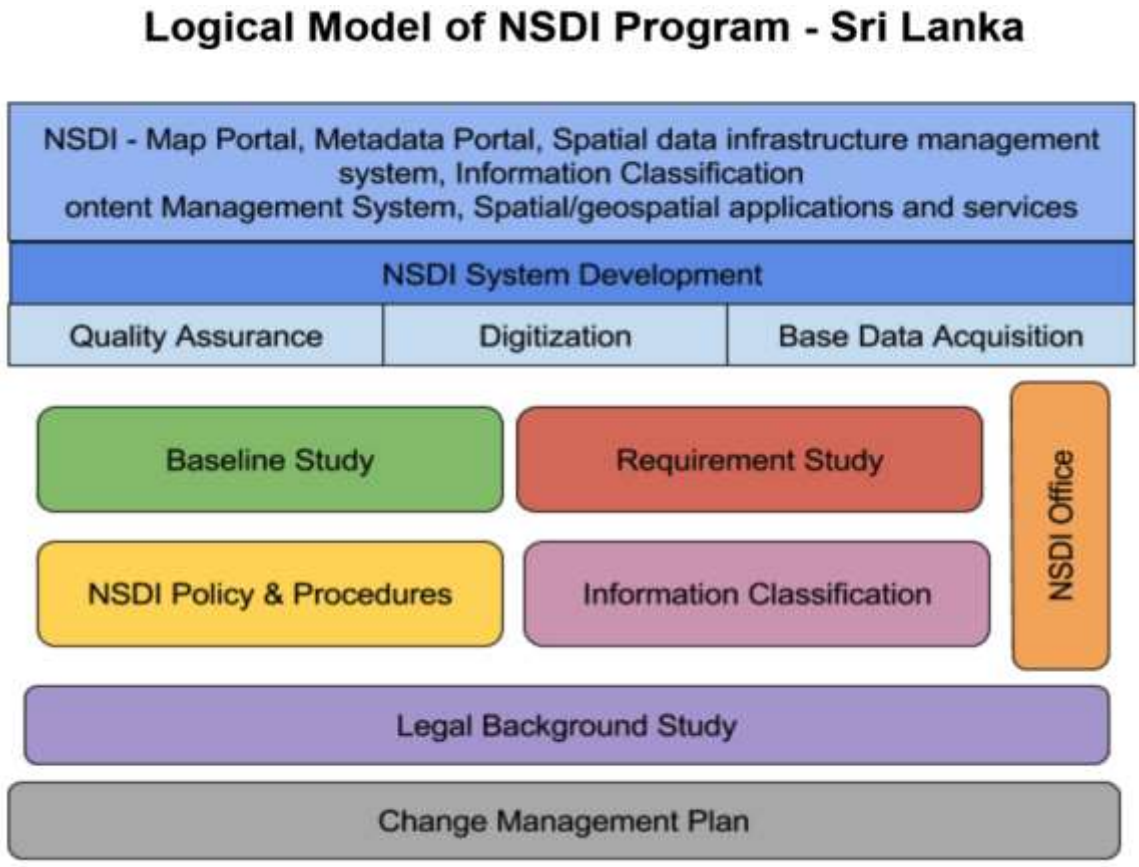


Figure 2. 14 Logical Model of the NSDI program, ICTA, 2016

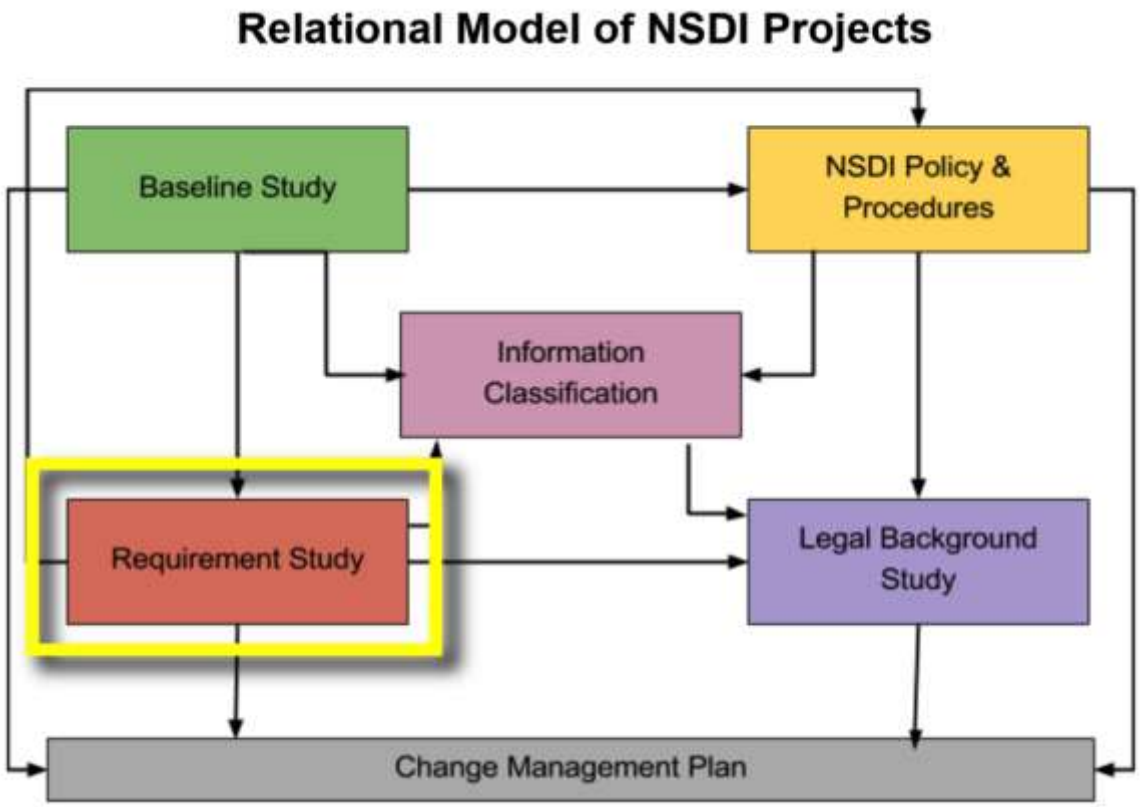


Figure 2. 15 Relational Model of NSDI Project, ICTA, 2016

NSDI Road Map

The proposed NSDI Road Map programmed for three years period with major components covering:

- Planning (Governance, Stakeholder Engagement etc)
- Data and Technology (Data Framework, Map Portal, Catalogue, Data Warehouse)
- Data Acquisition
- Compliance (Spatial data Management Compliance)
- Education and Awareness

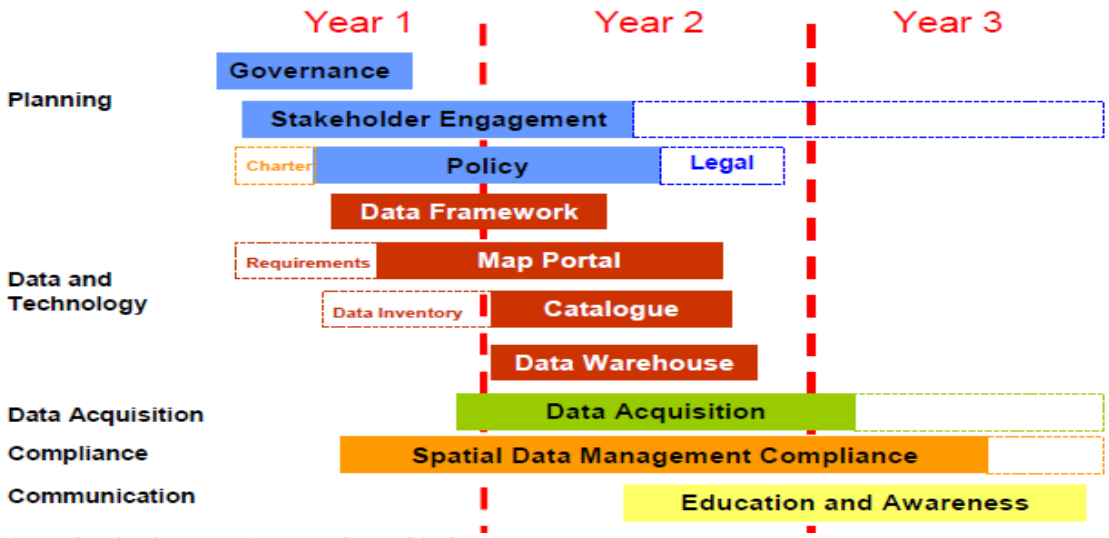


Figure 2. 16 NSDI Road Map, ICTA, 2016

Major part of required data acquisition is planned during the second year.

In relation to NSDI Road Map, Relational Model and Logical Framework the NSDI Governance Model is also proposed to manage spatial data as indicated in Figure 2.17

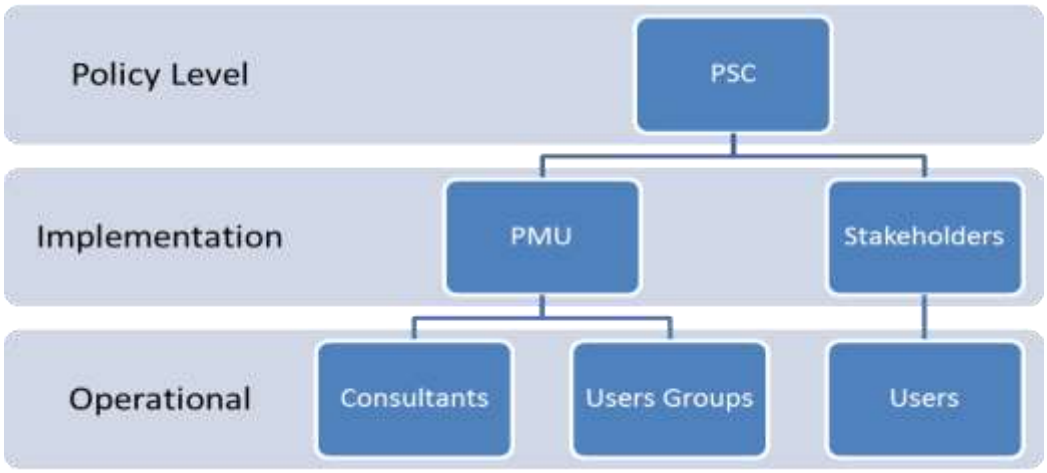


Figure 2. 17 NSDI Governance Model, ICTA, 2016

This project is evolved with conducting the NSDI Baseline Study. The background of the whole study programme is as follows:

- Spatial information are collected by various government organizations and are vary the utilized systems and technology to collect spatial data.
- Ensure effective decision making it needs in creating a platform to share spatial information between organizations as well as among the broader community.
- Collection of spatial data is in isolation and closed systems only for individual purposes.
- Difficulties in accessibility to available spatial data and understanding the type and location where it could be collected leads to repetition of collection and differ in quality.

- Government sector recognizes the current processes are inefficient and require more collaboration across the sector.
- Collaboration is much restricted due to existing data sharing policies and standards, paper trails of agreements before transferred the spatial data among organizations.
- Manual sharing procedures contribute delays and efforts required to manually integrates and updates spatial data which is labour intensive and time consuming.
- ICTA intends to have NSDI as a centralized platform for sharing government spatial data across the organizations and supports the government organizations to make operational decisions more effective and timely using real-tie evidence.

In this regard ICTA intended to conduct a comprehensive baseline study to assess the present situation of collection, storing, usage and sharing of national spatial data across the organizations and overall readiness of the staff and organizations to adopt and effective use of the system.

SDI Policy Analysis Study

The second consultancy project was awarded in developing the policies for spatial data management, sharing and engage with stakeholders for SDI Policy Analysis

The objectives of this study are to develop:

- National Spatial Data Policy & Guidelines for NSDI
- Standards to be followed by NSDI
- Functionality, Processes and Governance Model of NSDI/NSDI office

The Scope of Work covered:

- Consultant to develop the policies for spatial data management, sharing and engage with stakeholders for NSDI
- Consultant should study the outputs from the requirement study and the baseline survey in order to, extensively but not limited to develop the National Spatial Data Infrastructure
  guiding principles such as,
- Data from the multi-sector source are available and easily integrated to enhance and add value to other geospatial data.
- Data quality including the frequency of updating the data, data resolution, history of data lineage, completeness, logical and semantic consistency, coherence of the data.
- Protect the privacy and security of personal data and ensure the accuracy of demographic data or information about people either in raw form or in derived form.
- Ensure access to available geospatial data by all stakeholders including citizens without compromising the propriety and confidentiality of data, based on the classification and sensitivity of the data.
- Data liabilities such as types of data accuracies, fit for the purpose, disclaimers, infringement of copyrights, use of open data specifications, data modification and reproduction by users

- Comply with the government systems interoperability guidelines and standards to fully enable access to the multi-sector geospatial resources, adherence to a data dictionary.
- Enhance the accessibility, communication and use of geospatial data to support a wide variety of decisions at all levels of government and in society through an effective, efficient and widely accessible NSDI backbone or information highway.
- Protect proprietary interests related to licensed information and data.
- Specific policies on the use of open data
- Ensure that investment and policy decisions consider the expected return on investment and effective use of resources.
- Classification and pricing of data.
- Revenue sharing between NSDI and data providers.

The NSDI Policy would cover the following areas:

- Data standards related policies
- Custodianship
- Spatial Data Management
- Organization of Information Security
- IPR, Disclaimers
- Pricing policies
- Information security policies
- Cryptography and Communications security
- Physical and Environmental Security
- Operations security
- Access Control
- System acquisition, development and maintenance
- Supplier relationships
- Information security incident management
- Information security aspects of business continuity management
- Compliance; with internal requirements, such as policies, and with external requirements, such as laws
- Meta-data handling policy

In order to ensure the continuity of operations at NSDI, a Disaster Recovery Plan is also expected to develop which will be preceded by an analysis of the vital functions dependent on computer processing. This analysis would determine the maximum amount of time the NSDI is capable of continuing its operations without computing resources. When this critical time period has been established a Disaster Recovery Plan should be able to provide adequate recovery within this period. An effective Disaster Recovery Plan should address the following key areas:

- Roles and responsibilities of data processing staff and users;
- All potential disasters to be addressed by the plan;
- Priority for critical processing;
- Procedures for testing, reviewing, and updating the plan;
- Backup of hardware and network configurations;
- Backup of systems software, program and data files and appropriate documentation;
- Off-site storage of all backups, including a copy of the plan;
- Power and air-conditioning requirements; and
- Emergency supplies of computer media.

- On-site and off-site troubleshooting.

The Legal Background study

One of the main components of the NSDI project is to conduct a Legal background Study for Assessing Legal Amendments and New Regulatory Requirements for NSDI Project has following major areas to be addressed:

Existing Legal /NSDI Document Review

- Review of land related acts/legal entities (local/global)
- Legal background of ICT related Copyright, Intellectual Property Rights, and Information Acts on SDI process
- Review of NSDI Baseline Study, Requirement Analysis and Requirement Analysis and Policy Study Reports
- Identification of Key Stakeholder Legal Background and Cross verification of relevancy of land related acts on NSDI data sharing

Analysis of Available NSDI related Policies, Guidelines, Rules in Practice

- Study on policies, standards, technologies, data collection, exchanging data, data access protocols, securities, data dissemination, application development etc
- Issues confronted, prevailing legal & other restrictions
- Review discussions with key stakeholders
- Identification of relevant legal entities from existing acts and ordinances and necessity on new act or amendments required

Ratifying the Existing Framework

- Key stakeholders
- Identification of Key areas need strengthening / newly addressing
- Governing principles, Institutional and management drawbacks

Identification of Causes to be Addressed in establishing Integrated Legal Framework of NSDI

- Data sharing policies
- Functional specifications of NSDI Office set up
- Areas to be preserved with regard to confidentiality, privacy, security, information sharing and intellectual property rights
- Information security of stored & transmitted data, change right etc
- Long term sustenance of operation by updating and upgrading the processes of delivery organization responsibilities
- Procurement and licensing processes of costly remote sensing data
- Pricing policy & Revenue model to be considered in proposed NSDI organizational spatial data

Proposed Legal Framework and Operational Principles

- Corporate responsibilities of stakeholders within defined NSDI Framework & legal Framework
- Proposed operational mechanism within integrated framework
- Proposed legal background for online transactions, payment related regulations and compliances to industry standards
- Spatial data Infrastructure operations and guiding principles

Proposed Specifications, Proposals for amendments or New Legislation

- Existing laws or proposals for legislation compelling stakeholder commitment for spatial data sharing through NSDI

- Stakeholder Responses
- Completion of the NSDI Legal Study

In the overall context the ICTA NSDI Project is having significant opportunities to follow the proposals made by various stages for establishing NSDI without making major mistakes or perhaps any difficulties on the context of technology and techniques except administration and management issues and funding arrangements. In the overall NSDI approaches the Sri Lanka NSDI has achieved major milestones.

Milestone evolution and key themes of NSDI initiatives in Sri Lanka over the last 25 years period had significant events in the tears of 1992, 1996, 2004, 2008, 2012-16 while achieving following major results as shown on Figure 2.18.

1992 - Shadowing spatial data
1996 -Building confidence on GIS
2001 -Established Geospatial One Stop Shop
2004 -Starts Geo-Spatial Line of Business
2008 -Established Geo-Spatial Platform with UDA Web Geoportal
2012-2016-NSDI Framework

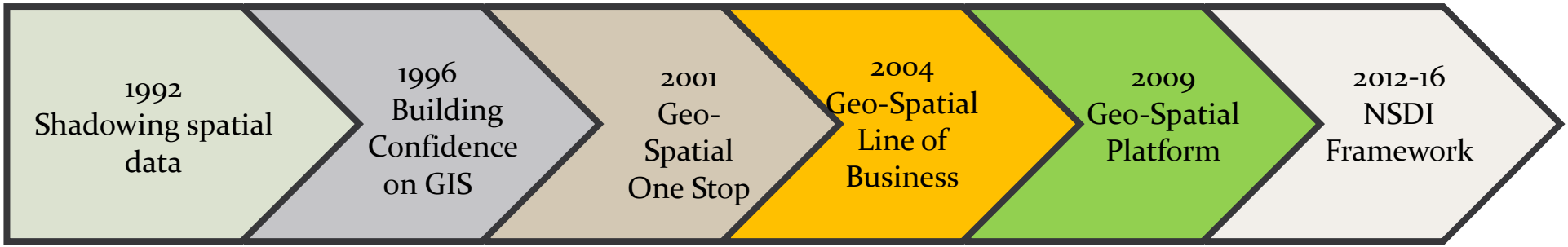


Figure 2. 18 Milestone Evolution and Key Themes of NSDI in Sri Lanka

-Little or no idea on GIS data by many -hand -picked organizations touch in use of software -Recognition of Framework data for local NSDI	-Expands involvement in GIS / Spatial data -Establishing facility in organizations at primary level -International support for SDI initiatives	-Establish One-Stop Shop for on-line data sharing and development planning approval system & process for expedite decision making -Framework draft standards for building of spatial data -Captured national level spatial data base on: - land use, water network, road and rail network, contour network, place names, environmental sensitive areas using 50,000 maps -administration boundary -Census data by GN Ds -Initiate 1:10,000 urban data gathering	-Create business requirements using spatial data -Data life cycle -Provide common services and sharing of spatial data across Government, National and International agencies/NGO/INGO /Public/Individuals -Strong case for establishing national level spatial data to support for SDI initiatives -	-Established web GeoPortal -Shared activities -Common data services and GIS based application development Introduced academic programmes; initially short courses and later Post Graduate course -Human resource management and enhancement -First Attempt to establish NSDI policy framework & actions	-Scattered SDI & individual interests in establishing own frameworks -Second attempt in establishing NSDI jointly by My of Lands, My of RRR with the support of GTZ, Colombo, -Third attempt in establishing NSDI by DMC -Fourth attempt in establishing NSDI by ICTA -NSDI baseline Study -Requirement Analysis -Policy Analysis -Legal Background Study -System Design -Establish Web GeoPortal

2.4 Gradual Processes in Transformation

The global perspective on GSDI/NSDI initiated with the actions of Federal Geographic Data Committees (FGDC) of United States of America as the concept of geo-spatial industry was activated with the issuance of Presidential Order 12906 in 1994 considering the work undertaken by different agencies on geographic data.

For the past two decades, FGDC has worked to develop policies and partnerships to advance the development of NSDI. To achieve this objective, FGDC has contributed to the evolution of federal and national geospatial initiatives of which several of these initiatives have been sponsored as US government priorities and their milestone evolution as highlighted in the Figure 2. 19 below:

In these initiatives the following key thematic areas were dominant within specific time period given against each year:

1992 -Geospatial Clearinghouse Network
1996 -Global Spatial Data Infrastructure
2001 -Geo-Spatial One Stop
2006 -Geo-Spatial Line of Business
2010 -Geo –Spatial Platform
2012-16- Geo-Spatial Shared Services

The transformation of approaches which were changed from generation (period) to generation (period) as well as its connected driving forces as indicated below:

Table 2. 11 NSDI Generations, Transformation of Approaches and Driving Forces

NSDI Generation	Period	Approaches	Driving Forces
First Generation	1980 - 1990	NSD Clearinghouse	Data
Second Generation	1990 – 2000	Process based approach	Use of data and need of uses
Third Generation	2000 – 2016	Smart World (Smart City/Smart Country)	Electronic & digital technology Spatially enabled society

The analysis shows that the initiatives of the ICTA NSDI to be geared in establishing Smart Cities/Smart Country with the driving forces of electronic & digital technology to make spatially enabled society for which the major task of the Government Organizations is to safeguard all the existing GIS installations established in the respective organizations rather than looking for start everything in fresh dreaming on utopian concepts as for all it needs a comprehensive fundamental spatial data bases on identifiable spatial units related to building blocks.

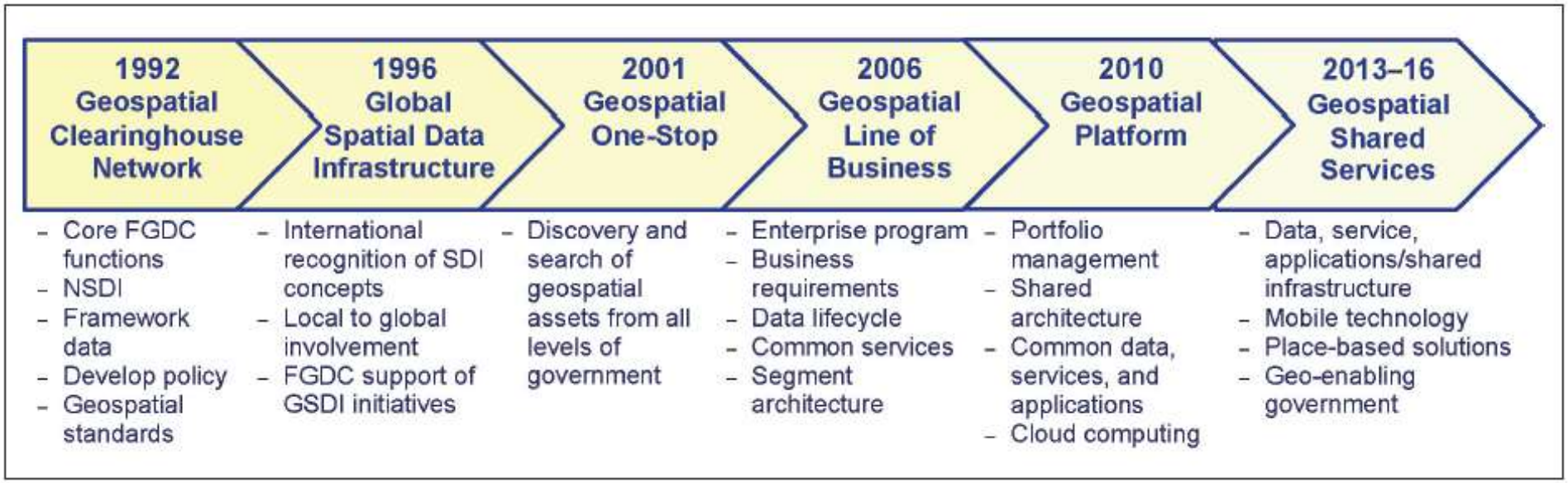


Figure 2. 19 Milestone Evolution and Key Themes of NSDI in USA (Source: National Spatial Data Infrastructure Plan 2014-16, FGDC, December 2013)

2.5 Global Best Practices in NSDI/GSDI

The global best practices of GSDI/NSDI provides to the countries to understand how these countries addressed the various challenges confronted in implementation of NSDI programmes at different stages and its sustainable operations.

The source for information on the current situation of the Global Geospatial Data Infrastructure (GSDI) of the leading partner countries could be obtained through different ways of which the web search and the GSDI Association contribution in finding the practical solutions applied in this endeavour. GSDIA was established in 2004 for academic, government, industry entities and individual professionals working or interested in the field of geomatics and Spatial Data Infrastructures to share the views, concepts, theories, and new initiatives made in the field of GSDI.

According to GSDI source data it shows that it has 38 Organisational Members from 20 countries and over 400 Individual Members from 55 countries with a high concentration in developing nations exists in the field with the present status and the contribution made by these countries in establishing GSDI/NSDI and its promotion which provides updated situation of each of these countries, the specific issues confronted at the initial stage and how these issues were addressed using different strategies and approaches in order to establish country wide SDI and their contribution in developing global geospatial data infrastructure. This information provides opportunities to Sri Lanka to practically apply in each of the issues presently confronted in different ways to move forward the proposed NSDI programme ahead as many of our previous attempts were failed due to number of similar reasons the other countries overcame. As the GSDI Association has evolved with all the key institutional involved in overview of GSDI the information gathered through their sources illustrated the current scenarios of GSDI in well-established countries.

The GSDI has Special Consultative status with UN ECOSOC and supports the UN Global Geospatial Information Management (UN UN GGIM) initiative. The GSDI Association is an Official Observer to UN-GGIM Regional Committees, including UN-GGIM America and UN-GGIM Europe. In the meantime the GSDI promotes the Open Data Principles of GEO/GEOSS and has formal liaison with the Committee on Earth Observation Satellites (CEOS) (2).

Since 2004, the Association has conducted GSDI World Conferences around the globe, offering significant networking opportunities and prospects for SDI researchers and SDI implementers to present their latest work, challenges and solutions (GSDI was founded partly to continue the GSDI conference series that started in 1996 in Bonn, Germany.) In 2016, GSDI began a series of public webinars on selected SDI implementation challenges and best practices.

GSDI have liaisons and Memorandums of Understanding with several global organizations those who are fully or partly involved in various avenues in GSDI, including:

- Joint Board of Geospatial Information Societies (**JBGIS**) –GSDI is current Chair of JBGIS
- International Cartographic Association (**ICA**)
- International Federation of Surveyors (**FIG**)
- International Society for Photogrammetry and Remote Sensing (**ISPRS**)
- International Society for Digital Earth (**ISDE**)

- Centre for Disaster Management and Public Safety (**CDMPS**-Univ. of Melbourne)

Spatial Enablement in Smart World is the current initiative in the advanced countries focusing on what is already in place provides us the opportunity to examine how far we have come with respect to spatially enabling "smart city" and "smart country" initiatives in worldwide – as well as how much still needs to be done. With this in mind, the initiatives made by Sri Lanka are needs to evaluate in order to understand our way to go forward with the current work.

"Building from an understanding of spatial data infrastructures, Williamson et al (2006) suggested the vision of a spatially enabled government involves …"establishing an enabling infrastructure to facilitate use of place or location to organize information about activities of people and businesses, and about government actions, decisions and polices.

Rajabifard (2007) introduced the idea of spatial enablement of society, arguing that the creation of economic wealth, social stability and environmental protection could be achieved through developing products and services *based on spatial information* collected by all levels of government. These objectives can be facilitated by cultivating an environment in which "…spatial information is regarded as a common good made available to citizens and businesses to encourage creativity and product development". It was further argued that this would require data to be accessible, accurate, regularly maintained and sufficiently reliable for use by the majority of society who are not spatially aware – as well as some form of "assessment mechanism" and a set of agreed indicators to measure the progress of its development and delivery of its services. Rajabifard et al. (2010) expanded on the notion of a "spatially enabled society" as being the result of a transformative process in which spatial information technologies and spatially equipped citizens change the way economies, people, and environments are managed and organized.

Holland et al. (2010) tied down the meaning of spatial enablement in government (SEG) by posing that to "spatially enable" something usually means:

(1) Geographically tagging records in a given government database; and
(2) Provision and ongoing support of an enabling spatial data infrastructure that allows government to readily make decisions that take account of 'location'.

More recently, this notion of spatial enablement is implicit in the importance of "location" to the development of the "smart cities" and/or "smart communities" concepts. Clearly, many different definitions of the term "smart city" exist, and it is acknowledged that it may have evolved from earlier terms like "Wired City". No one commonly-accepted definition fits all contexts. That said, Albino et al. (2015) offer an excellent discussion of the history of the term "Smart City". The term was first used in the 1990s (Mahizhnan, 1999) with a clear focus on the significance of new ICT with regard to modern infrastructures within cities. The California Institute for Smart Communities (CISC) was among the first to focus on how communities could become "smart" and how a city could be designed to implement information technologies (Alawadhi et al., 2012).

Significant corporate investment and developments aimed at realizing this concept took place in 2005 when, through the Clinton Foundation, former US President Bill Clinton challenged US-based Cisco Systems to use its technical expertise to make cities more sustainable (Information Age, 2012). In response, through its Connected Urban Development program, Cisco dedicated $25 million over five years to research the topic. Beginning in 2010, through its new Smart and Connected Communities Division, Cisco began commercializing the new

products and services it had developed through pilot projects conducted with 3 major cities worldwide. Similarly, beginning in 2009, IBM began its "Smarter Cities" program to investigate the integration and application of new sensor, networking and analytics technologies with a specific focus on problems experienced in urban centers.

Deakin and Waer (2011) listed four factors that contribute to modern definitions of a smart city:

- The application of a wide range of electronic and digital technologies to communities and cities;
- The use of information and communications technologies (or "ICTs") to transform life and working environments within the region;
- The embedding of such ICTs in government systems; and Spatial Enablement in a Smart World
- The territorialisation of practices that brings ICTs and people together to enhance the innovation and knowledge that they offer.

Musa (2016) suggests that the goal of building a smart city is "… to improve the quality of life by using technology to improve the efficiency of services and meet residents' needs". He proposes that a smart city engages its citizens and connects its infrastructure electronically, and that it would also possess the ability to securely integrate multiple technological solutions in order to manage such city assets as (e.g.,) local information systems, schools, libraries, transportation systems, hospitals, power plants, law enforcement, and other community services.

In all cases, an SDI provides an institutionally sanctioned, automated means for, discovering, evaluating, and exchanging geospatial information by participating information producers and users. SDI extends a GIS by ensuring geospatial data and standards are used to create authoritative datasets and polices that support it (ESRI, 2010). SDI is fundamentally about facilitating and coordinating the exchange and sharing of spatial data between stakeholders in the spatial community.

From the Global to the local level, the generic components of an SDI are quite similar. They enable different users to access, locate and retrieve information in an easy and secure way. In general, the fundamental components include:

- Metadata – for the documentation of data, services and other geospatial resources within an organization.
- Clearinghouse – a network applications (now predominantly Internet based) that uses the metadata records to search and discover data across the network.
- Access Infrastructure and services that enable access to the actual data sets.
- Human resource and partnership – training, development and outreach.
- Standards – these include the specifications and formal standards and documented practices, which could include cataloguing and web services standards.
- Data sets – any data that has spatial component such as digital base map, thematic and statistical names.
- Others include policies for acquisition, ownership, pricing, access, sharing, dissemination, custodianship, preservation, governance.

The concept of data communities has been introduced as an effective way of bringing in data from new sources into an expanded data ecosystem. The SDI concept of custodianships offers an approach to organize the data communities.

Steudler et al. (2008) distinguish three SDI organizational levels: the policy level, the management level and the operational level. Each level is associated with one of the key components of an SDI: policies, standards, access networks, people and data (see Rajabifard et al. 2002). Further, Steudler et al. (2008) describes the SDI levels, areas and possible indicators as:

Policy Level - Policy: One aspect to be considered for the policy component is the geographic, historic and social context of the country. A second aspect is how the government handles the overall policy regarding the collection, dissemination and legal protection of spatial data; for example the issues such as intellectual property rights, privacy issues and pricing. Indicators might be the existence of a government policy regarding the mentioned issues and how the issues are dealt with. Good practice is when the government has taken actions for an SDI and when issues have been handled in a comprehensive and satisfying way in relation to the geographic, historic and social context of the country.

Management Level - Standards: The evaluation of the standards component includes how the government administration is dealing with organizational arrangements for the coordination of spatial data. This component may include the assessment of government agencies involved in providing spatial data for land titles, for large- and small-scale mapping. The evaluation has to consider standardization issues like the definition of core datasets, data modelling practices and interoperability at the national level. Indicators for the management level might be a list and the size of government agencies involved in spatial data, their size and activities and how they communicate and cooperate with each other. In order to permit comparisons with other countries, indicators might point out the definitions of the core datasets, the data modelling techniques used for defining spatial datasets and the standardization decisions for the access networks.

Management Level - Access Networks: The evaluation of the access networks component may include issues like the definition of data summaries, formats of available data, delivery mechanisms for the data, whether access will have associated costs and whether data-access privileges will be defined for different user groups. Indicators might point out access pricing, access delivery mechanisms and procedures, whether access is defined by privileges or is open to all users, as well as whether there are inter-institutional links for data access, or value-adding arrangements established with the private sector.

Operational Level - Access Network: The responsibility for the operational level is with the government's operational units that have to make things happen in terms of access network and data provision. The access network component is to be evaluated by considering the type of available network and its capacity and reliability. Indicators might be the data volume and response time and good practice would be when the network can handle a large data volume reliable with a short response time.

Operational Level - Data: The data component can be evaluated by assessing the data models of the spatial datasets of the different agencies, the creation of a national core

dataset, the data formats, data capture methods, data maintenance as well as data quality and accuracy. Good practice might be when data is defined in clear and transparent ways (content, quality, accuracy) so that they can easily and readily be shared among the different agencies and users.

O*ther Influencing Factors - People:* The evaluation of the people or human resources component has to take the three groups into account which have been identified as relevant in the SDI context: end-users; data integrators. The evaluation will have to assess the situation within these three groups in terms of personnel, opportunities for training and capacity building and the market situation for spatial data. Good practice will be when end-users are easily and readily getting the data product that they are looking for, when integrators can operate and prosper in favorable market situations and when data providers are able to deliver the data in efficient and effective ways.

Performance Assessment: This aspect is important for the overall assessment of national infrastructures. The assessment might include the review of objectives, strategies, performance and the reliability of the system, as well as user satisfaction. Indicators can be the adoption of SDI principles, its use and diffusion of spatial data and user satisfaction surveys. Good practice can be considered as when all SDI principles are adopted, when there is large use and diffusion of spatial datasets and when users indicate satisfaction about the products and services offered.

Although the areas and possible indicators were suggested they have become only a general framework for evaluating SDIs but are nonetheless useful for providing a first-order evaluation of an SDI and eliciting valuable indicators as given in Table 2.12.

Table 2.12: Table 2. 12 Possible SDI performance indicators per SDI component (Steudler et al., 2008)

Level	Area	Possible Indicators
Policy	Policy	Existence of a government policy for SDi
		Handling of Intellectual Property Rights, Privacy Issue and pricing
		Objectives for acquisition and use of spatial data
Management	Standards	Standardization arrangements for data dissemination and access network
		Institutional arrangements of agencies involved in providing special data.
		Definition of core datasets
		Data modelling
		Interoperability
Management	Access Network	Access pricing
		Delivery mechanism and procedure
		Access privilege
		Value adding arrangements
Operational	Access Network	Type of network
		Data volume
		Response Time
Operational	Data	Data Format
		Data capture method
		Definition of core datasets
		Data maintenance

Level	Area	Possible Indicators
		Data quality and accuracy
Other Influencing Factors	People	Number of organizations and people involved
		Opportunities for training
		Market situation for data providers, data integrators and end users
Performance Assessment		Degree of satisfying the objectives of end objectives and strategies
		User satisfaction
		Definition and use of spatial data and information
		Turnover and reliability

Source: Steudler et al, 2008

In this context the Baseline Study attempts to identify some of the significantly contributing countries to the study and identify global best practices.

The literature review provided an opportunity to select following 10 countries to study the current best practices in spatial data and its initiatives. These countries identified from different regions in global context representing the way the countries achieved the desired objectives of the Global SDI/ National SDI:

Region	Country
North America	United States of America
	Canada
Europe	European Union Countries
	Iceland
Asia and Pacific	South Korea
	Australia/ New Zealand
	India
Middle East & North Africa	Oman
Latin America & Caribbean	Chile
Africa	South Africa
United Kingdom	

The international best practices was reviewed in respect of possible extraction of best approaches made in overcoming the issues and in developing sustainable NSDI initiatives for the purpose of expecting in application of such results in the Sri Lankan context in order to localize the best methods at the implementation of NSDI initiatives nationally. Further, the literature review was facilitated in the exercise of contrasting the present scenario with the previous status of the NSDI initiatives and concerns.

2.5.1 Best Practices in USA

The Office of Management and Budget (OMB) has specific oversight responsibilities for Federal information technology systems and acquisition activities, including geographic information systems, to help ensure their efficient and effective use. Since 1953, OMB has released several iterations of Circular A–16 that, among other requirements, encourages avoidance of duplicative mapping and surveying efforts. These efforts were reinforced in 1994 by Executive Order 12906, "Coordinating Geographic Data Acquisition and Access." Two

subsequent laws that reinforce these responsibilities are the Clinger-Cohen Act of 1996 (in Public Law 104–106) and the E–Government Act of 2002 (Public Law 107–347). With the issuance of Executive Order 12906, "Coordinating Geographic Data Acquisition and Access," describes the National Spatial Data Infrastructure (NSDI) as "the technology, policies, standards, and human resources necessary to acquire, process, store, distribute, and improve utilization of geospatial data." The Federal Government Data Committee (FGDC), which was formally established by OMB in 1990, is the interagency committee that promotes the coordinated use, sharing, and dissemination of geospatial data in the United States. The Secretary of the Interior is the Chair of the FGDC and the Deputy Director for Management of OMB is the committee's Vice-Chair. The Department of the Interior provides support for the FGDC through the Office of the Secretariat, which is housed within the U.S. Geological Survey.

For the past two decades the FGDC has worked to develop policies and partnerships to advance the development of the NSDI. To achieve this, the FGDC has contributed to the evolution of Federal and national geospatial initiatives. Several of these initiatives have been sponsored as Administration priorities.

Most recently, the FGDC led the development of the OMB Circular A–16 Supplemental Guidance, initiated the implementation of a geospatial portfolio management approach, and led the development of the Geospatial Platform initiative with Supplemental Guidance to addresses portfolio management for the coordination of Federal geospatial data assets and investments to more efficiently support national priorities and government missions. Portfolio management will apply consistent management approaches to help increase the quality of data through best practices and documentation in a manner that reduces duplication and cost and provides greater accessibility. The Geospatial Platform will provide a suite of shared services and capabilities to Federal agencies and partners. These developments build upon the previous processes and accomplishments of the FGDC and will provide a means to more efficiently manage and deliver Federal geospatial products and services in the coming years. The Federal activities in the Strategic Plan will be carried out by the FGDC community, which includes FGDC member agencies, the Steering Committee, Coordination Group, subcommittees, working groups, and partners.

National Geospatial Advisory Committee

The National Geospatial Advisory Committee (NGAC) is a Federal Advisory Committee established by the Department of the Interior to provide advice and recommendations related to management of Federal and national geospatial programs, development of the NSDI, and implementation of OMB Circular A–16 and Executive Order 12906. The Committee reviews and comments on geospatial policy and management issues and provides a forum to convey views representative of non- Federal stakeholders in the geospatial community. The NGAC includes representatives from all levels of government, the private sector, nonprofit organizations, and academia.

The Federal Geographic Data Committee's (FGDC), has worked with partners and stakeholders USA in developing defined spatial data to achieve the objectives of the programme.

In 2013 the FGDC has made a new Strategic Plan for the period between 2014 -2016 which is timely for several reasons. First, while the FGDC has engaged in several recent strategic initiatives, including the Geospatial Line of Business and the Geospatial Platform, the current

NSDI Strategic Plan has not been revised since 2005. Secondly, geospatial technologies, industries, and applications have seen tremendous growth and change over the past 8 years: therefore; strategies need to be updated and modernized to align with and leverage these changes.

In addition, the U.S. Government Accountability Office (GAO) published "Geospatial Information - OMB and Agencies Need to Make Coordination a Priority to Reduce Duplication" (GAO-13-94) in November 2012. In the report, GAO recommended that the Secretary of the Interior, as the FGDC chair, should establish a time frame for creating and updating a strategic plan to improve coordination and reduce duplication, and create and implement the plan within the established time frame. This Strategic Plan fulfils the requirement under OMB Circular A–16 to "Prepare and maintain a strategic plan for the development and implementation of the NSDI."

The technology landscape has seen tremendous change since the NSDI was initially conceptualized in the early 1990s. In the years leading up to the 1990s, advances in mapping and geospatial technology were largely driven by the public sector—with Federal agencies playing a major role in the development and coordination of data, products, and services. The origins for many of the current geospatial innovations and operational successes have their roots in past government investment in research and implementation of computing and communication technology, geospatial data standards, NSDI framework data development, the Internet, remote sensors, and the Global Positioning System (GPS).

In the years since the inception of the NSDI, remarkable advances in computing power, the emergence of open standards and open systems, and the Internet have reshaped the technology landscape. In recent years, the availability and usage of geospatial information and products have dramatically expanded as software has matured and high-quality data became available through newly implemented State and Federal clearinghouses and private sector offerings.

The NSDI Strategic Plan includes a set of three strategic goals that were developed through extensive consultation with Federal agencies and partners and stakeholders across the geospatial community.

Goal 1 – Develop Capabilities for National Shared Services

Developing shared services is a vital strategy for delivering geospatial solutions faster, for less money, and with fewer resources. These enterprise approaches take advantage of evolving technologies and methodologies to reduce potential duplication, create innovative tools and technology, and leverage agency budgets and expertise to accomplish agency mission and support functions more efficiently, while also improving quality.

The Geospatial Platform initiative is a critical component for the continued development of the NSDI. The Platform is a Web-based first generation service environment that provides access to a suite of well-managed, highly available, and trusted geospatial data, services, applications, and tools for use by Federal agencies and their State, Tribal, regional, and local partners. In addition, the FGDC community and its partners will utilize common cloud computing and enterprise acquisition approaches as mechanisms to leverage technology, close productivity gaps, and combine buying power across agencies for similar needs.

Objective 1.1 : Develop geospatial interoperability reference architecture

Objective1.2 : Establish the Geospatial Platform as the Federal geospatial data, services, and applications Web-based service environment

Objective 1.3 : Expand the use of cloud computing

Objective 1.4 : Promote the use of geospatial multiagency acquisition vehicles for interagency and intergovernmental purchases

Anticipated Outcomes-

O1- More current, complete data available to all through improving capabilities for NSDI partners to develop, maintain, share, and use geospatial information. Cost savings through better leveraging of shared technology infrastructure across Federal agencies and among our partners.
O2- Efficient and effective use of shared technology, infrastructure to encourage and support better information sharing, Cost savings through shared geospatial investment planning
O3- Cost savings through expanded use of commodity, cloud-hosting capabilities for the benefit of all NSDI partners
O4- Cost savings through better leveraging of governmental purchasing power when buying geospatially related goods and services for the benefit of multiple partners.

Goal 2 – Ensure Accountability and Effective Development and Management of Federal Geospatial Resources

Effective management of geospatial investments will enable Federal agencies and their partners to meet mission responsibilities, control costs, streamline services, make decisions on eliminating duplication, save taxpayer dollars, and drive efficiency across the Federal Government.

This approach will allow identification of data themes and datasets that are most critical for meeting the needs of government and stakeholders. The FGDC agencies will also apply the framework of the Administration's Open Data Policy to manage information as an asset throughout its life cycle to promote interoperability and openness and safeguard systems and information.

Objective 2.1: Advance the portfolio management process for National Geospatial Data Assets (NGDA)

Objective 2.2 : Identify potentially duplicative investments and opportunities for collaborative investments

Anticipated Outcomes

O1- Increased access to high-priority, documented, and standards-based national geospatial datasets and services. Enhanced level of transparency into Federal activities and resources required to manage and provide access to geospatial resources.
O2- Additional information is publicly available on geospatial acquisition plans resulting in cost efficiencies and decreased duplication of effort. Enhanced return on geospatial investments through partnerships across Federal and non-Federal sectors.

Goal 3 – Convene Leadership of the National Geospatial Community

The Federal Government is in a unique position to provide a leadership and facilitation role in the national geospatial community. This role includes providing institutional leadership for the development and coordination of national and international geospatial standards and policies, integrating geospatial technology into information technology (IT) management processes, contributing to the development of a legal and policy framework that supports the objectives of the NSDI, and fostering collaboration across sectors.

Objective 3.1. *Lead and participate in the development and coordination of national and international standards applicable to the geospatial community*

Objective 3.2. *Convene the leadership of the geospatial and non-geospatial communities to develop public/private partnerships and shared approaches for addressing critical national issues*

Objective 3.3. *Raise awareness of the NSDI and its impact on critical national and international issues*

Anticipated Outcomes

O1- Greater adoption and utilization of standards resulting in enhanced interoperability of geospatial data, services, and systems. Decreased barriers to exchanging geospatial content effectively and efficiently by reducing technical impediments to sharing geospatial data and services.

O2- More effective collaboration in the development and oversight of critical geospatial activities required for the effective management of the NSDI.

O3- Enhanced level of understanding, engagement, and investment by all affected communities in the development and maintenance of the national spatial data infrastructure.

Important Trends

Other trends impacting the strategy for a national geospatial infrastructure can be characterized by four themes: technology, communications, workforce, and legal/policy issues.

Technology

The "Internet of Things" will connect billions of stationary and mobile sensors with human users.

The value of integrated geospatial information (3D, 4D, indoor, unstructured, linked, archived) will be multiplied by high-powered processing and analytics capabilities, and by the ability to provide succinct intelligence to decision makers.

Static ad hoc data will yield to big data transactional models based on cloud-based service models for infrastructure, software, and information content.

The needs and practice of information technology management and geospatial management will align.

Increasingly, geospatial information resources and application source code will be built collaboratively, using open, rapid-deployment strategies and open standards.

*Impacts: G*eospatial technologies will be called upon to organize a much larger information domain, provide trusted analysis of complex "big data" holdings, and effectively visualize and communicate knowledge so that it can be turned into operational efficiencies. Open data and open government initiatives built on the desire for efficiency and transparency will be the norm, and these initiatives must be balanced against traditional IT requirements for

appropriate levels of information security and risk management. Geospatial strategies should use life-cycle approaches that factor in time to market and future agility in systems development and evolution.

Communications

Systems for information delivery will be ubiquitous and highly mobile, will utilize Web-based services, and will be components of more advanced information workflows.

Traditional media will be challenged to adapt to the changes initiated by dynamic social media channels.

Agencies and individuals will have far higher expectations for the quality, timeliness, currency, and accessibility of geospatial data and services, yet will have ubiquitous access to information with vastly different lineages and degrees of uncertainty.

> *Impacts:* There is a heightened need to collect, store, and process data from sensors, crowd-sourcing, and other processes and connect the data to decision making processes as actionable information. Harnessing content provided by sensors and social media, in particular, as feedback to enhance authoritative processes and products, needs research and strategy. Information regarding data, processes, and products must be more usable and reliable to ensure meaningful applications of data to create knowledge and inform decisions. Additional attention is needed with regard to the measurement and expression of the uncertainty inherent in information and related analytical products.

Workforce

There will be increasing demand for skill sets positioned at the intersection between the traditional IT and geospatial realms, such as application and services development, geoinformation fusion, crowd-sourcing, social networks and human geography, identity management, visual analytics, and forecasting/modeling.

There will be increasing acceptance of professional qualification from non-traditional sources: Massive Open Online Courses (MOOC) and other online training and information resources.

Responsibilities for geospatial data and shared services operations will increasingly be assigned to information technology and chief information officers.

> *Impacts:* The current capabilities and organization of the geospatial workforce will be called upon to transform at a rapid pace. This is no small task, as it will require a combination of finding, retraining, reorganizing, and replacing existing staff. Successful geospatial organizations will build and maintain agile workforces closely aligned to or within IT divisions, while also retaining and supporting competencies in fundamental geographic and geomatics disciplines. IT security governance models will need to adapt to an evolving cloud deployment environment where infrastructure and platform security is easily shared across agencies.

Legal/Policy Issues

Views and approaches to geospatial privacy will continue to evolve. Geolocation privacy is a complex and multifaceted issue that will engage a variety of interests, including both geospatial and nongeospatial entities. Potential statutory or regulatory changes to locational privacy issues have the potential to significantly impact the geospatial community. It is likely that legislation will lag behind the changes in technology and behaviour.

Capabilities of State, Tribal, regional, and local geospatial resources continue to improve and, in many areas, will provide the best sources for ongoing current and accurate information. Integrating these diverse datasets involves conforming to numerous legal and policy frameworks.

Government policy and private practices will increasingly demand information transparency. Data will be considered an integral and accountable part of decision making, including its use in models and forecasts.

> *Impacts:* Proactive approaches are needed to develop consensus terminology, develop policy, and educate citizens and decision makers with regard to geospatial data gathering, dissemination, licensing, and usage practices. Privacy, confidentiality, and security issues must be addressed for sensitive geospatial information, especially when directly linked to personally identifiable information, to protect the interests of both individuals and commerce. A priority for privacy policy efforts should be developing consensus on acceptable practices with immediate use. Issues at the margins of privacy acceptability should not delay important work to aggregate and utilize geospatial data and services from local to national levels in a timely manner.

Annex Table 2.1 provides more details on the best practices of each country.

2.5.2 Best Practices in the European Union

European Community -emphasized the importance of good cooperation as the basis of geospatial statistic and four groups were formed around the four topics of UN GGIM: Europe and GGIM Working Groups to work out details:

-National Institutional Arrangements led by Spain.
-Core Data led by France.
-Data integration led by Germany.
- Geodetic Reference Framework led by Finland

Considering the user needs of increasing data interoperability and harmonization they are working in proposing to have core geospatial data with description and technical specification based on user needs and requirements in accordance with relevant legislation frameworks. It is also evaluating:

-Economic model for production and distribution of core data
-Existing political and financial frameworks which support core data availability and
-Enabling integration of core geospatial data with other data in order to foster further usage.

New topic areas where work is to be implemented were introduced:
-Determination of Global Fundamental Geospatial Data Themes
-Global Geodetic Reference Frame (Working Group GRF), and
-Sustainable Development Goals.

UN's SDG 2030 Agenda has great importance for UN-GGIM: Europe's proposed work and working for "Spatial Enablement in the Smart Homeland"' explicitly addresses the SDGs and related global, regional and national initiatives.

Further that in public administrations across Europe, sharing and reuse competition was made to understand the best countless IT solutions and services are in place that could often easily be reused by other public administrations. Reuse of successful existing software would stop continuous reinvention of the wheel and could help to save time and costs for users and administrations alike and increase interoperability between systems for IT solutions and services that meet the criteria in one of the four categories:

-Cross-border administrations
-National administrations
-Regional administrations
-Local administrations.

The research activities of the European Spatial Data Research (EuroSDR) network have developed over time through a collaboration of academia and national mapping agencies. In order to further strengthen the collaboration and to involve young scientists in its research, EuroSDR has established an Award to reward recent PhD theses that have significantly contributed to the development of Geoinformation science in the context of national mapping and cadastral agencies (5). The Chair of UN-GGIM expressed that *"Only by working together can mapping and cadastral authorities, statistical institutes, European Institutions and associated bodies contribute to the more effective management, availability and integration of geospatial information in Europe,"*

Fighting Crime across Borders

Crime does not stop at the border. Smuggling people, weapons, drugs and waste trafficking have a distinctly international character. Robberies, burglaries, car theft and sex crimes often take place on either side of a national border.

They are frequently committed by the same offenders. Police departments in several European countries currently work closely together to fight cross-border crime. The national police departments of Belgium and the Netherlands are already exchanging geo-information to visualize and analyze cross-border crimes during their investigation thereby increasing the success rate and speed of catching offenders. Furthermore, a better understanding of legal concepts regarding real estate in the various countries helps decrease fraud situations.

A European (EUREF) and global (UN GGIM) Reference Framework

Within Europe, experts participating in the European Reference Framework (EUREF) discuss the development of all national reference frameworks and how they can be harmonized within the European Reference System. At the global level a resolution by the United Nations Global Geospatial Information Management (UN GGIM) was adopted to recognize the need for a global approach on how to define location. The Dutch Kadaster has an active role in both initiatives and supported the resolution.

European i-SCOPE project with a total budget of 4M€ supported by the European Union within the Competitiveness and Innovation Framework Programme CIP-ICT-PSP.2011-5 for Open Innovation for Internet-enabled Services in "smart" Cities.

The project aimed to create an open source platform for three-dimensional representation of the territory. The project was based on the use of CityGML Urban Information Model, official OGC Standard. The latest generation of 3D Urban Information Models (UIM), created from

accurate urban-scale geospatial information, can be used to create smart web services based on geometric, semantic, morphological and structural information at urban scale level. These smart services were put at the disposal to the local governments to improve decision making on issues related to urban planning, city management, environmental protection and energy consumption, to promote inclusion among various user groups, and involve citizens by collecting geo-referenced information based on location based services at urban scale.

2.5.3 Best Practices in Iceland

Iceland is in collaboration in developing a data platform for national geospatial and statistical information focusing on the merge of statistical and geospatial data.

Iceland has committed to contribute data to a gateway to pan-European maps, geographic and land information from official sources and provides a range of information, including topographic and cadastral data, administrative units, addresses, geographical names, land cover and transport networks to the European Location Framework. In the future, users will also be able to license the information from different agencies and different countries from this single access point.

It was pointed out that "solid foundation on which to build future European location services delivering the most up to date information available from official national sources. As custodian of this powerful source of geospatial information, they look forward to working with members to secure its long-term future by ensuring that it will meet market need for authoritative reference data" and e*nsure that this data is used across Europe by those who rely on NMCA information for high-level decision making and policy development, as well as users who need data to industry-recognized specifications that enable the easy transfer of applications between countries."*

This is a good example to Sri Lankan authorities as well that those who are working in isolation in producing most important data sets covering the key areas as Iceland working on and collaborative effort would definitely helpful not only the partner organizations but also all the user community for enhancing economic development and avoid and minimize wrong decision making presently taken by the key institutions in name sake of development and releasing lands for conceptual proposals.

(5) UN-GGIM-Europe 3rd Plenary Session, Budapest, GSDI Association, Oct 2016.

2.5.4 Best Practices in Chile

Currently, the National Geospatial Information Catalogue of Chile has 11,605 metadata records and in 2016 about 1,165 records were updated, which is equivalent to 10% of the total published. This work is planned, year after year, to complete 100% of the available files.

The method for updating the records was proceeded by first identifying the metadata records that have a higher number of inquiries from users. To this end, a list was built which orders records based on demand queries, allowing for the prioritization of the update work.

Chile has updated 1,161 metadata records in Chile's National Geospatial Information Catalogue providing opportunities to view approximately 10,000 viewers per month. The National Geospatial Information Catalogue enables both public officials and the general public to discover, evaluate and access to land information maintained by state agencies. This is possible thanks to the metadata records, which describe the information available, revealing, among other documents, the production facility or maintainer of the data, contact information, location and technical aspects, as the scale of representation system reference format.

Subsequently, the information provided is updated in the metadata records, with particular attention to contact details, which are a key element access to information. For example, institutional web links, telephone numbers and email addresses. Also, links that allow direct downloading of this information are verified.

A productive meeting was held on December 21, 2015 of the Council of Ministers for Territorial Information, an upper body of the National System of Territorial Information Coordination (SNIT), in order to review of the contents of the proposed National Geospatial Data Infrastructure of Chile (IDE).

The meeting was attended by Ministers of Housing and Urban Development, Social Development, and National Assets, chairs the Council. With them, the Secretaries of Treasury, Agriculture, Public Works (s), and Tourism are also attended the director of DIFROL (Directorate of Borders and Limits), and representatives of the Ministries of Interior and Defense.

The Portal GEO-CGR Citizen Control Works website gives the possibility to approach the information through a map, so that easily can get an overview of the territorial distribution of investment in public works throughout the country,

The initiatives show that the success is always behind with the leadership and partnership of the organizations responsible in developing and sharing spatial data. The Ministers of different key ministries are participating at the meetings and each institutional representative present the available data which could be shared in the Portal GEO-CGR. Chile has drawn up plans to update the available geo spatial data layers annually. The approaches in Sri Lankan context don not show strong leadership and collaborative partnership in developing the system.

2.5.5 Best Practices in Australia/ New Zealand

Australia/New Zealand: ANZLIC-the Spatial Information Council Strategic Plan 2016-2019 published and the Strategic Plan has been developed as a one page summary of the essential information about ANZLIC and what it will achieve over a three year horizon on:

- Connected management (collaborative works that aligns ANZLIC and stakeholders)
- Communication and awareness (communicating to mobilize stakeholders)
- Digital spatial data (leading the digital spatial discussion)
- Technology Ecosystem (improved ways of doing business)

Recognizing that spatial data is a major contributor to the digital economy and broader government service delivery, ANZLIC's vision is:

Spatially referenced information that is current, complete, accurate, affordable and accessible is used to inform decision making for economic, social and environmental outcomes.

In support that vision, the Members of ANZLIC provide value as advocates to their respective governments for nationally coordinated spatial policy.

ANZLIC has four Strategic Focus Areas and Goals with associated Actions for the 2016 - 2019 periods.

2.6 Planning an NSDI for the Future

As Doug Richardson, Executive Director of the Association of American Geographers pointed out, the planning is now underway for a new NSDI future, one that responds to evolving mobile GPS/GIS data collection and use technologies and the resultant explosion of real time spatiotemporal data availability and its dynamic, interactive applications. One step in adjusting the NSDI to this changing world of pervasive real time geographic data is the recent Strategic Planning Process undertaken by FGDC for the NSDI.

As Anne Castle, Assistant Secretary of the Interior Department and a leader throughout the NSDI strategic planning process, pints out "the NSDI strategic plan describes a broad national vision for the NSDI and includes goals and objectives for the federal government's role in continued sustainable development of the NSDI. The plan has been developed with inputs from a variety of sources, including FGDC member agencies and geospatial partner organizations. The National Geospatial Advisory Committee (NGAC) has played a critical role in the development of the plan by providing extensive input and comment.

The plan recognizes the revolutionary changes in geographic science and technologies and the growing applications of geospatial information across all sectors of the global economy. The New NSDI Plan focuses on adapting to a rapidly changing set of external factors, such as these ongoing and future trends:

Work Force :Increasing demand for skill sets positioned at the intersection between the traditional IT and geospatial realms, such as application and services development, geoinformation fusion, crowd sourcing, social networks and human geography, identity management, visual analytics, and forecasting / modeling.

Technology : Geospatial technologies will be called upon to organize a much larger information domain, provided trusted analysis of complex "big data" holdings, and effectively visualize and communicate knowledge so that it can be turned into operational efficiencies. The "internet of things" will connect billions of stationary and mobile sensors with human users.

Communications: Systems for information delivery will become ubiquitous and highly mobile, will utilize web based services, and will be integrated components of ore advanced information workflows. Harnessing content provided by sensors and social media, particularly in the form of feedback to enhance authoritative processes and products, needs research and strategy.

Legal and Policy Contexts: State, tribe, regional, and local geospatial resources will continue to improve and, in many areas, may provide the best sources for ongoing current and accurate information. Integrating these diverse datasets involves coordinating numerous legal and policy frameworks. Thoughtful approaches are needed to develop consensus terminology; develop policy; and educate citizens and decision makers with regard to geospatial data gathering, dissemination, and usage. Geolocation privacy, confidentiality, and security issues may need to be addressed for sensitive geospatial information.

At the 15th GSDI World Conference in 2015 which was organized by the GSDI discussed the latest development in the field of GSDI as the creation of spatially enable citizens on SMART homeland connected with number of major themes.

Most significant `technical drivers which support urban development and services in meeting of transformation have been identified under:

- Land Information and Management Systems
- SDI Governance and Policy Development
- Disaster Management, Reduction and Mitigation
- Earth Observation and Services
- Geo- Technology and innovation of SDI
- Geo data for decision making
- Geo education and Cartography
- Regional and Global SDI Initiatives.

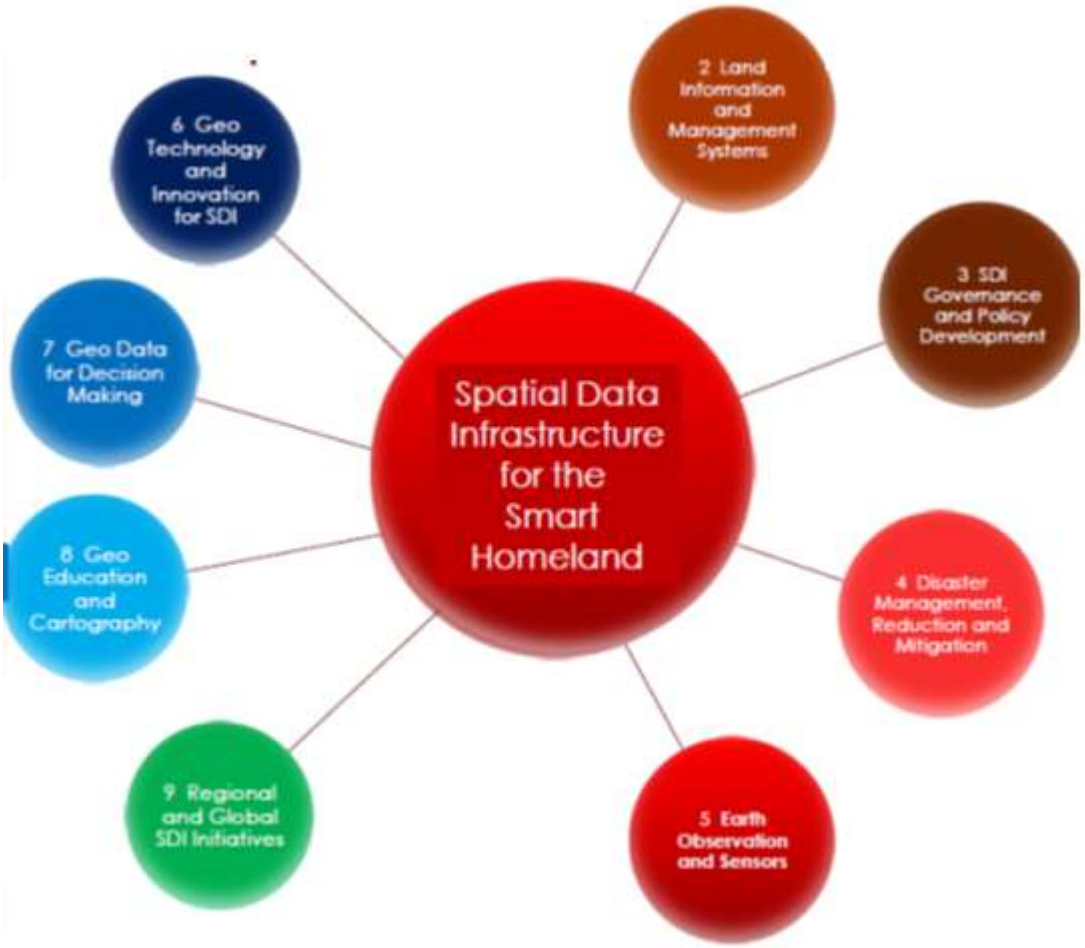


Figure 2. 20 Themes Focused for Spatial Data Infrastructure for the Smart Homeland

The detail sub topics discussed under each major theme includes:

1. SDI for Smart Homeland
    - -SDI for smart cities, smart territories and smart environments
    - -Location-based services and (indoor/outdoor) positioning for smart homeland
    - -Indoor SDI (Positioning) and personal SDI development
    - -Volunteered Geographic Information, crowdsourcing and citizen science
    - -Internet of Vehicle (IoV) and Intelligent Transport Systems (ITS)
    - -Advanced traffic management and application service platform
    - -Application of 4S (Seamless, Smooth, Safety, Sharing) in smart transport

2. Land Information and Management Systems
    - -Land Information Systems
    - -Land and Urban Data Management
    - -SDI for Low Impact Development (LID)
    - -SDI for resilience and sustainable development

3. SDI Governance and Policy Development
    - -Open data and open government
    - -e-Government and e_Governance
    - -Geospatial legislation and policies

-Privacy, security and institutional concern

4. Disaster Management, Reduction and Mitigation
-Innovation in disaster management technology
-Disaster management 'Best Practice'
-Protecting critical infrastructure
-Earthquake mitigation challenges, earthquake early warning system (EEVS)
-Economic exposure & loss database development
-Hazard Model Development
-Los estimation, transforming risk and insurance
-Risk modelling and assessment, mitigation and management
-Disaster prevention and emergency management for smart homeland
-Disaster response transportation management service

5. Earth observation and sensors
-Observatories (environmental, transportation, logistics, citizen, health, urban)
-Wearable device and technology
-Earth Observation
-Remote Sensing, Survey & Mapping Application (UAVs, LIDAR, SAR…)
-Sensor Web/Internet of Things (IoT) and Linked Data

6. Geo Technology and Innovation for SDI
-SDI in the Cloud- Challneges and solutions for smart homeland
-CyberGIS
-Geospatial Big Data Management and Analytics
-3D/ 4D spatial data visualization and analytics

7. Geo Data for Decision Making
-Geospatial decision support system
-Geospatial Business Modelling
-Geo-Intelligence

8. Geo Education and Cartography
-Geospatial Education
-Web Cartography
-Historic Geo Data Management

9. Regional and Global SDI Initiative
-UN-GGIM Global and Regional Initiatives
-GEO/GEOSS Developments
-GEO/GEOSS
-UN Sustainable Development Goals
-European Pan-European SDI- INSPIRE

All these nine major themes and its sub themes are relevant in the Sri Lankan context in its new initiative in establishing NSDI under ICTA.

CHAPTER 3 - METHODOLOGY OF THE STUDY

This chapter elaborates the methodology carried out in conducting this Baseline Study to achieve the objectives as specified in the Terms of Reference of the assignment. The given objectives are mutually interconnected and therefore, the approaches and methods may address one or more objectives at once. Table 3.1 presents how these particular objectives will be achieved.

Table 3. 1: Study objectives and the methodological approach

No	Study objective	Approach
1	Identify variables/ indicators and collect necessary data on the present situation of collection, storing and usage of spatial data, identify stakeholders and types (data providers, data users) of organizations	a. Review the secondary data sources on NSDI initiatives b. Questionnaire I – General c. Questionnaire II - Detailed
2	Assess the available hardware infrastructure, available infrastructure (in use), data, data formats, and software use, guideline standards, and policies	a. Hardware and Software Checklist b. Questionnaire II – Detailed c. Key Informant Interviews (KIIs) d. Focus Group Discussions (FGDs)
3	Identify the capacities of the management and operational staff of data custodians, providers, users and people who are generating spatial data, readiness of individuals, and organizations, assess the knowledge, skills, attitudes and expectations of officials of stakeholder organizations on the effective use of spatial data across the government, understand the willingness of the staff of stakeholders to effectively collaborate with the initiative.	a. Questionnaire II - Detailed b. Key Informant Interviews with selected institutions to supplement information received from questionnaires c. Focus group discussions to gather additional qualitative information
4	Draw/identify the desired and improved future situation (in the year 2020) by analyzing international best practices and make recommendations on potential use of spatial data (to develop mobile apps etc. through public private partnerships) to improve life of citizens.	a. Questionnaire II - Detailed b. Literature review c. Literature survey of 12 countries to ascertain the best practices in NSDI d. Localized the best practices in those countries e. Case Studies f. Recommendations for implementation provided

The flowchart in **Figure 3.1** shows the overall process involved in completion of ICTA NSDI Baseline Study. The following sections present and discuss how the four study objective are approached and achieved throughout the study.

3.1 Literature Review

A comprehensive literature review was conducted on the past initiatives of NSDI in Sri Lanka. The literature review was helpful for the identification of variables/indicators, stakeholders, and types of organizations previously engaged in NSDI initiatives for Sri Lanka. This also provided a platform to validate identified variables/ indicators, list of stakeholders, and the types of organizations.

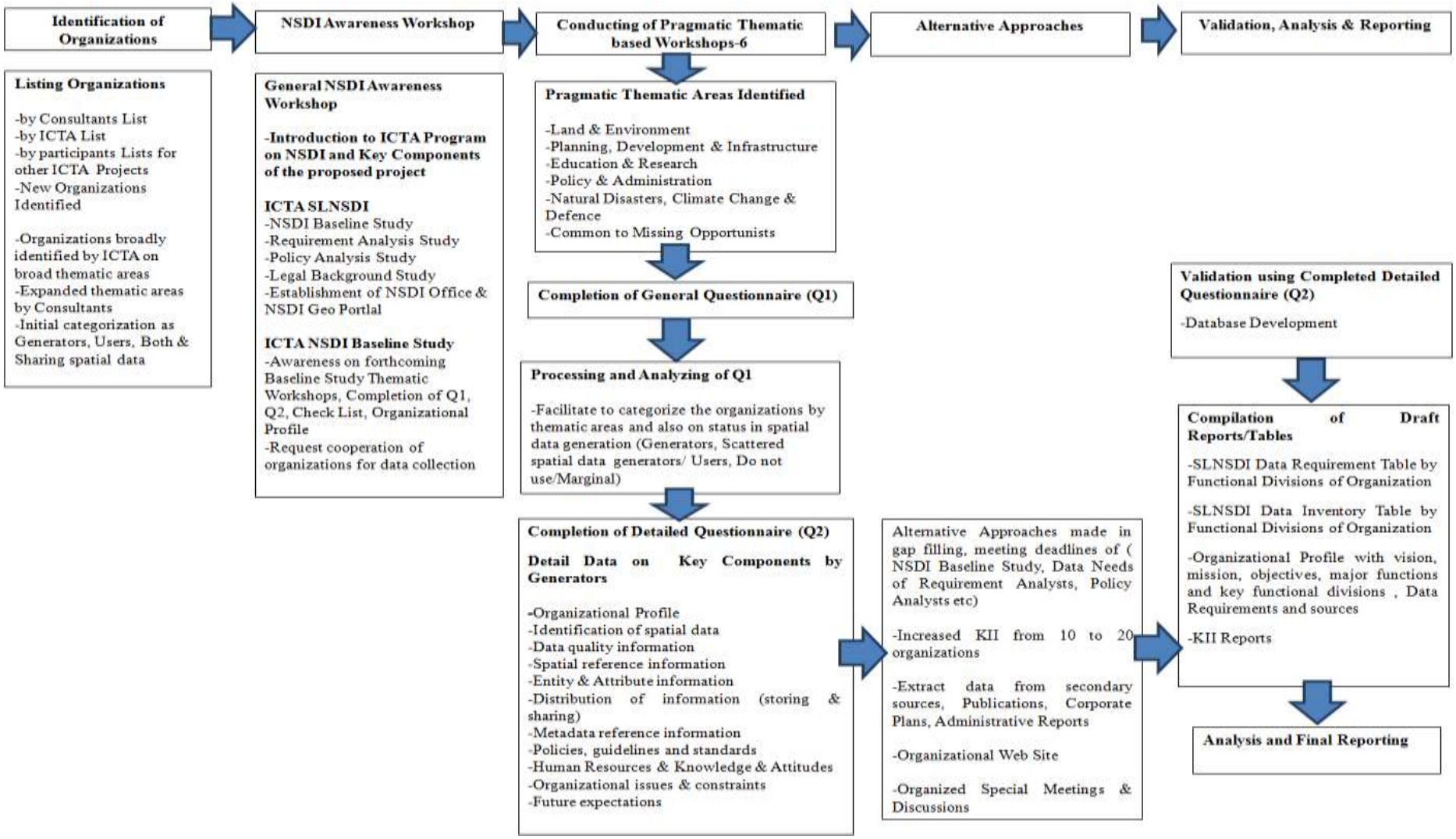


Figure 3. 1 Flowchart indicating the Process of NSDI Baseline Study

The Consultant's long-term experience in the field of NSDI and their networks with individuals involved with NSDI initiatives in Sri Lanka since 1990, including their affiliations with organizations involved in different levels of geospatial data production and use was utilized to obtain an understanding of NSDI initiatives. Through the documentation review, the consultant has identified all the organizations involved in the field including Ministries, Departments, Statutory Bodies, and Research Organizations and reviewed the progress/performance since 1990. The high level themes for NSDI initiatives in Sri Lanka have been outlined on the basis of international best practices in countries that have already implemented NSDI.

A literature review of 12 countries was also undertaken to identify the current best practices in spatial data and its initiatives. These countries identified from different regions in global context representing the way the countries achieved the desired objectives of the Global SDI/ National SDI.

Table 3. 2 Literature survey of 12 countries

	Region		Country
1	North America	1	Unites States of America
		2	Canada
2	Europe	3	European Union Countries
		4	Iceland
3	Asia and Pacific	5	South Korea
		6	Australia
		7	New Zealand
		8	India
4	Middle East & North Africa	9	Oman
5	Latin America & Caribbean	10	Chile
6	Africa	11	South Africa
7	United Kingdom	12	United Kingdom

The international best practices was reviewed and applied in a Sri Lankan context in order to localize the best methods to be implemented for NSDI initiatives nationally. Further, the literature review was facilitated in the exercise of contrasting the present scenario with the previous status of the NSDI initiatives and concerns.

3.2 Designing Survey Instruments

Mainly, the following survey instruments were designed as indicated in the methodological approach.

- **Preliminary Questionnaire – Part I**
- **Detailed Questionnaire – Part II**
- **Hardware and Software Checklist**
- **Themes for Key Informant Interviews**
- **Themes for Focus Group Discussions**

Considering the nature of the information required for the study, different methods of primary data collection were engaged in the study.

3.2.1 Survey Questionnaire

Accordingly, two questionnaires were developed; Preliminary Questionnaire – Part I and Detailed Questionnaire – Part II, in order to collect the information on the nature of the organization, and to classify it as using or providing the spatial data and detailed information on spatial data collection, storing, sharing, usage, policies, standards, human resource capacity and the perceptions of the organizational staff on NSDI. Both these questionnaires were developed, revised and discussed in consultation with the ICTA and the NSDI Review Committee until finalized. The following Table 3.3 shows the timeline used for the questionnaire development in which the ICTA and NSDI Review Committee.

Table 3. 3 Timeline for questionnaire development

Date of submission	Submission	Outcome
4th August 2016	Draft Questionnaire and Hardware Software Checklist	Improvements suggested Separation of the Hardware & Software Checklist from the main questionnaire
11th August 2016	Revised Draft Questionnaire – 2nd Draft Questionnaire	Further improvements suggested
19th August 2016	Revised Draft Questionnaire – 3rd Draft Questionnaire	Requirement Study Specialist suggested some key areas to be included Split the questionnaire in to two; Preliminary Questionnaire & Detailed Questionnaire
26th August 2016	Revised Draft Questionnaires – 4th Draft Questionnaire; Preliminary Questionnaire – Part I, Detailed Questionnaire – Part II and the Checklist for Hardware and Software	Further improvements suggested To include sections on knowledge, skills, attitudes, readiness and desired of future in NSDI
31st August 2016	Revised Draft Questionnaires – 5th Draft Questionnaire; Preliminary Questionnaire – Part I, Detailed Questionnaire – Part II and the Checklist for Hardware and Software	Preliminary Questionnaire – Part I, Detailed Questionnaire – Part II and the Hardware & Software Checklist approved subject to validation at the jumbo workshop to be held on 9th September 2016.

3.2.1.1 Preliminary Questionnaire

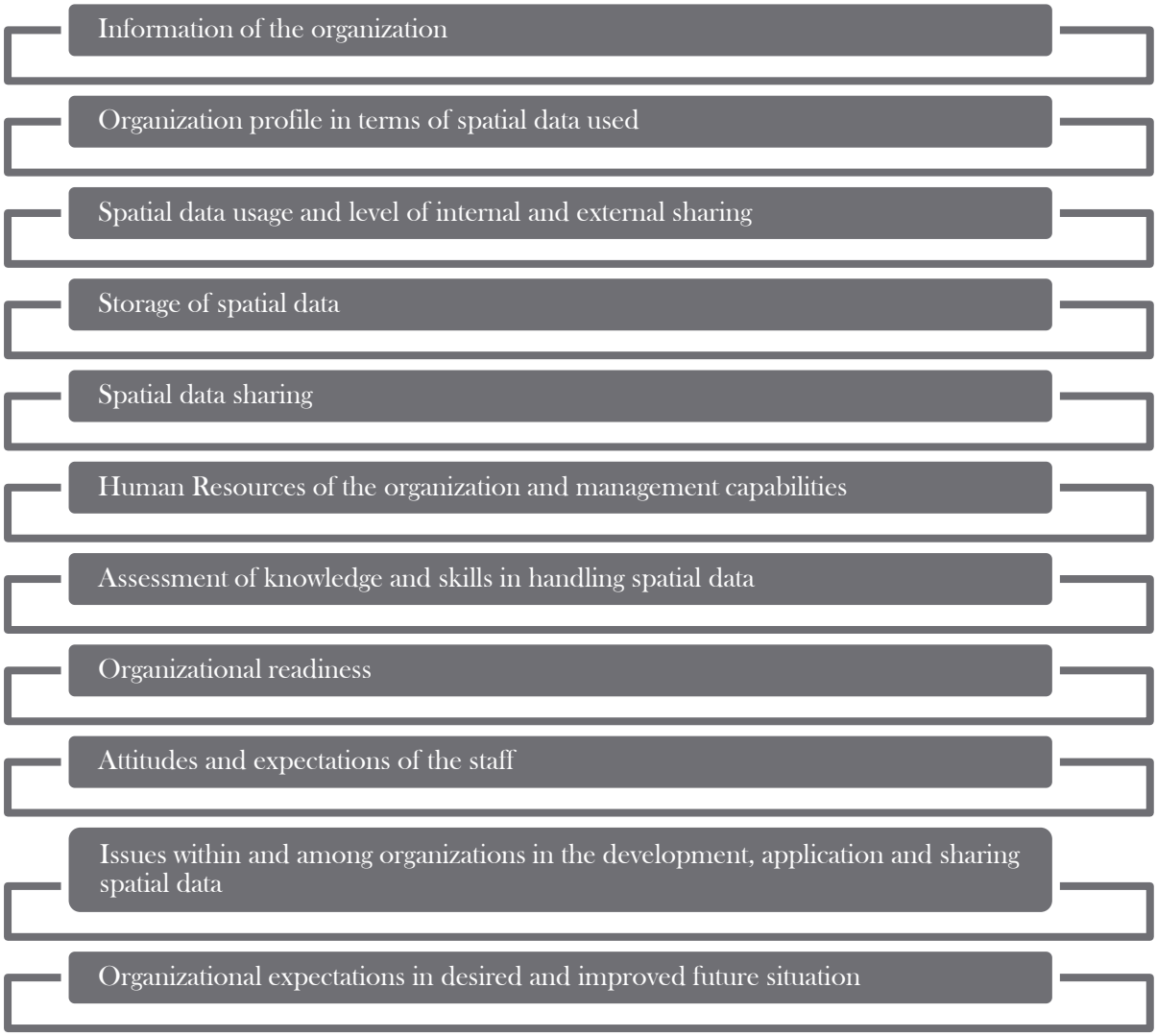
The Preliminary Questionnaire seeks the following information in order to classify the institutions as either 'spatial data generator' or 'user' or 'sharer' and to obtain the organizational profile of the participating institution.

The Preliminary Questionnaire is attached as **Annex 1.**

3.2.1.2 Detailed Questionnaire

The detailed questionnaire with an accompanying guide was developed to obtain a comprehensive understanding of the spatial data production, usage and sharing from spatial data producing institutions.

Types of information covered in the detailed questionnaire:



The Detailed Questionnaire, Questionnaire Training Guide and Spatial Data Classification are given in **Annex 2, Annex 3 and Annex 4.**

3.2.1.3 Hardware and Software Checklist

Further, a resource checklist was developed in order to collect the information on organizational capacity in terms of hardware and software to engage in spatial data handling and ultimately contributing to the NSDI. The resource checklist included the capacities and status of hardware, software, GPS, Communication and Network infrastructure and operating systems etc.

The Hardware and Software Checklist is in **Annex 5.**

It was evident that this particular set of information was not sent back to the Consultants during the follow-up phase of the survey. Respondents from the institutions were focused on completing the preliminary and detailed questionnaires and a majority of the institutions did not return this completed checklist, citing that their particular organization does not have specific infrastructure for spatial data. However the Consultants are aware that most organizations do not have much infrastructure pertaining to spatial data, as these are quite specialized. Therefore, all attempts to obtain as much detailed information as possible regarding the infrastructure availability at the institutions were taken through FGDs, KIIs and literature reviews conducted.

3.2.2 Key Informant Interviews (KIIs)

Key Informant Interview is one of the main qualitative data collection methods in this study. The consultant conducted 20 Key Informant Interviews with the selected Key Informants based on the following criteria.

- Institutions that are Technologically advanced, with High Caliber professional staff and which produce standardized spatial data
- The institutions doing well in spatial data infrastructure with established policies, guidelines and standards on spatial data production, storage, sharing across Government Organizations
- Institutions that have a high demand for the production and sharing of spatial data
- Institutions involved in producing and sharing fundamental and key thematic Spatial Data
- Institutions with protected spatial data infrastructure

The Key Informant Interviews focused on the following themes in NSDI. The themes for KIIs developed by the Consultant have been revised and approved by ICTA and the NSDI Review Committee.

In the circumstances the following institutions were selected and conducted Key Informant Interviews, in consultation with ICTA.

Table 3. 4 Key Informant Interviews

	Institution	Date
1	Survey Department	03/11/2016
2	Urban Development Authority	26/10/2016
3	National Physical Planning Department	26/10/2016
4	Central Environment Authority	23/11/2016
5	Disaster Management Centre	26/10/2016
6	Irrigation Department	13/01/2017
7	Mahaweli Authority of Sri Lanka	28/12/2016
8	Meteorology Department	26/10/2016
9	Land Use Policy Planning Department	24/11/2016
10	National Water Supply & Drainage Board	11/11/2016
11	International Water Management Institute (IWMI)	08/11/2016
12	Ministry of Lands	02/12/2016
13	Department of Archeology	16/07/2017
14	National Building Research Organization	13/01/2017
15	Ministry of Defense	15/12/2016
16	Ministry of Agriculture	25/10/2016
17	Department of Agrarian Development	25/10/2016
18	Sri Lanka Telecom	07/12/2016
19	Sri Lanka Department of Fisheries	28/12/2016
20	Department of Forest Conservation	16/01/2017

3.2.3 Focus Group Discussions (FGDs)

FGDs are one of the main qualitative data collection methods in this study. A Focus Group Discussion allows a group to freely discuss a certain subject with the guidance of a facilitator or reporter. The consultant conducted 7 Focus Group Discussions during the mini workshops held with 7 groups based on the following themes.

In the circumstances the following FGDs were conducted with respective institutions as provided in the following table.

Table 3. 5 Focus Group Discussions

Thematic Workshop	Invited Institutes	Participating Institutes	Proposed Schedule of Workshops*
Workshop 1 : Pilot Workshop	1. National Aquatic Resources Research & Development Agency (NARA) 2. General Sir John Kotelawala Defence University 3. NBRO 4. Disaster Management Centre 5. Airport & Aviation Services Limited, Bandaranaike International Airport 6. Department of Census and Statistics 7. Department of Wildlife Conservation 8. Department of Rubber Development 9. Department of Agriculture 10. National Physical Planning Department 11. National Water Supply & Drainage Board 12. Land Use Policy Planning Department 13. International Water Management Institute (IWMI) 14. Coast Conservation Department 15. Sri Lanka Navy 16. Department of Fisheries & Aquatic Resources 17. Department of Agrarian Development	National Physical Planning Department Kothalawala Defence University Department of Coast Conservation & Coastal Resource Management National Building Research Organization National Aquatic Resource Research & Development Agency (NARA) Department of Agriculture Land Use Policy Planning dept. International Water management Institute (IWMI) Department of Fisheries of aquatic Resources Airport & Aviation Services (S.L) Ltd Sri Lanka Tea board Rubber Development Department National Water Supply and Drainage Board Urban Development Authority	11th Oct 2016
Workshop 2 : Land and Environment	1. Ministry of Land 2. Ministry of Mahaweli Development and Environment 3. Ministry of Agriculture 4. Survey Department 5. Sri Lanka Land Titling Registration and Related Services Project 6. Coast Conservation and Coastal Resources Management Department 7. Central Environment Authority 8. Forest Conservation Department(Forest Resources Management Project) 9. Wildlife Conservation Department 10. Sri Lanka Land Reclamation and Development Corporation	Ministry of Agriculture Department of Animal Production and Health Geological Survey and Mines Bureau Department of Land Title Settlement Central Environment Authority Department of Agrarian Development	17th October 2016

Thematic Workshop	Invited Institutes	Participating Institutes	Proposed Schedule of Workshops*
	11. Geological Survey and Mines Bureau 12. National Aquatic Resources Research and Development Agency 13. Meteorology Department 14. Marine Pollution Prevention Authority 15. Sri Lanka Mahaweli Authority 16. Departments of Agrarian Development 17. Department of Agriculture 18. Department of Animal Production and Health 19. Land use Policy Planning Department		
Workshop 3: Planning, Development and Infrastructure	1. Ministry of Megapolis and Western Development 2. Ministry of Ports & Highways 3. Urban Development Authority 4. National Physical Planning Department 5. Board of Investment of Sri Lanka 6. Sri Lanka Hydraulic Institute 7. National Housing Development Authority 8. Urban Settlement Development Authority 9. Road Development Authority 10. National Transport Commission 11. Road Sector Development Project 12. Provincial Road Development Authorities/Departments 13. Railway Department 14. Sri Lanka Transport Board 15. Sri Lanka Ports Authority 16. Ceylon Fishery Harbour Corporation 17. Sri Lanka Telecom 18. Telecommunication Regularity commission 19. National Water Supply & Drainage Board 20. Irrigation Department 21. Water Resources Board 22. Ceylon Electricity Board 23. Sri Lanka Sustainable Energy Authority	1. Sri Lanka Ports Authority 2. Sri Lanka Telecom 3. Irrigation Department 4. Ceylon Fishery Harbour Corporation 5. Road Development Authority 6. National Housing Development Authority 7. Railway Department 8. National Transport Commission 9. Ministry of Megapolis and Western Development 10. Water Resources Board	20th October 2016
Workshop 4:	1. Ministry of Education	Post Graduate institute of Archeology	25th October 2016

Thematic Workshop	Invited Institutes	Participating Institutes	Proposed Schedule of Workshops*
Education and Research	2. Ministry of Higher Education and Highways 3. Ministry of Science & Technology 4. University of Kelaniya(Departments of Geography, Zoology) 5. International Water Management Institute 6. General Sir John Kothalawala Defence University 7. UvaWellassa University 8. Open University (Departments of Engineeringt, Engineering Technology, School of Computing. Zoology) 9. University of Colombo (Departments of Geography, Biology, Zoology) 10. Rajarata University (Department of Social Science) 11. University of Sri Jayewardenepura (Department of Forestry, Geography, Zoology, Estate Management & Valuation, University Township Development Project) 12. South Eastern University (University Park, Department of Geography) 13. University of Jaffna (Department of Geography) 14. Institute of Surveying and Mapping 15. Post Graduate Institute of Archaeology 16. Post Graduate Institute of Agriculture Peradeniya, 17. Post Graduate Institute of Sciences, Peradeniya 18. Eastern University (Department of Zoology) 19. Overseas School of Colombo 20. Arthur C. Clerk Centre for Modern Technologies, 21. Sri Lanka Association of Advancement of Sciences, 22. National Aquatic Resources and Development Agency 23. Coconut Research Institute 24. Tea Research Institute 25. Rubber Research Institute	2. Ministry of Higher Education and Highways 3. University of Sri jayawardhanapura – township development project 4. Department of Census and Statistic 5. Arthur C. Clerk Centre for Modern Technologies	
Workshop 5: Policy and Administrative	1. Ministry of Public Administration & Home Affairs 2. Ministry of Local Government and Provincial Councils 3. Ministry of Policy Development and Implementation 4. Department of Census and Statistics	Ministry of Home affairs 2. Ministry of national policy and economic affairs	1st November 2016

Thematic Workshop	Invited Institutes	Participating Institutes	Proposed Schedule of Workshops*
	5. Central Bank of Sri Lanka 6. Presidential Secretariat, President House, 7. National Planning Department 8. Information & Communication Technology Agency 9. District Secretariats (Jaffna, Trincomalee, Batticaloa),Northern, Eastern, Uva and Southern Provinces (REEP). 10. Sri Lanka Institute of Local Governance 11. Colombo Municipal Council (Planning, Traffic Management, Local Area Sustainable Observatory) 12. Dehiwela – Mt. Lavinia MC 13. Sri Jayawardenepura - Kotte MC 14. Kundasale Pradeshiya Sabha	3. District Secretariat – Jaffna 4. District Secretariat – Trincomalee 5. Mahaveli Development Authority – Land use Department 6. Central Bank of Sri Lanka Marine Environment Protection Authority	
Workshop 6: Policy, Education and Administrative FGD	1. Ministry of Provincial council and Local Government 2. Dehiwala Mount Lavinia Municipal Council 3. Colombo MC- Planning Division 4. Colombo MC-Traffic management Division 5. Colombo MC-land and Environment Division 6. Colombo MC –Engineering Service 7. Department of National Planning 8. Sri Lanka Institute of Local governance 9. Sri Jayawardanapura Municipal Council 10. District Secretariat – Batticaloa 11. Ministry of Lands 12. Ministry of Ports and High way 13. Boards of Investment 14. Sri Lanka Transport board 15. Ceylon Electricity Board 16. Sri Lanka Sustainable Energy Authority 17. Ministry of Science and Technology 18. University of Kelaniya- Dept. of Zoology and environmental management 19. Open University- Dept. of Zoology 20. University of Colombo- Dept. of Geography	1. National Livestock Development board 2. Sri Lanka Transport board	18th November 2016

Thematic Workshop	Invited Institutes	Participating Institutes	Proposed Schedule of Workshops*
	21. University of Colombo – Dept. of Zoology 22. Rajarata University – Dept. of Social Science 23. University of Sri J'pura – Dept. of Forestry 24. University of Sri J'pura – Dept. of Zoology 25. Institute of Surveying and Mapping 26. Post Graduate Institute of Science – Peradeniya 27. Sri Lanka association of Advancement of Science 28. Coconut research Institute 29. Tea Research Institute 30. Rubber Research Institute 31. University of Moratuwa – Dept. of town and country Planning 32. University of Sri Jayawardhanapura – Dept. of Estate Management and Valluation 33. University of Moratuwa – Dept. of Earth Resource Engineering 34. University of Moratuwa – Dept of Civil Engineering 35. National Livestock Development board		
Workshop 7: Natural Disaster, Climate Change, Disaster responsiveness & Defense FGD FGD with participants from institutions that were unable to attend the mini workshops	1. Ministry of Provincial council and Local Government 2. Dehiwala Mount Lavinia Municipal Council 3. Colombo MC- Planning Division 4. Colombo MC-Traffic management Division 5. Colombo MC-land and Environment Division 6. Colombo MC –Engineering Service 7. Department of National Planning 8. Sri Lanka Institute of Local governance 9. Sri Jayawardanapura Municipal Council 10. District Secretariat – Batticaloa 11. Ministry of Lands 12. Ministry of Ports and High way 13. Boards of Investment 14. Sri Lanka Transport board 15. Ceylon Electricity Board 16. Sri Lanka Sustainable Energy Authority 17. Ministry of Science and Technology	1. University of Moratuwa – Dept. of town and country Planning 2. Ministry of Defense 3. Rubber Research Institute 4. Ministry of Disaster Management 5. PRDA- Western Province	8th December 2016

Thematic Workshop	Invited Institutes	Participating Institutes	Proposed Schedule of Workshops*
	18. University of Kelaniya- Dept. of Zoology and environmental management 19. Open University- Dept. of Zoology 20. University of Colombo- Dept. of Geography 21. University of Colombo – Dept. of Zoology 22. Rajarata University – Dept. of Social Science 23. University of Sri J'pura – Dept. of Forestry 24. University of Sri J'pura – Dept. of Zoology 25. Institute of Surveying and Mapping 26. Post Graduate Institute of Science – Peradeniya 27. Sri Lanka association of Advancement of Science 28. Coconut research Institute 29. Tea Research Institute 30. Rubber Research Institute 31. University of Moratuwa – Dept. of town and country Planning 32. University of Sri Jayawardhanapura – Dept. of Estate Management and Valluation 33. University of Moratuwa – Dept. of Earth Resource Engineering 34. University of Moratuwa – Dept of Civil Engineering 35. Ministry of Disaster Management 36. Ministry of Defense 37. Sri Lanka Army 38. Sri Lanka Airforce 39. Sri Lanka Navy 40. Special Task force 41. SL police academy 42. State Timber Corporation 43. PRDA- western province 44. Dept. of Export agriculture 45. Natural Resource Management center 46. Ministry of Health 47. Valuation Department		

3.2.4 Case Studies

A case study is a one of well-known research strategy that will be used as another qualitative evaluation tool for this baseline study. Ten brief case studies for selected high level thematic areas were developed as part of this assessment, took place in parallel to secondary data collection. The case studies further bolstered the findings of the quantitative survey and qualitative KII and FGD findings. This method of data collection serves to identify institutions that are advanced in their knowledge of and willingness to share spatial data. It would also observe any institutions that are not as advanced in their awareness of spatial data. These case studies evaluated the selected institution in greater detail, and provide a more in depth analysis of the institution utilizing the quantitative, qualitative and secondary data obtained through the study. It was initially proposed to conduct 5 case studies (one institution selected from each of the five thematic areas identified). However the experts decided to increase the number of case studies to ten on the following topics.

1. Fully fledged NSDI structure
2. Production of spatial data
3. Use of spatial data
4. Storage of spatial data
5. Sharing spatial data
6. Human Resources
7. Infrastructure
8. Institutional leadership
9. Political interferences
10. Incompatibility in the categorization of spatial data

The Case Studies are presented in a separate document named as '**Volume III: Report on Case Studies'.**

3.3 Determination of the Sample

A scientific sample representing all types of stakeholders was necessary for the baseline study. The initial enquiries made from ICTA provided an organization list containing 26 main Government Organizations as indicated in the Terms of Reference. However, some of these organizations have a number of individual organizations as well as different departments who are actively engaged in spatial data handling. The list of available institutions who are engaged in spatial data collection, data sharing and related activities developed by the Consultant was presented in the Inception Report.
These institutions were classified under the thematic areas of Land, Environment, Planning, Research and Development, Education, Transportation, Utility (transport, heath, Telecommunication, water supply), Disaster Management, Agriculture, Administration, Provincial and local government, International Missions, Private sector Organizations and Service Providers.

After detailed discussions between the consultant and ICTA it was decided to use a purposive sample of institutions based on the list of organizations compiled by the consultant's team on the following three categories of organizations.

1. Institutions that generate spatial data
2. Institutions that generate/use scattered spatial data
3. Institutions that currently not generate or do not use or marginal users of spatial data

The Study Population of 103 institutions involved in this study is in **Annex 6.**

3.4 Determination of Thematic Areas

Initially, ICTA provided a list of 8 themes, which they derived with the project steering committee pertaining to spatial data generate/use/share in 26 institutions.

1. Agriculture
2. Land
3. Transport
4. Health
5. Environment
6. Disaster Management
7. Education
8. Administration

Later, the client (ICTA) broadened and expanded this list to 18 thematic areas as mentioned below:

1. Bio Diversity
2. Agriculture
3. Aviation
4. Ports
5. Geological
6. Housing
7. Mining and Quarrying
8. Tourism
9. Industry and trade services
10. Power supply
11. Water supply
12. Telecommunications
13. Education
14. Health
15. Cultural and archeology
16. Wild life
17. Disaster Management
18. Climate

The Consultants redefined the same and included some of the themes into a main theme and presented this to the NSDI core group meeting for a decision on thematic areas.

i. Geodetic Network: *Map Spheroids; Projections/Grid Origin; Orientation and Spacing; Data Measurements and Collection Standards; Reference sea level*
ii. Topography/Terrain: *Contour Network; Spot Heights*
iii. Cadastral Data
iv. Hydrology

v. Geology & Soil
vi. Administrative Boundaries
vii. Natural Resources: *Forestry; Wild life sanctuaries/ Reserves; Eco Systems; Bio Diversity*
viii. Climate: rainfall; Temperature; Ecological; Climate Change/ Natural Hazards/Disasters
ix. Agriculture: *All Types including plantations*
x. Housing & Urban development
xi. Utilities, Services & Amenities: *Water Supply; Power & Electricity; Telecommunications; Sewerage; Storm water Drainage; Roads and Railroads; Ports and Airports*
xii. Social Infrastructure: *Educational (Primary/ Secondary/ University/ Technical/ Vocational/ Research & Training); Health Services*
xiii. Industry: *Mining & Quarrying; manufacturing; Service industry; Tourism Industry*
xiv. Demographic/ Population/ Social
xiv. Public Security & Judicial Services
xv. Defense
xvi. Cultural/ Historical/ Archaeological

This was done with the long-term experience of the Consultants in the field and through their contacts with individuals in NSDI initiatives and organizations involved in different levels of geospatial data production and use. The consultants have identified all the organizations involved in the field including Ministries, Departments, Statutory Bodies, and Research Organizations. The high level themes have been outlined in **Annex 4** (Spatial Data Classification Table). These have been on the basis of international best practices in countries that have already implemented NSDI. Standard software such as ArcGIS, ERDAS etc. have been considered during the compilation of this list; since open source software and other types of commercial software are not heavily used by local organizations and also not categorized according to the thematic areas by users.

Therefore, the topics have been rearranged according to the local requirements. The themes for the mini workshops have been identified based on the aggregated spatial data themes. In order to structure the workshops, these thematic areas have been broadly classified into five themes.

After several meetings and rounds of discussion, the final list of institutions was sorted into the following five thematic areas, agreed in consultation with ICTA and the Review Committee.

1. Land and Environment
2. Planning, Development and Infrastructure
3. Policy and Administrative
4. Education and Research
5. Natural Disaster, Climate Change, Disaster responsiveness & Defense FGD

Table 3.5 provides the classification of identified organizations these thematic areas on the basis of the main functions of the organizations and the list of institutions specified under each thematic area is provided in **Annex 7.**

3.5 Data Collection

The following key variables were identified for data collection at each point, and are predetermined in finalizing the questionnaires. These are listed below:

a. Organizational structure (Functional Units/Core Business Activities/ Spatial data requirement for application/Supply Source or organizations supplied)
b. Data Collection- Fundamental & Thematic Vector Data & Raster Data / GIS Layers/ Layer deals with/ Date of production)
c. Thematic Areas of Fundamental Vector data
    i. *(Base map including Geodetic Network, Projections, Reference data, Topography/Terrain, DTM/DEM/TIN, Coastline/MSL, Structures, Hydrology, Geology, Administration Boundaries, Transportation data on roads, railway, air and water)*
    ii. *(Cadastral Data including Plot & Block boundaries, Easement, Right of Way)*
    iii. *(Administrative Boundaries- Country/Province/District/DSD/GN/Census Blocks)*
    iv. *(Political Boundaries – Electoral Divisions, Local Authorities-MCs/UCs/PSs, Ward Boundaries)*
    v. *(Functional Boundaries – Postal zones, Health, Education, Utility, Forest-Beat/Range, Judicial, law & Order,)*
    vi. *Special Management Area Boundaries (Planning, Protected Areas, Service Areas etc.)*
d. Land-use/ Land Cover Data
e. Environmental Data:
    i. *(Air & Climate data including Rainfall, Temperature, Ecological, Eco Systems, Biodiversity, Land and Aquatic use/cover, Climate Change/ Natural Hazards/ Disasters)*
    ii. *(Hydrology Data including Rivers, streams, Reservoirs, Tanks, Lakes, Ponds, springs, Flood zones, watersheds, Basins and sub basins,)*
    iii. *(Geological, Geomorphological, & Soil Data)*
    iv. *(Natural Resources Data including Forestry, Wild Life reserves, Sanctuaries)*
f. Utilities Data including Electricity Generation, Transmission, Distribution & Communication Data; Water Supply data on production and distributions; Sanitary Sewer data on collection, treatment and disposal; Telecommunication; Solid Waste Management data on collection, processing and disposal)
g. Agriculture Data –all types including plantation
h. Social Infrastructure Data including Education(Primary/ Secondary/ University/ Technical/ Vocational/ Research & Training), Health (Teaching/Peripheral/ Base/ Rural/ Dispensaries/ Maternity & Childcare Clinics) and Social Services
i. Industry Data on Mining & Quarrying, Manufacturing, Service, Tourism
j. Demographic & Social Data
k. Defense Data

As identified in the inception report, due to the length and complexity of the detailed questionnaire survey the questionnaire survey was administered through a mini workshop strategy. The approach was discussed at length with the NSDI Review Committee and determined to be the most effective and efficient manner to collect the required data from the questionnaire surveys. The Consultant had proposed a workshop based data collection approach for this study to optimize the resources made available to this study. As agreed at the inception phase, these data gathering workshops were facilitated by ICTA.

It was determined that ICTA will facilitate and host the workshops, and the consultant will use this forum to conduct gather information from participating institutions.

Table 3. 6 Classification of Organizations Identified in involving of National Spatial Data Infrastructure Project

Organizations Involved	Main Functions	Broad Thematic Area
Ministry of Defence (MyD)	Planning and policy directives on all defence activities	Defence
Sri Lanka Navy (SLN)	Defence force in protection of sea and water and disaster relief	Defence
Sri Lanka Air Force (SLAF)	Defence force in protection of air and disaster relief	Defence
Sri Lanka Army (SLA)	Defence force in protection of ground and disaster relief	Defence
Specil Task Force (STF)	Facilitate in implementation of law and order	Defence
National Water Supply and Drainage Board (NWS&DB)	Planning and implementation of piped water supply	Development
Urban Development Authority (UDA)	Urban planning and project implementation	Development
Road Development Authority (RDA)	Planning and development of National Highways	Development
Ceylon Electricity Board (CEB)	Generation, transmission and distribution of electricity	Development
Sri Lanka Telecom (SLT)	Provision of telecommunication facilities	Development
Provincial Road Development Authorities/Departments (PRDA/Ds)	Planning and development of provincial roads	Development
Sri Lanka Railways (SLR)	Planning and development of transportation by railways	Development
Local Authorities (LAs) (CMC, DMMC, SJKMC)	Local administration wihin specific MCs, UCs & PSs areas	Development
Sri Lanka Ports Authority (SLPA)	Responsible in development and maintenance of ports	Development
Ministry of Ports & Shipping (MoP&S)	Planning and policy directives on ports related matters	Development
Ministry of Higher Education and Highway (MoHE&H)	Planning and policy directives on higher education and highways	Development
State Timber Corporation (STC)	Extraction of timber from Government forests	Development
Sri Lanka Tourism Development Authority (SLTDA)	Promotion of tourism development	Development
Post Graduate Institute of Archealogy (PGIA)	Post Graduate level academic education and research on archeology	Education & Research
University of Kelaniya-Department of Zoology	Academic edcation and research on zoology	Education & Research
Open University- Depatment of Zoology	Academic edcation and research on zoology	Education & Research
University of Colombo Departments of Geography	Academic edcation and research on Geography	Education & Research
Rajarata University-Department of Social Science	Academic education and research on social sciences	Education & Research
University of Sri Jayewardenepura- Department of Forestry	Academic education and research on forestry	Education & Research
University of Sri Jayewardenepura-Deparment of Zoology	Academic edcation and research on zoology	Education & Research
Sri Jayewardenepura University Township Development Project	Implementation of University Township Programme	Education & Research
University of Moratuwa, Department of Civil Engineering	Academic education and research on civil engineering	Education & Research
University of Colombo-Department of Zoiology	Academic education and research on civil engineering	Education & Research

Organizations Involved	Main Functions	Broad Thematic Area
University of Sri Jayawardenepura Department of Estate Management and Valuation	Academic edcation and research on estate management and valuation	Education & Research
Post Graduate Institute of Sciences, Peradeniya	Academic edcation and research on sciences	Education & Research
Sri Lanka Association for Advancement of Sciences	Professional involvement in promotion of application of sciences	Education & Research
University of Moratuwa- Department of Town and Country Planning	Academic education and research on Town and country planning	Education & Research
University of Moratuwa, Department of Earth Resource Engineering	Academic education and research on earth resource engineering	Education & Research
Kothalawala Defence University	Academic education and research on Defence related subjects	Education & Research
Central Environmental Authority (CEA)	Conservation and regulation of environment	Environment
Meteorology Department (MD)	Meteorological related research and studies	Environment
Forest Conservation Department (FD)	Protection and conservation of forest resources	Environment
Department of Wildlife Conservation (DWLC)	Protection and conservation of wildlife resources	Environment
Sri Lanka Land Reclamation and Development Corporation (SLLRDC)	Planning and development of low lying areas, wetlands etc	Environment
Natural Resources Management Centre (NRMC)	Studies on natural resources	Environment
Marine Environment Protection Authority (MEPA)	Protection of marine environment	Environment
Department of Animal Production and Health (DAP&H)	Planning and implementation of animal production and health	Environment
National Livestock Development Board (NLDB)	Planning and development of livestock development	Environment
Survey Department (SD)	Geodetic Network, Topography, Cadastral, Landuse, Air Survey	Land
Ministry of Agriculture (MoA)	Planning and policy directives on agriculture	Land
Department of Coast Conservation & Coastal Resource Management (CCD	Coastal planning and conservation	Land
Department of Agriculture (DA)	Planning and implementation of agricultural development	Land
Land Use Policy Planning Department (LUPPD)	Land use planning at local level	Land
Ministry of Mahaweli Development and Environment (MoMD&E)	Planning and policy directives on Mahaweli Scheme	Land
Department of Land Title Settlement (DLTS)	Settlement of land ownership	Land
Mahaweli Authority of Sri Lanka (MASL)	Development of Mahaweli Projects	Land
Department of Agrarian Development (DAD)	Agrarian services development withn agriculture area	Land
Irrigation Department (ID)	Planning and development of irrigation schemes and reservoirs	Land
Department of Export Agriculture (DEA)	Promotion of export agriculture crops	Land
Geological Survey and Mines Bureau (GSMB)	Mineral resources exploration and licensing	Land & Environment
Ministry of Lands (MoL)	Planning and policy directives on land related matters	Land & Environment
Agriculture Insurance Board (AIB)	Engaged in insuring of agriculture crops and farmer income	Land & Environment

Organizations Involved	Main Functions	Broad Thematic Area
Department of Asrchaeology DA)	Coinservation and protection of historical and national heritage	Land and Enviroment
Disaster Management Center (DMC)	Natural disaster management	Natural Disaster
Ministry of Disaster Management (MoDM)	Planning and policy directives on disaster Management	Natural Disaster
Natural Disaster Relief Services Centre (NDRSC)	Facilitation in disaster relief	Natural Disaster
National Building Research Organization (NBRO)	Research related to buildings and landslides	Natural Disaster
National Physical Planning Department (NPPD)	Physical planning at national, regional and urban level	Planning & Development
Sri Lanka Sustainable Energy Authority (SLSEA)	Planning and implementation of sustainable alternative energy sources	Planning & Development
Valuation Department (VD)	Assessment and valuation of properties	Planning & Development
Airport & Aviation Services (Sri Lanka) Ltd	Service provision to airports and aviations	Planning & Development
Department of Fisheries of Acquatic Resources (DFAR)	Planning and development of fisheries and acquatic resources	Planning & Development
Water Resources Board (WRB)	Research on water resources	Planning & Development
Ministry of Megapolis and Western Development (MoM&WD)	Planning and development of Megapolis and mega development	Planning & Development
Rubber Development Department (RDD)	Implementation of development of rubber production and marketing	Planning & Development
Ministry of Education	Planning and policy directives on education development	Planning & Development
Sri Lanka Transport Board (SLTB)	Provision of public transport by buses	Planning & Development
Ceylon Fishery Harbour Corporation(SFHC)	Maintaing and development of fishery harbours	Planning & Development
Telecommunication Regularity Commission (TRC)	Regularization of use of telecommunication facilities	Planning & Development
Sri Lanka Tea Board (STB)	Promotion of tea marketing	Planning & Development
National Housing Development Authority (NHDA)	Planning and implementation of rural housing development activities	Planning & Development
Urban Settlement Development Authority (USDA)	Planning and implementation of urban housing	Planning & Development
National Transport Commission (NTC)	Regularization of road transport facility providers	Planning & Development
Sri Lanka Police (SLP)	Maintaining law and order	Policy & Administration
Divisional Secretariat Divisions (DSDs)	Divisional level administration within specific Divisional Secretariat Divisions	Policy & Administration
District Secretariats (DSs) (Jaffna, Trincomalee, Batticaloa)	District level administration within specific districts	Policy & Administration
Provincial Councils (PCs)	Provincial level adminsitartion within specific provinces	Policy & Administration
Board of Investment of Sri Lanka (BoI)	Promotion and implementation of foreign funded projects	Policy & Administration
Ministry of Local Government and Provincial Councils (MoLG&PC)	Planning and policy directives of local and provincial level administration	Policy & Administration
Department of Census and Statistics (DC&S)	Demographic surveys and census	Policy & Administration
Central Bank of Sri Lanka (CBSL)	Directives on Monetary and Financial policies & regulating banking & financial institutions	Policy & Administration

Organizations Involved	Main Functions	Broad Thematic Area
National Planning Department (NPD)	Directives on economic planning	Policy & Administration
Sr Lanka Institute of Local Governance (SLLGI)	Facilitation in planning and policy directives on local governance	Policy & Administration
Ministry of Health (MoH)	Planning and policy directives on health sector development	Policy & Administration
Information & Communication Technology Agency (ICTA)	Promotion of ICT usage in business development	Policy & Administration
Miniustry of Pblic Adminiustration and Management	Policy directives on public administration	Policy & Administration
Ministry of Home Affairs	Policy directives on home affaitrs matters	Policy & Administration
Ministry of National Policy and Economic Affairs (MoNP&EA)	Poliocy on national econnomic developmet	Policy & Administration
Informnation and Communication Technology Agency (ICTA)	Promoting ICT usage in business porocess re-engineering	Policy & Administration
International Water Management Institute (IWMI)	Water sector research	Research
National Aquatic Resource Research & Development Agency (NARA)	Oceanographic aquatic resources studies and research	Research
Lanka Hydraulic Institute (LHI)	Research and feasibility studies related to hydraulic sector	Research
Arthur C. Clerk Centre for Modern Technologies (ACCMT)	Research on modern technologies	Research
Coconut Research Institute (CRI)	Research related to coconut plantation	Research
Tea Research Institute (TRI)	Research related to tea plantation	Research
Rubber Research Institute (RRI)	Research related to rubber plantation	Research
National Science Foundation (NSF)	Promotion of scientific and technology research	Research
Ministry of Science and Technology (MoS&T)	Planning and policy directives on science and technology	Research

Source: Information & Communication Technology Agency, NSDI Baseline Study, Questionnaire Survey and Key Informant Interview, December 2016

3.6 Initial Awareness Workshop

The initial awareness workshop was organized to be a two-day workshop held on 8th and 9th September 2016; but it was decided to be as a one-day workshop that was held on September 9th 2016 at the Survey Department of Sri Lanka. The finalized version of the preliminary questionnaire was shared via email to the institutions that were invited for the initial awareness workshop on 9th September 2016, anticipating that the attendees would have reviewed and attempted to fill it prior to the workshop.

The purpose of the workshop was to provide an introduction to the NSDI initiative and baseline survey and a tutorial of the preliminary questionnaire that would be filled out during the workshop itself so that the Consultants could commence analyzing the information and classifying the institutions as either data producing or supplying. This information would also be an input into the Requirement Study, which was on-going at the time. In addition, the detailed questionnaire was also described at the workshop for the participants to facilitate filling them up.

3.7 Mini Workshop Sessions

Due to the lengthiness and complexity of the detailed questionnaire, the questionnaire survey was administered through a mini workshop strategy. For this approach the consultant had clustered the full list of sample organizations by different thematic area groups in discussion with ICTA at the inception phase. According to this approach, ICTA had invited and hosted each grouped cluster for mini awareness workshops.

The initial pilot workshop took place on October 11th, 2016. This was with the institutions that completed the preliminary questionnaire. This mini workshop was highly successful with active participation. In addition, the participants completed a questionnaire acceptance form to commit to completing the detailed questionnaire within two weeks of the workshop (October 25th, 2016 in this case). An enumerator was assigned to each institution participating and the enumerator coordinated with the respondent to facilitate completion of the detailed questionnaire within the specified timeframe. This pilot workshop also served as a platform to test the themes and discussion points for the Focus Group Discussion. These were improved and amended accordingly.

During these mini workshops, the consultant raised awareness, maintained communication, and gathered both qualitative and quantitative information. During these full day sessions, the Expert Consultant Team conducted comprehensive Focus group discussions and discussed the Questionnaire survey with selected organization representatives.

Participants signed off on the questionnaire and committed to complete this within two weeks of the workshop attended. ICTA sent formal invitations to the institutions to attend the workshop and the dedicated staff followed up with the invitees.

For this approach the Consultant had clustered the full list of sample organizations by the different thematic areas groups in discussion with ICTA and at the inception phase.

Please see the table below for the clustering of institutions by thematic areas and scheduled mini workshop. These were clustered as is mentioned in Table 3.5.

Table 3. 7 Clustering of institutions by thematic areas and scheduled mini workshop

Thematic workshop	Date of the workshop	No. of institutions invited	No. of institutions attended	Percentage of attendance
Workshop 1: **Pilot Workshop- Institutions that completed the Preliminary questionnaire**	11 October 2016	17	14	82%
Workshop 2: **Land and Environment**	17 October 2016	19	6	31%
Workshop 3: **Planning, Development and Infrastructure**	20 October 2016	23	10	43%
Workshop 4: **Education and Research**	25 October 2016	25	5	20%
Workshop 5: **Policy and Administrative**	1 November 2016	14	7	50%
Workshop 6: **Policy, Education and Administrative**	18 November 2016	35	2	5%
Workshop 7: **Natural Disaster, Climate Change, Disaster responsiveness & Defense. All participants from institutions that were unable to attend the previous mini workshops**	8 December 2016			
Overall		**133**	**44**	**33%**

According to the above table, the overall attendance to the awareness workshops is extremely poor; it is 33%. The institutions participated and not participated at the awareness workshops is in **Annex 8.**

3.8 Questionnaire Administration and Enumeration

In addition to the goals to raise awareness, maintain communication, and gather both qualitative and quantitative information, the Consultant conducted a comprehensive tutorial session of the Preliminary Questionnaire, Detailed Questionnaire and the Checklist of the Hardware and Software. Opportunities were open to the participants to clarify any unclear areas in the questionnaire during the workshop. Meanwhile, a questionnaire guide also accompanied the questionnaires to the participants.

An enumerator was assigned to each institution participating and the enumerator was coordinated with the respective respondents who participated at the workshops to facilitate the completion of the preliminary and detailed questionnaire within the specified timeframe of two weeks. The enumerators followed up the progress of questionnaire completion almost every day and the progress was reported to ICTA by updating a Google Sheet. In addition, the consultant reported on the institutions that had a different array of issues that were beyond the consultant and required counterpart support to the ICTA on daily basis for their follow-up action.

As indicated above, the progress made in collecting information via questionnaire survey has been somewhat challenging due to multiple reasons. Key among these issues was the complexity and the length of the Questionnaires. As such, completing the questionnaires was a multiple day task that may involve multiple respondents. Therefore the Client and Consultant have come to the understanding that the anticipated number of questionnaire surveys may not be completed by the intended deadline.

However in any such assessment, a three-pronged approach was used to arrive at the study findings. Quantitative data obtained through the questionnaire survey was to be supplemented with qualitative data findings from Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) and secondary data review.

Table 3. 8 Status of total NSDI Baseline Study Coverage

Type of Organization	Total No	Percentage	Involvement Level	No	Percentage
1. Ministries	15	14.6	Category 1	4	26.7
			Category 2	7	46.7
			Category 3	3	20.0
2. Departments	23	22.3	Category 1	16	69.6
			Category 2	4	17.4
			Category 3	3	13.0
3. Corporations	3	2.9	Category 1	1	33.3
			Category 2	0	0.0
			Category 3	2	66.7
4. Authorities	10	9.7	Category 1	4	40.0
			Category 2	3	30.0
			Category 3	3	30.0
5. Boards	8	7.8	Category 1	2	25.0
			Category 2	2	25.0
			Category 3	4	50.0
6.Institutions	10	9.7	Category 1	9	90.0
			Category 2	1	10.0
			Category 3	0	0.0
7. Agency/Bureau/Centres	7	6.8	Category 1	5	71.4
			Category 2	1	14.3
			Category 3	1	14.3
8. Local Authorities	3	2.9	Category 1	3	100.0
			Category 2	0	0.0
			Category 3	0	0.0
7. District Secretaries	3	2.9	Category 1	0	0.0
			Category 2	3	100.0
			Category 3	0	0.0
9. Public Companies	2	1.9	Category 1	0	9.0
			Category 2	2	100.0
			Category 3	0	0.0
10. Commissions	2	1.9	Category 1	0	0.0
			Category 2	2	100.0
			Category 3	0	0.0
11. University Faculties/Departments	12	11.7	Category 1	0	0.0
			Category 2	12	100.0
			Category 3	0	0.0
12. Post Graduate Institutes	2	1.9	Category 1	1	50.0
			Category 2	1	50.0
			Category 3	0	0.0
13. Defence	3	2.9	Category 1	2	66.7
			Category 2	1	33.3
			Category 3	0	0.0
Total	103	100.0		103	

Note: Category 1-Generators Category 2- Scattered Generators/Users, Category 3- Not Generate/Use

Source: ICTA NSDI Baseline Study, December 2016

Table 3. 9 Status of Spatial Data Generation and Usage by Type of Organizations

Type of Organization	Spatial data Geneators	Scattered Generators/ Users	Not Generated/ Not Used	Total
Ministries	4	8	3	15
Departmets	16	4	3	23
Corporations	1	0	2	3
Authorities	4	3	3	10
Boards	2	2	4	8
Institutions	9	1	0	10
Agency/ Bureau/ Centres	5	1	1	7
Local Authorities	3	0	0	3
District Secretariats	0	3	0	3
Defence Forces	2	1	0	3
Private	0	2	0	2
Commissions	0	2	0	2
Universities	0	12	0	12
Post Graduate Institutions	1	1	0	2
Total	47	40	16	103

Source: ICTA NSDI Baseline Study, December 2016

However, the following Table presents the summary of the performance of the data collection.

Table 3. 10 Performance of the questionnaire completion

	Categories or organizations		Preliminary Questionnaire		Detailed Questionnaire	
		Total number of institutions	No. Received	% Received	No. Received	% Received
1	Institutions that generate spatial data	45	25	53%	18	38%
2	Institutions that generate/use scattered spatial data	42	8	23%	7	20%
3	Institutions that currently not generate or do not use or marginal users of spatial data	16	13	76%	6	35%
4	**Overall**	**103**	**46**	**46%**	**31**	**31%**

In view of the understanding of the spatial data concept in the country, the consultant is of the view that 46% of the Preliminary Questionnaires and 31% Detailed questionnaires are adequate to develop the baseline information but it will be supplemented with the information obtained from relevant web sites, comprehensive documentary reviews and the consultants expertise on the local situation in spatial data.

3.9 Design of SPSS Database, Data Entry and Analysis

The consultant proposes to use IBM's SPSS database for detailing concise information pertaining to the NSDI Baseline Study. As SPSS is statistical analysis of software made specifically for social science, and serves as a good database for the requirement of this study. SPSS comes with descriptive statistics (cross tabulations, frequencies,

descriptive ratio statistics, explore), bivariate statistics (means, correlation, nonparametric tests), prediction for numerical outcomes (linear regression), and prediction for identifying groups (factor analysis, cluster analysis, and discriminant).

The database was designed and formatted to enter the manually edited and coded data in the form of spreadsheets with respect to key areas of content in the questionnaire. It is planned to come out with a set of indicators and scope to ensure that the data collection exercise is meaningful and productive. In this respect, the consultant team will develop a set of indicators to assess the impacts in the NSDI. However these indicators are by no means final and such it will be useful in selecting information from different sources in order to have a more comprehensive understanding.

The database has re-coding, computational and other facilities useful in data cleaning and manipulating, while advanced analytical techniques are built in. The design of this survey will use these facilities in building the database, as well as for simple and detailed statistical analysis of the quantitative data consisting of numerical continuous variables as well as discrete categorical data.

The technical coordinator will review all the completed questionnaires prior to data entry. The information from the database will be cross-checked with the questionnaires to minimize inconsistencies, verify accepted ranges, and missing data. Outliers and deviations are also verified with the questionnaires. Respondents will also be contacted to verify additional information, if necessary. All the information that will be collected by the questionnaire survey will be converted into numerical figures and added into the database. Once finalized, the database will be shared with the client along with other deliverables.

3.10 Quality Assurance

GreenTech Consultants has the highest standard policies, procedures and practices in place that promote Total Quality Management which has, over the years, resulted in Clients' satisfaction, shareholders' steady confidence in our corporate performance, and stable cooperation between us and our various host communities across the country. It is thus ensured that the work was carried out according to the mentioned pre-setting. Unexpected deviations were detected by the QA System and were rectified immediately. To ensure the quality of work throughout the duration of the project, senior staff members were assigned to review every step of the work process to ensure that the output quality meets the expectations.

Sound approaches were taken to ensure quality of quantitative data collected through the questionnaire surveys. This was attained by implementation issues and non-responsiveness.

Table 3. 11 Methods of ensuring quality of data

Phase of Survey	Method of Ensuring Quality of Data
Questionnaire development	• Design of quality questionnaires with choice of accurate wording • Pre-coding of as many questions as possible • Peer review of draft questionnaires
Pre-testing of questionnaire	• Identification of questions which need re-wording / fine-tuning • Identification of pre-codes to any remaining un-coded questions
Selection of enumerators	• Interview, select and recruit adequate number of enumerators; with gender balance, possessing relevant experience or technical qualifications, having field experience and the ability to work diligently

Phase of Survey	Method of Ensuring Quality of Data
Training of enumerators	• Provision of 2 day extensive training to enumerators and survey supervisors; contents of which include (i) interviewing techniques, (ii) role play, (iii) hands-on training in field interviewing, (iv) review of experience and lessons learned during field testing of the questionnaire. • Training will be supported by a Manual of Instructions developed by the Study Team
Field operation	• Continuous thorough supervision of follow up procedures during the whole operation by the survey supervisors and the team of consultants • The team leader will support the completion of the questionnaires, tend to any technical queries, and guide the enumerator to obtain the completed questionnaire including providing instructions to the enumerator • Subsequently, while enumerators continue following up as per allocations, the Survey Supervisors and the team of consultants will meet them in a random manner and check the completed questionnaires filled by them to guarantee that they continuously adhere to and maintain expected standards. The team leader will review all completed questionnaires prior to data entry
Editing / coding of completed questionnaires	• Identifying sets of codes with respect to each open-ended question will be conducted through a cross-section of completed questionnaires • On the basis of the above, and in consultation with the Survey Specialist and Team Leader, a Code List consisting of a set of codes in respect of each open-ended question will be developed • Editing and coding (using the Code List) of completed questionnaires will be carried out. For this purpose, a selected number of enumerators will be selected from among those who engaged in the field work and they will be provided with orientation/hands-on training
Data entry	• Data entry structure(s) as required for SPSS software package will be developed in parallel with the on-going field operations • For purpose of data validation by the computer, edit-checks will be incorporated • On completion of data entry, accuracy of data entry in 5% of randomly selected questionnaires will be checked against the original completed questionnaire
Data cleaning	• Cleaning of the data entered will be undertaken following machine-aided procedures
Data tabulation	• Preparation of a well-designed set of dummy tables, which will be made available to guide data tabulation • Subject machine generated tables for accuracy, validity and consistency checks

3.11 Challenges in Data Collection

The Consultant faced several challenges during the collection of data;

- Poor participation at the Awareness Workshops due to delays of correspondence as many of the respondents need prior approval to attend the workshops, lack of interest shown by the nominated representatives indicating various excuses, lack of knowledge on overall NSDI and GSDI, assuming that participation of these workshops not gaining any tangible results as many of the previous attempts failed, many of the participants attended previously in similar work organized by the Ministry of Lands and Disaster Management centre, contemporarily conducting many questionnaire surveys in similar nature by ICTA and other organizations create confusions among the respondents, lack of encouragements made by the heads of organizations in making collaborative efforts in developing the proposed NSDI etc.
- Lengthy Preliminary and detailed Questionnaire: Breach of agreed consensus over the process of distributing the detailed questionnaire after overall processing of the status of the organization results in respondents being confused due to both to the unfamiliar subject matter, and the presence of technical details which were not related to their normal work.
- Respondent's lack of understanding of questionnaire content: The Consultant found that there was an overall lack of understanding on the content of the questionnaire, and the participants who were representing invited institutions were not conversant in spatial data or were not the relevant personnel handling spatial data.
- The finalized questionnaires were addressed to heads of institutions, however the relevant respondent to fill questionnaire was not nominated, or there was a lack of authorization for the nominees to share information on spatial data
- Respondents commit to send questionnaire but do not follow through.
- The officers who have received the questionnaire might not have authority to supply the data, share the questionnaire among relevant divisions and send back the completed questionnaire in the time available.
- Identified government respondents were not available to fill the questionnaire.

CHAPTER 4 – KEY NSDI STAKEHOLDER ORGANIZATIONS IN SPATIAL DATA DEVELOPMENT AND SHARING

4.1 Key Stakeholder Organizations involved in Handling of Spatial Data

The NSDI Baseline Study has explored the organizations involved in spatial data related activities and the generated and use of such data for the core business functions of the organizations. The selection of the organizations was limited to Government Sector organizations as the main objective of establishing the NSDI Geo Web Portal to facilitate sharing the spatial data across the Government organizations. Therefore the private sectors, bi lateral and multi-lateral organizations, Non-Governmental, local and international as well as United Nations Organizations were not covered in their spatial data applications for various functions.

Although ICTA invited about 105 organizations to the respective workshops and internal meetings for the discussion on the completion of both general and detailed questionnaires only about 99 organizations responded in the different capacities.

In order to identify the main functional requirements of the organizations and its mandatory tasks, the information about organizations were requested along with the other information completed using the two questionnaire forms. Since many of the representatives of invited organizations did not respond, the required information on vision, mission, objectives, core functions, main functional divisions and the organizational structures were collected using official web sites and other documents published by these organizations such as Corporate Plans, Annual Reports and Performance Reports (Refer Annex Report on Organization Profile for details). Accordingly the general functions of these organizations were not taken into consideration for use for the cases of spatial data when analyzing the core business functions. The functions like Human Resources Management/Administration, Finance/ Accounts, Internal Audit, Transport, Progress Monitoring, Services etc. were excluded and rest of the other functions were counted. Accordingly the 105 organizations had 403 core business functional divisions in the following main categories:

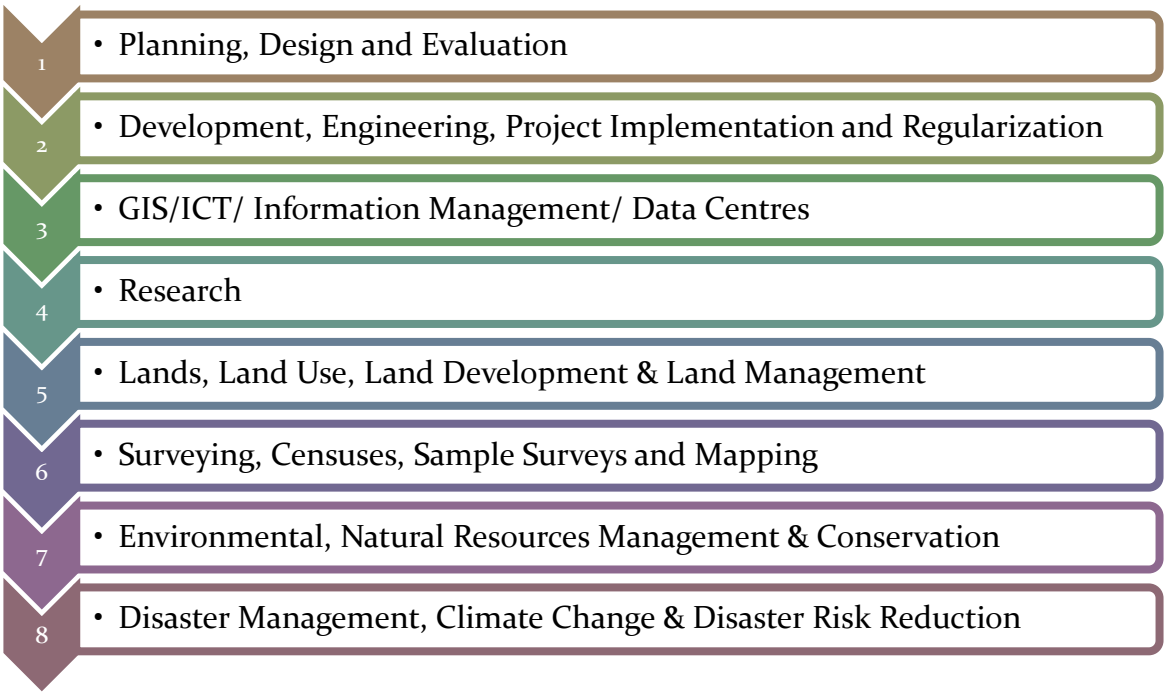


Table 4.1 provides the details of each organizational number of core functional divisions and its distribution pattern as per the thematic areas broadly categorized as above. The distribution pattern shows that a fair amount of core functional divisions are engaged in the activities related to Development, Engineering, Project Implementation and Regularizations as summarized below:

Table 4. 1 Thematic Areas related to Operational Core Functional Divisions of Organizations-2016

Name of Organization	No of Core Functional Divisions	Thematic Areas related to Operational Core Functional Divisions							
		Planning	Developmet	GIS/IT	Research	Lands	Surveys	Environment	Disaster
01. Ministry of Land	3	1				2			
02. Ministry of Mahaweli Development and Environment	7	1	1					4	1
03. Ministry of Agriculture	5	1	2	1	1				
04. Survey Department	8	1	1	2		1	3		
05. Coast Conservation and Coastal Resources Management Department	2	2							
06. Central Environment Authority	9		1	1	1	1		4	1
07. Forest Conservation Department	8	1	1	1	1			4	1
08. Department of Wildlife Conservation	9	1	3		1	2		2	
09. Sri Lanka Land Reclamation and Development Corporation	8		3		3	1		1	
10. Geological Survey and Mines Bureau	2		1			1			
11. National Aquatic Resources Research and Development Agency	9		2		5		2		
12. Meteorology Department	6			2			4		
13. Marine Environment Protection Authority	1								1
14. Sri Lanka Mahaweli Authority	8	1	2		1	1		3	
15. Departments of Agrarian Development	6		4	1				1	
16. Department of Agriculture	2	1	1						
17. Department of Animal Production and Health	1		1						
18. Land use Policy Planning Department	2	1		1					
19. Department of Land Title Settlement	1					1			
20. Ministry of Fisheries and Aquatic Resources Development									
21. National Livestock Development Board	1	1							
22. Natural Resource Management Center	6					5		1	
23.Department of Archaeology	5							5	
24. Bim Saviya Land Title Registration	1					1			
25. Ministry of Megapolis and Western Development	4	1	2			1			
26 .Ministry of Ports & Shipping	3	1	2						
27. Urban Development Authority	8	1	4	1		1		1	
28. National Physical Planning Department	6	2	3		1				
29. Board of Investment of Sri Lanka	4		4						
30. Sri Lanka Hydraulic Institute	1				1				
31. National Housing Development Authority	5	1	2	1		1			
32. Urban Settlement Development Authority	3		3						
33. Road Development Authority	12	2	5		1	2		1	1
34. National Transport Commission									
35. Provincial Road Development Authorities/ Departments	2	1	1						
36. Sri Lanka Railway	9	1	6	1					1
37. Sri Lanka Transport Board									
38. Sri Lanka Ports Authority	4	1	2	1					
39. Ceylon Fishery Harbours Corporation	3		3						
40. Sri Lanka Telecom	8	2	6						
41.Telecommunication Regularity Commission of Sri Lanka	8	2	6						
42. National Water Supply & Drainage Board	10	3	4	2	1				
43. Irrigation Department	17	1	5	1	2	3		3	2
44. Water Resources Board	4		2	1				1	
45. Sri Lanka Sustainable Energy Authority	3							3	
46. Ministry of Health	6				6				
47. Airport and Aviation Services (Ltd)	2			2					
48. Department of Export Agriculture	1		1						
49. State Timber Corporation	1		1						
50. Valuation Department	7					7			
51. Information & Communication Technology Agency									
52. Sri Lanka Tourism Development Authority	2	1	1						
53.Ministry of Transport and Civil Aviation	3	1	1			1			
54. Ministry of Fisheries & Aquatic Reseouces Development	3	1	2						
55. Ministry of Higher Education and Highways	1	1							
56. Ministry of Science & Technology	4	1	1		1	1			
57. University of Kelaniya(Departments of Geography, Zoology)									
58. International Water Management Institute	7			1	6				
59. General Sir John Kothalawala Defence University									
60. Open University, Department of Zoology									
61. University of Colombo (Departments of Geography									
62. University of Colombo (Department of Zoology)									

Name of Organization	No of Core Functional Divisions	Thematic Areas related to Operational Core Functional Divisions							
		Planning	Developmet	GIS/IT	Research	Lands	Surveys	Environment	Disaster
63. Rajarata University (Department of Social Science)									
64. University of Sri Jayewardenepura (Department of Forestry)									
65. University of Sri Jayewardenepura (Department of Zoology)									
66. USJ (Department of Estate Management & Valuation)									
67. University of Sri Jayewardenepura Township Development Project									
68. University of Moratuwa (Department of Town and Country Planning									
69. University of Moratuwa (Department of Earth Resource Engineering)									
70. University of Moratuwa (Department of Civil Engineering)									
71. Post Graduate Institute of Archaeology	13				13				
72. Post Graduate Institute of Sciences, Peradeniya									
73. Arthur C. Clerk Centre for Modern Technologies,	8		3	2	3				
74. Sri Lanka Association of Advancement of Sciences	8				8				
75. Coconut Research Institute	11	2			8		1		
76. Tea Research Institute	7		1		6				
77. Rubber Research Institute	10		3		6		1		
78. National Science Foundation	4	1	2		1				
79. Sri Lanka Tea Board	4	2	2						
80. Ministry of Education	2	1	1						
81. Hector Kobbekaduwa Agrarian Research & Training Institute	4	1	1		1		1		
82. Ministry of Public Administration & Management									
83. Ministry of Home Affairs	3		3						
84. Ministry of Local Government and Provincial Councils	3	1	1				1		
85. Ministry of National Policy and Economic Affairs									
86. Department of Census and Statistics	8			1			5	2	
87.Central Bank of Sri Lanka	2				2				
88. National Planning Department	8	8							
89. District Secretariat - Jaffna									
90. District Secretariat - Trincomalee									
91. District Secretariat - Batticaloa									
92. Sri Lanka Institute of Local Governance	3	1	1		1				
93. Colombo Municipal Council	16	1	14					1	
94. Dehiwela – Mt. Lavinia MC									
95. Sri Jayewardenepura - Kotte MC									
96. Rubber Development Department	1		1						
97. Ministry of Disaster Management									
98. Ministry of Defense	1		1						
99. Disaster Management Center	5	2						1	2
100. National Building Research Organization	4	1	1						2
101. National Disaster Relief Service Centre	1								1
102. Climate Change Secretariat	2							1	1
103. Special task Force, Sri Lanka Police	3	3							
104. Agricutural Insurance Board	8								8
105. Sri Lanka Navy	2								2
	403	60	125	23	81	33	18	39	24

Note: Type of Core Functional Divisions

- *Planning, Design and Evaluation*
- *Development, Engineering, Project Implementation and Regularization*
- *GIS/ICT/ Information Management/ Data Centres*
- *Research*
- *Lands, Land Use, Land Development & Land Management*
- *Surveying, Censuses, Sample Surveys and Mapping*
- *Environmental, Natural Resources Management & Conservation*
- *Disaster Management, Climate Change & Disaster Risk Reduction*

Source: Organizational Profile of Provider and User Group of Spatial Data, 2016

In summary the distribution pattern of functional divisions in each broad theme is as follows:

Core Functional Divisions	No of Divisions
Planning, Design and Evaluation	60
Development, Engineering, Project Implementation and Regularization	125
GIS/ICT/ Information Management/ Data Centres	23
Research	81
Lands, Land Use, Land Development & Land Management	33
Surveying, Censuses, Sample Surveys and Mapping	18
Environmental, Natural Resources Management & Conservation	39
Disaster Management, Climate Change & Disaster Risk Reduction	24
Total	403

The full functional details of each organization are provided separately in Organizational Profiles compiled as part of the NSDI Baseline Study. In addition, the study also examines the type of spatial data compiled or developed by these core functional divisions of individual organizations as well as spatial data requirements to each of them in delivering core business functions. The details of Data Inventory and Data requirements were provided in Excel Worksheets separately and the relevant references are given in Table 4.3.

Table 4.3 indicates that the profile was compiled on 82 organizations. However time has not been devoted to collect the information on the different faculties and departments of the Universities, Post Graduate Institutions etc. as their involvement in the NSDI process are in the context of using available data for academic teaching and conducting research studies rather than as key agencies producing spatial data. However many of the Universities are presently engaged in consultancy services to government agencies and private sector with generating of certain sets of spatial data which are not open to general public or the Government. Therefore about 23 such units were not considered.

On the basis of the data inventory column the key institutions organizations producing spatial data is identified as follows:

- Survey Department
- International Water Management Institute
- Coast Conservation Department
- National Building Research Organization
- Department of Agrarian Development
- Urban Development Authority'
- Central Environmental Authority
- Disaster Management Centre
- Meteorology Department
- Department of Wild Life Conservation
- Lanka Hydraulic institute
- National Physical Planning Department
- Road development Authority
- Tea Research Institute
- Archaeology Department
- Irrigation Department
- Natural Resources Management Centre
-

- Mahaweli Authority of Sri Lanka
- Geological Survey & Mines Bureau

These organizations are generating five types of data covering

- Digital Vector _Fundamental
- Digital Vector _Thematic
- Digital Raster
- Digital Image
- Digital Document
- Digital Tabular
- Digital Text
- CAD/ DGN/DXF
- Manual Map
- Manual Report
- Manual Tables
- Manual Photos, Videos

The baseline study has examined the available data types through the questionnaire survey, published documents, corporate plans, annual reports, web searching etc. The whole process emphasized to inform the participants to elaborate on the data availability as either digital or manual as much as possible because there is an opportunity to transform manual data into digital spatial data if there is any reference for its identification. A majority of organizations do not have an incentive or feel the need to list down all the available types of data, and therefore the given set of data seems incomprehensive to explore the volume of data available in these organizations.

This situation is highly prevalent the organizations that are not presently very active in the use of GIS as well as lack an understanding on the possibilities of transforming into digital spatial data.

The analysis is made on the basis of a combination of all sources and ability to extract from the sources.

Table 4. 2 Summary Status of Collected Data on Organization Profile, Data Requirements and Data Inventory on NSDI Baseline Study -February 2017

Organisation Name	Generator/ User/Both	Organizational Profile Reference Section No	Data Requirement Status	Data Inventory Reference & No of Data Topics (Status as Per Excel Data Sheets)
Spatial Data Generators				
Survey Department (SD)	Both	2.0	R 5 - R14	R 1 - R 105 (105)
International Water Management Institute (IWMI)	Both	29.0	R 216- R 217	R 572 - R 668 (97)
Ministry of Agriculture	Both	17.0	R 80 - R84	R 524 - R 549 (26)
Department of Coast Conservation & Coastal Resource Management (CCD)	Both	11.0	R 53 - R64	R 246 -R 278 (33)
National Building Research Organization (NBRO)	Both	81.0	R 229 - R 236	R 674 -R 678 (5); R 1170 - R 1189 (20)
National Aquatic Resource Research & Development Agency (NARA)	Both	12.0	R 65 - R 72	R 162 - R 246 (85); R 538 -R 539 (2)
Department of Agriculture (DA)	Both	18.0	R 85- R 91; R 254 -R 297	R 478- R486 (9)
Land Use Policy Planning Department (LUPPD)	Both	3.0	R 20 - R 26	R 114- R 129 (16)
National Water Supply and Drainage Board (NWS&DB)	Both	24.0	R 113 - R 119	
Urban Development Authority (UDA)	Both	22.0	R 93 - R 99	R 317- R 377 (61); R 679 - R1045 (366)
Ministry of Mahaweli Development and Environment (MyMD&E)	Both	5.0	R 28 - R 34	
Disaster Management Center (DMC)	Both	23.0	R 100 - R 112	R 434 - R 442 (10)
Central Environment Authority (CEA)	Both	18.0	R 73 - R 79	R 288 - R 316 (29)
Ministry of Local Government and Provincial Councils (MyLG&PC)	Both	76.0		R 1046 - R 1055 (10)
Meteorology Department (MD)	Both	14.0	R 219 - R 220	R 130 - R 161 (32)
Department of Land Title Settlement (DLTS)	Generator	32.0	R 237	
Geological Survey and Mines Bureau (GSMB)	Generator	15.0	R 342 - R 346	R 106 - R 113 (8)
Forest Conservation Department (FD)	Both	9.0	R 39 - R 45	R 279 - R 282 (4)
Department of Wildlife Conservation (DWLC)	Both	8.0	R 35 - R 38	R 283 -R 287 (5); R 1102 - R 1119 (18)
Sri Lanka Land Reclamation and Development Corporation (SLLRDC)	Both	10.0	R 46 - R 52	
Mahaweli Authority of Sri Lanka (MASL)		7.0		R1192 - R1196 (5)
Department of Agrarian Development (DAD)	Both	19.0		R 424 - R 432 (9)
Lanka Hydraulic Institute (LHI)	Both	35.0	R 159 - R 163	R 1079 - R 1105 (27)
National Physical Planning Department (NPPD)	Both	21.0	R 15 - R 19	R 378 - R 423 (46)
Road Development Authority (RDA)	Both	37.0	R 137 - R 153	R 1106 - R 1130 (25)
Irrigation Department (ID)	Both	38.0	R 164 - R 190	R 443- R 464 (22)
Ceylon Electricity Board (CEB)	Both		R 202 - R 207	
Sri Lanka Sustainable Energy Authority (SLSEA)		51.0		
Arthur C. Clerk Centre for Modern Technologies (ACCMT)	Generator	39.0		
Coconut Research Institute (CRI)	Both	40.0	R 208 - R 215	R 1131- R 1134 (4)
Tea Research Institute (TRI)	Both	42.0		R 487 - R 523 (37)
Rubber Research Institute(RRI)	Both	41.0		
Department of Census and Statistics (DC&S)	Both	25.0	R 120 - R 128	

Organisation Name	Generator/ User/Both	Organizational Profile Reference Section No	Data Requirement Status	Data Inventory Reference & No of Data Topics (Status as Per Excel Data Sheets)
Ministry of Defence (MyD)		43.0		
Valuation Department (VD)		44.0		R1135 - R1137 (3)
Natural Resources Management Centre (NRMC)	Both	33.0		R 1085 - R 1087 (3)
Post Graduate Institute of Archealogy (PGIA)		45.0	R 221 - R 227	
Bimsaviya Land Title Registration Programme		4.0	R 368- R373	R1108 (1)
Central Bank of Sri Lanka (CBSL)	User	70.0		R 550 - R 564 (14)
Bio Diversity Secretariat (BDS)			R 191 - R 201	
Archaeology Department (AD)	Both	77.0	R 347 - R 360	R 1056 - R 1068 (10)
Sri Lanka Tourism Development Authority (SLTDA)	Both	82.0	R 336 - R 341	
Scattered Spatial Data Generators/Users				
Sri Lanka Navy (SLN)		47.0		Not specified
Airport & Aviation Services (S.L) Ltd	Generator	28.0		Not specified
Ministry/Department of Fisheries of Acquatic Resources (MyFAR)		72.0		R 532 - R 537 (6)
Sri Lanka Telecom (SLT)		57.0		Not specified
Water Resources Board (WRB)	User	71.0	R 132- R 136	R 1033 -R 1038 (6)
Provincial Road Development Authorities (PRDAs)	Both	6048.0		
Ministry of Megapolis and Western Development (MyM&WD)	Both	58.0		
Sri Lanka Railways (SLR)	User	73.0		
National Science Foundation (NSF)	User	46.0	R 298 - R 335	R 669 - R 673 (5)
Colombo Municipal Council (CMC)	Both	1.0		R 1138 - R 1148 (11)
Ministry of Lands (MyL)	User	34.0	R3 - R4	Not specifie
Board of Investment of Sri Lanka (BoI)	User	62.0	R 244 - R 247	Not specifie
Sri Lanka Ports Authority (SLPA)	User	26.0		Not specifie
National Planning Department (NPD)		61.0		Not specifie
Sr Lanka Institute of Local Governance (SLLGI)	Both	27.0	R 154 - R 158	Not specifie
Ministry of Health (MyH)		75.0	R 228	
Information & Communication Technology Agency (ICTA)	User	13.0		Not specified
Marine Environment Protection Authority (MEPA)	Both	67.0	R 218	Not specified
Rubber Development Department (RDD)				Not specified
University of Kelaniya-Department of Zoology				Not responded
Open University- Depatment of Zoology				Not responded
University of Colombo Departments of Geography				Not responded

Organisation Name	Generator/ User/Both	Organizational Profile Reference Section No	Data Requirement Status	Data Inventory Reference & No of Data Topics (Status as Per Excel Data Sheets)
Rajarata University-Department of Social Science				Not responded
University of Sri Jayewardenepura- Department of Forestry				Not responded
University of Sri Jayewardenepura-Deparment of Zoology				Not responded
Sri Jayewardenepura University Township Development Project				1197-1103 (7)
University of Sri Jayawardhanapura Department of Estate Management and Valuation				Not responded
Post Graduate Institute of Sciences, Peradeniya				Not responded
Sri Lanka Association of Advancement of Sciences		64.0		Not responded
University of Moratuwa- Department of Town and Country Planning				Not responded
University of Moratuwa, Department of Earth Resource Engineering				Not responded
University of Moratuwa, Department of Civil Engineering				Not responded
Kothalawala Defence University				Not responded
Currently Not Generate or Not Use or Marginal Users				
Department of Animal Production and Health (DAP&H)	User	20.0		R 465-R477 (13)
Ministry of Ports & Shipping (MyP&S)	User	49.0	R367	Not specified
Ministry of Higher Education and Highway	User	74.0		Not specified
Ministry of Science and Technology (MyS&T)	User	56.0		Not specified
National Livestock Development Board (NLDB)	User	66.0		R 1151 (1 layer)
State Timber Corporation (STC)	User	68.0		R 1077 -R 1078 (2)
Department of Export Agriculture (DEA)	User	65.0		Not specified
Sri Lanka Transport Board (SLTB)	User			Not specified
Ceylon Fishery Harbour Corporation(SFHC)	User	54.0	R 248 - R 250	R1104-1107 (4)
Telecommunication Regularity Commission of Sri Lanka (TRCSL)		63.0	R 361	R 1149 - R 1150 (2)
Sri Lanka Tea Board (STB)	User	30.0	R 129 - R 131	R1113 (1)
Agriculture Insurance Board	User		R 238	Not specified
National Housing Development Authority (NHDA)	User	36.0		Not specified
Urban Settlement Development Authority (USDA)	User	69.0		Not specified
National Transport Commission (NTC)	User	50.0		R1109 (1)
Hector Kobbekaduwa Agriculture Research & Training Institute (HKARTI)	User	53.0	R 239 - R 243	R 516 (1 layer)
Ministry of Transport & Civil Aviation (MyT&CA)	User	55.0	R 251	Not specified
Special Task Force of the Police (STF)		31.0		Not specified
Sri Lanka Agriculture Insurance Board (SLAIB)		52.0		Not specified
SriLanka Telecom (SLT)		57.0		Not specified
Ministry of Education (MyE)		59.0		Not specified
Water Resources Board (WRB)		71.0		Not specified
National Disaster Relief Service Centre (NDRSC)		78.0		Not specified
Ministry of Public Administration & Management (MyPA&M)		79.0		R1114- R1116 (3)
Ministry of Home Affairs (MyHA)		80.0		Not specified
University Profiles not included				

4.2 Characteristics of Spatial Data Generated

The spatial data inventory compiled on the basis of available information was categorized under different components as follows:

a) Level of Administration of data - Level 1 – Ministry; Level 2 – Organization; Level 3 – Functional Division
b) Document Set Name
c) Class, Theme and topic of referred Data
d) Description about Data
e) Metadata
f) Source
g) Scale
h) Projection
i) Vertical Datum and Horizontal Datum
j) Geo Coverage
k) Map Extent
l) Currency
m) Update Frequency
n) Accuracy
o) Features
p) Availability
q) Purpose
r) Condition of Use
s) Compilation History
t) General Comments
u) Contact Person
v) Status
w) Due Date

Although these categories are formatted in the Spatial Data inventory worksheet all these categories are not applicable to all the types of data and many of the categories are blank to the data sets related to non-spatial and manual data. Although it has mentioned large number of data types earlier all these categories were aggregated into five major types of data as follows:

a) Digital Vector _ Fundamental
b) Digital Vector – Thematic
c) Digital Raster
d) Hard Copy
e) Images including videos and photographs
f) Text (document and tabular)

The sub categories of data types including in fundamental digital vector data have certain reservations among the expertise as the types which comes into the set may vary from one over the other. The good example is the two proposals made for NSDI has listed down such types in different ways as indicated below:

Table 4. 3 Fundamental Geospatial data Classification

Class	SLSDI Classification_2014	FGD Classification by SLNSDI_2016
Basemap	Geodetic Network	**Survey Control** (geodetic Network)
Basemap	Topography Elevation	**Elevation** (Topography, bathymetry, Altimetry, Sea Bottom Profile, DEM/ DTM/ TIN, Coastline)
Basemap	Imagery	**Imagery** (LR,HR, VHR satellites, Aerial Photographs, Orthophotos, LiDAR)
Basemap	Buildings Street Address	**Structures** (Buildings, Street Address)
Basemap	Place Names	**Places** (Names, Gazeteer)
Areas	Administrative Boundaries	**Political/ Administrative Areas** (Sri Lanka, Provincial, District, Divisional Secretariat Divisions, Grama Niladhari Division, Census Block)
Areas	Cadastral	**Cadastral** (Block Boundaries, Plot Boundaries, Easements, Right of Way)
Transportation	Transport	**Transportation** **Land** (Expressways, AA, AB. AC, B, C, D, Local, Rail), **Water** (Internal water ways, Sea), **Air** (Domestic and International)
Environmental	Hydrography	**Hydrography** (Rivers and Stream and Water Bodies)
Utilities	Utility	**Portable Water,** **Sanitary Sewer,** **Electricity,** **Storm Water Sewer,** **Telecommunication,** **Waste Management,** **Oil Pipe Line,** **Gas Pipe Line**
	Land Use	
	Reserves	

Source: SLNSDI Baseline Study, 2016 and SLSDI Road Map, 2014

As per the above classification and the five broad categories of data types collected by the Baseline Study 1,887 data topics were identified of which its sub categories are as follows:

Sub Category of Data Type	No of Topics identified
Digital Vector _ Fundamental	148
Digital Vector – Thematic	506
Digital Databases	46
Digital Raster	221
Hard Copy	456
Images including videos and photographs	162
Text (document and tabular)	348
Total	1,887

The details of each sub category of data types are given in Table 4.4 to 4.15. According to Table 4.4 Survey Department, UDA, IWMI, NARA and CCD provides large number of fundamental vector data layers applicable to all five levels such as National, Regional, District, Urban and Local levels containing:

- National Level -35
- Regional Level -22
- District Level -05
- Urban Level -55
- Local Level -24
- Unclassified -07

Total No of Data Topics -148

T able 4. 4 NSDI Baseline Study _ Spatial Data Inventory _Fundamental Vector Data

Doc Id	Admin_L 2	Doc_Set_Name	F/T	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
168	NARA	Continental Margin	F	Areas	Political/Administration	Exclusive Economic Zone	Yes	Shapefile	NARA		Nationall		High
350	UDA	VECTOR.BO_Country	F	Areas	Political/Administrative Areas	Sri Lanka	Yes	Vector	Digitized based on census field data using 1:50,000 topographic maps	1:50,000	National	2001	Medium
351	UDA	VECTOR.BO_Region	F	Areas	Political/Administrative Areas	Regions	Yes	Vector	Digitized based on census field data using 1:50,000 topographic maps	1:50,000	National	2001	Medium
352	UDA	VECTOR.BO_Province	F	Areas	Political/Administrative Areas	Provinces	Yes	Vector	Digitized based on census field data using 1:50,000 topographic maps	1:50,000	National	2001	Medium
353	UDA	VECTOR.BO_District	F	Areas	Political/Administrative Areas	Districts	Yes	Vector	Digitized based on census field data using 1:50,000 topographic maps	1:50,000	National	2001	Medium
354	UDA	VECTOR.BO_DSD	F	Areas	Political/Administrative Areas	Divisional Secretariat Divisions	Yes	Vector	Digitized based on census field data using 1:50,000 topographic maps	1:50,000	National	2001	Medium
355	UDA	VECTOR.BO_GND	F	Areas	Political/Administrative Areas	Grama Niladhari Divisions	Yes	Vector	Digitized based on census field data using 1:50,000 topographic maps	1:50,000	National	2001	Medium
356	UDA	VECTOR.BO_Ward	F	Areas	Political/Administrative Areas	Administrative Wards	Yes	Vector	Digitized based on census field data using 1:50,000 topographic maps	1:50,000	National	2001	Medium
357	UDA	VECTOR.BO_Local_Government	F	Areas	Political/Administrative Areas	Local Authority	Yes	Vector	Digitized based on census field data using 1:50,000 topographic maps	1:50,000	National	2001	Medium
358	UDA	VECTOR.BO_Polling_zone	F	Areas	Political/Administrative Areas	Polling Division	Yes	Vector	Digitized based on census field data using 1:50,000 topographic maps	1:50,000	National	2001	Medium
359	UDA	VECTOR.AZ_UDA_declared_areas	F	Areas	Planing Areas	Urban Development Areas	Yes	Vector	Digitized based on census field data using 1:50,000 topographic maps	1:50,000	National	2001	Medium
360	UDA	VECTOR.SO_CE2011_DIS	F	Areas	Political/Administrative Areas	Districts	Yes	Vector	Digitized based on census field data using 1:50,000 topographic maps	1:50,000	National	2011	Medium
361	UDA	VECTOR.SO_CE2011_DSD	F	Areas	Political/Administrative Areas	Divisional Secretariat Divisions	Yes	Vector	Digitized based on census field data using 1:50,000 topographic maps	1:50,000	National	2011	Medium
362	UDA	VECTOR.SO_CE2011_GND	F	Areas	Political/Administrative Areas	Grama Niladhari Divisions	Yes	Vector	Digitized based on census field data using 1:50,000 topographic maps	1:50,000	National	2011	Medium
1176	NBRO	Grama Niladhari Divisions	F	Areas	Political / Administrative Areas	Grama Niladhari Divisions	Yes	Vector	Survey collection using satellite/ GPS by NBRO	1:10,000; 1:5	District	Current	High
706	UDA	Plot Boundaries - Mullaitivu PS	F	Areas	Cadastral	Plot Boundary	No	Vector	UDA	1:4000	Urban	2003	Medium
789	UDA	UDA Declared Areas - Sri Lanka	F	Areas	Political / Administrative Areas	MCs, UCs, PSs, Coaslal Belt, Districts & GN Divisions	No	Vector	UDA	1:50000	Urban	2015	Medium
23	SD	Cadastral Survey Data	F	Areas	Cadastral	Plot Boundaries & Right of Way	yes	Vector			Local		High
697	UDA	Building Footprint -Maharagama UC	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2004	Medium
712	UDA	Building Footprint -Dehiwala-Mt.Lavinia MC	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2005	Medium
716	UDA	Building Footprint-Panadura DSD	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2006	Medium
722	UDA	Building Footprint-Moratuwa MC	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2003	Medium
745	UDA	Plot Boundaries -Nallur PS	F	Base Map	Planimetric Features	Building Type	No	Vector	UDA	1:20000	Urban	2004	Medium
747	UDA	Land Use -Vavuniya UC	F	Base Map	Planimetric Features	Urban Land Use	No	Vector	UDA	1:20000	Urban	2004	Medium
749	UDA	Land Use -Anuradhapura MC	F	Base Map	Planimetric Features	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2005	Medium
751	UDA	Land Use -Anuradhapura MC	F	Base Map	Structures	Urban Land Use	No	Vector	UDA	1:10000	Urban	2005	Medium
753	UDA	Building Footprint -Kalmunai MC	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2006	Medium
755	UDA	Building Footprint -Kalmunai to Ninthavur	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2006	Medium
757	UDA	Building Footprint -Karativu DSD	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2006	Medium
759	UDA	Building Footprint -Ninthavur DSD	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2006	Medium
761	UDA	Building Footprint -Sainthamarathu DSD	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2006	Medium
770	UDA	Building Type -Kotikawatta_Mulleriyawa PS	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2007	Medium
775	UDA	Building Footprint -Boraresgamuwa UC	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2008	Medium
779	UDA	Building Footprint -Kesbewa PS	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2007	Medium
781	UDA	Building Type -Kolonnawa UC	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2007	Medium
794	UDA	Building Footprint -Attanagalla PS	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2011	Medium

Doc Id	Admin_L 2	Doc_Set_Name	F/T	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
803	UDA	Building Footprint -Gampaha, Minuwangoda, Mahara, Attanagalle - UDA Dec. Area	F	Base Map	Structures	Building Type	No	Vector	UDA	1:10000	Urban	2010	Medium
804	UDA	Land Use -Gampaha MC	F	Base Map	Structures	Urban Land Use	No	Vector	UDA	1:10000	Urban	2012	Medium
810	UDA	Building Type -Potuvil	F	Base Map	Structures	Building Type		Vector	UDA	1:5000	Urban	2009	Medium
812	UDA	Building Type -Kalmunai	F	Base Map	Structures	Building Type		Vector	UDA	1:5000	Urban	2009	Medium
814	UDA	Building Type -Batticaloa	F	Base Map	Structures	Building Type		Vector	UDA	1:5000	Urban	2009	Medium
816	UDA	Building Type -Hambantota	F	Base Map	Structures	Building Type		Vector	UDA	1:5000	Urban	2009	Medium
818	UDA	Building Type -Kinniya	F	Base Map	Structures	Building Type		Vector	UDA	1:5000	Urban	2009	Medium
820	UDA	Building Type -Valachchenai	F	Base Map	Structures	Building Type		Vector	UDA	1:5000	Urban	2009	Medium
822	UDA	Building Type -Trincomalee	F	Base Map	Structures	Building Type		Vector	UDA	1:5000	Urban	2009	Medium
824	UDA	Building Type -Matara	F	Base Map	Structures	Building Type		Vector	UDA	1:5000	Urban	2009	Medium
826	UDA	Building Type -Muttur	F	Base Map	Structures	Building Type		Vector	UDA	1:5000	Urban	2009	Medium
828	UDA	Building Footprint -Eatsen & Southern Provinc	F	Base Map	Structures	Building Type		Vector	UDA	1:10000	Urban	2007	Medium
246	CCD	Shorline Mapping and Changes	F	Basemap	Elevation	Coastline	Yes	Shapefile	Lanka Hydraulic Institute		National	Since 2004	High
247	CCD	Coastal Information System	F	Basemap	Elevation	Coastline	Yes	Shapefile	Lanka Hydraulic Institute		National	Since 2004	High
1	SD	1:10,000 topographic database	F	Basemap	Elevation	Topographic/Bathymetric/Contours	yes	Vector	Aerial Photographs, VHR Satellite images	1:10,000	National	since 1999	High
3	SD	1:50,000 topographic database	F	Basemap	Elevation	Topographic/Bathymetric/Contours	yes	Vector	Aerial Photographs, VHR Satellite images	1:50,000	National		High
8	SD	National Geodetic Control Network (Horiznatl/ Vertical)	F	Basemap	Survey Control	Geodetic Control Network	yes	Vector	GPS & Field work	sub centimete	National		High
9	SD	Control Surveys	F	Basemap	Survey Control	Ground Control Surveys	yes	Vector	GPS & Field work	sub centimete	National		High
1123	STB	Factory Elevation and Location-DEM -	F	Basemap	Structures	Building Type		Vector	SL Tea Board	02 m accurac	National	2007	High
11	SD	Sri LankaNational Atlas	F	Basemap	Imagery	Thematic Images of individual sectors	yes	Vector	SD		National		High
1114	CFHC	Ground Control Points	F	Basemap	Places	Ground Control Points		Vector	SFHC	1:1,000	National	2015	High
1125	MyPA	Points of Interest buildings	F	Basemap	Structures	Building Foot Print		CAD			National		Medium
1126	MyPA	Points of Interest buildings	F	Basemap	Structures	Building Foot Print		CAD			National		Medium
37	SD	Hard Copies of Survey Documents	F	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Shapefile			National		Medium
165	NARA	Nautical Charts	F	Basemap	Elevation	Bathymetry	Yes	Shapefiles	Nautical Charts		Regional		High
343	UDA	VECTOR.TO_Terrain_Li	F	Basemap	Elevation	Contour	Yes	Vector	Based on aerial photographs	1:10,000	Regional	2008	Medium
345	UDA	VECTOR.TO_Terrain_Pt	F	Basemap	Elevation	Spot Heights	Yes	Vector	Based on aerial photographs	1:10,000	Regional	2008	Medium
1173	NBRO	DTM/DEM/TIN	F	Basemap	Elevation	DTM/DEM/TIN		Vector	NBRO		Regional	Current	Medium
1172	NBRO	Topographic slope, Elevation Regimes	F	Basemap	Elevation	Topographic/ Bathymtric/Contour		Shapefile	NBRO		District	Current	High
1175	NBRO	Building Foot Prints	F	Basemap	Structures	Building Type	Yes	Vector	Survey collection using satellite/ GPS by NBRO	1:10,000; 1:5	District	Current	High
1182	NBRO	Topographic Slope, Elevation Regimes, Landform, Hill shade	F	Basemap	Elevation	Topographic	Yes	Vector	Survey collection using satellite/ GPS by NBRO	1:10,000; 1:5	District	Current	High
56	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Ambalangoda		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
57	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Anuradhapura		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
58	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Bandarawela		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
59	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Beruwela		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
60	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Chilaw		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
61	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Galle		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
62	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Gampaha		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
63	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Hambantota		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
64	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Horana		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
65	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Kegalle		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
66	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Kuliyapitiya		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
67	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Kurunegala		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
68	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Matale		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
69	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Matara		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
70	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Minuwangoda		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
71	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Moneragala		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
72	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Nawalapitiya		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
73	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Nuwara Eliya		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
74	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Polonnaruwa		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
75	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Puttalama		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium

Doc Id	Admin_L 2	Doc_Set_Name	F/T	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
76	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Ratnapura		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
77	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Trincomalee		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
78	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Wattegama		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
79	SD	Town Area Maps	F	Basemap	Land & Aquatic Use/Cover	Town Area Map-Weligama		DGN/DWG	Aerial Photographs and Surveys	1:5,000	Urban		Medium
685	UDA	Building Type -Beruwala UC	F	BaseMap	Structures	Building Type	No	Vector	UDA	1:2chain	Urban	2002	Medium
1094	LHI	Investigation of Sea Bottom Profile near Galle Marine Drive: Bathymetric Survey	F	Basemap	Elevation	Sea Bottom Profile	Yes	Digital	LHI, CCD		Local	2014	High
1095	LHI	Investigation of Near-Shore Bottom Profile at Muttur in Koddiyar Bay: Bathymetric Survey	F	Basemap	Elevation	Sea Bottom Profile	Yes	Digital	LHI, CCD		Local	2014	High
1101	LHI	Longitudinal Profile and Cross Sectional Survey along Sudu Ganga from Ukuwela to Bowatenna	F	Basemap	Elevation	Longitudinal Profile	Yes	Digital	LHI, MDASL		Local		High
1105	LHI	Galle Port Development – Topographic Survey & Hydrographic Survey	F	Basemap	Elevation	Topographic & Hydrographic Survey	Yes	Digital	LHI		Local	2007	High
32	SD	Stereo plotted 3D Data	F	Basemap	Elevation	3D		Vector			Local		High
34	SD	Terrain Data_Digital Elevation Model	F	Basemap	Elevation	Digital Elevation Model		Vector			Local		Medium
35	SD	Terrain Data_Digital Elevation Model	F	Basemap	Elevation	Digital Elevation Model		Vector			Local		Medium
1197	UTDP	UTDA_Buiding Type Data	F	Basemap	Structures	Building Type	Yes	Vector	Satellite based extracted data having GPS coordinates		Local	2014	Medium
1116	CFHC	Digital Elevation Model	F	Basemap	Elevation	DEM		Spectral data	SFHC	1:1,000	Local	2016	Medium
1115	CFHC	Mean Sea Level	F	Basemap	Survey Control	Mean Sea Level		Vector	SFHC	1:1,000	Local	2016	Medium
1117	CFHC	Buildings & Breakwaters	F	Basemap	Structures	Buildings/ Break Water		Vector	SFHC	1:1,000	Local	2016	Medium
444	ID	Embankments	F	Basemap	Structures	Properties		Shapefile	Surveys and other sources of data base by Irrigation Department				
308	CEA	Industrial Database	F	Basemap	Structures	Building Type	Yes	Shapefile	CEA				
7	SD	National Geodetic Control	F	Basemap	Survey Control	Geodetic Control Points		Vector					
277	CCD	Bathymetry and Shore Profile	F	Basemap	Elevation	Bathymetry		Vector	CCD			2016	
1053	MyLG&PC	Assessment Registers	F	Basemap/ Area	Structures/ Statistical Areas	Building Type/ Assessed Properties	Yes	Vector	Each Municipal Councils is responsible to maintain and update their assessed properties located within respective Municipal Council		Local		High
1054	MyLG&PC	Assessment Registers	F	Basemap/ Area	Structures/ Statistical Areas	Building Type/ Assessed Properties	Yes	Vector	Each Urban Councils is responsible to maintain and update their assessed properties located within respective Urban Council		Local		High
1055	MyLG&PC	Assessment Registers	F	Basemap/ Area	Structures/ Statistical Areas	Building Type/ Assessed Properties	Yes	Vector	Each Pradeshiya Sabha is responsible to maintain and update their assessed properties located within respective Pradeshiya Sabha		Local		High
328	UDA	VECTOR.LU_Physical_block	F	Basemaps	Structures	Building Foot Print	Yes	Vector	QuickBIRD and SPOT 5 & Field work	1:10,000	Regional	2008	High
329	UDA	VECTOR.HO_Building_5k	F	Basemaps	Structures	Building Type	Yes	Vector	QuickBIRD and SPOT 5 & Field work	1:10,000	Regional	2008	High
339	UDA	VECTOR.HO_Building_10k	F	Basemaps	Structures	Building Type	Yes	Vector	Digitalized from satellite images (geodatabase)	1:10,000	Regional	2008	Medium
347	UDA	VECTOR.LA_Toponym	F	Basemaps	Places	Point of Interest	Yes	Vector	Digitized from 1/50 000 maps (coverage)	1:50,000	Regional	2008	Medium
1123	RDA	Road Roughness	F	Transportation	Land Transportation	Road Condition		Vector	RDA		National		High
1124	RDA	Profile of the Road	F	Transportation	Land Transportation	Road Condition		Vector	RDA		National		High
1125	RDA	Road Features	F	Transportation	Land Transportation	Road Condition		Vector	RDA		National		High
1126	RDA	As built drawings	F	Transportation	Land Transportation			Vector	RDA		National		High
1106	RDA	National Road Network	F	Transportation	Land Transportation	National Road Network	Yes	Shapefile	RDA	1:50,000	National		Medium
1107	RDA	Expressway Network	F	Transportation	Land Transportation	National Road Network	Yes	Shapefile	RDA	1:50,000	National		Medium
1108	RDA	Road Network Under Rehabilitation	F	Transportation	Land Transportation	National Road Network	Yes	Shapefile	RDA	1:50,000	National	2015	Medium
331	UDA	VECTOR.TR_Road_segment	F	Transportation	Land Transportation	Roads	Yes	Vector	QuickBIRD and SPOT 5 & Field work	1:10,000	Regional	2008	High
332	UDA	VECTOR.TR_Railway	F	Transportation	Land Transportation	Railway Line	Yes	Vector	QuickBIRD and SPOT 5 & Field work	1:10,000	Regional	2008	High
335	UDA	VECTOR.TR_Junction	F	Transportation	Land Transportation	Roads/Railway	Yes	Vector	QuickBIRD and SPOT 5 & Field work	1:10,000	Regional	2008	High

Doc Id	Admin_L 2	Doc_Set_Name	F/T	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
1046	MyLG&PC	Provincial Road Network	F	Transportation	Land Transportation	Provincial Roads_C Class	No	Vector	Provincial Road Development Departments/ Authorities are responsible to managed and update the respective Provincial level C Class Roads	1:50,000	Regional		Medium
1047	MyLG&PC	Provincial Road Network	F	Transportation	Land Transportation	Provincial Roads_D Class	No	Vector	Provincial Road Development Departments/ Authorities are responsible to managed and update the respective Provincial level D Class Roads	1:50,000	Regional		Medium
342	UDA	VECTOR.TR_Transport_Li	F	Transportation	Land Transportation	Roads	Yes	Vector	Digitalized from satellite images (geodatabase)	1:10,000	Regional	2008	Medium
348	UDA	VECTOR.TR_Transport_Pt	F	Transportation	Land Transportation	Roads	Yes	Vector	Digitalized from satellite images (geodatabase)	1:10,000	Regional	2008	Medium
374	UDA	Road Nework_Local Authority	F	Transportation	Land Transportation	Roads	Yes	Vector		1:5,000	Urban	2007	Medium
1049	MyLG&PC	Local Authority Roads	F	Transportation	Land Transportation	Local Authoity Roads	No	Vector	Each Municipal Councils is responsible to managed and update the respective Municipal Council Roads	1:50,000 / 1:10,000	Local		Medium
1050	MyLG&PC	Local Authority Roads	F	Transportation	Land Transportation	Local Authoity Roads	No	Vector	Each Urban Councils is responsible to managed and update the respective Urban Council Roads	1:50,000 / 1:10,000	Local		Medium
1051	MyLG&PC	Local Authority Roads	F	Transportation	Land Transportation	Local Authoity Roads	No	Vector	Each Pradeshiya Sabhas isresponsible to managed and update the respective Pradeshiya Sabha Roads	1:50,000 / 1:10,000	Local		Medium
573	IWMI	Water Asset Management	F	Utilities	Potable water	Water Assets	Yes	Shapefile	IWMI		National	Recent	High
636	IWMI	Document Hub- Water Supply, Waste Water & Sanitation	F	Utilities	Water supply, sanitation	water distribution	Yes	Shapefile	IWMI		National	Recent	Medium
637	IWMI	Document Hub- Water & Energy	F	Utilities	Electric Facilities	Energy	Yes	Shapefile	IWMI		National	Recent	Medium
642	IWMI	Document Hub- Irrigation Projects	F	Utilities	Potable water	Irrigation Projects	Yes	Shapefile	IWMI		National	Recent	Medium
643	IWMI	Document Hub- Village Irrigation Systems in Sri Lanka	F	Utilities	Potable water	Village Irrigation Systems	Yes	Shapefile	IWMI		National	Recent	Medium
645	IWMI	Document Hub- Irrigation Investment Projects	F	Utilities	Potable water	Irrigation investmet Projects	Yes	Shapefile	IWMI		National	Recent	Medium
333	UDA	VECTOR.UT_Powerline	F	Utilities	Electric Facilities	Electrical Distribution Line	Yes	Vector	GPS & Field work	1:10,000	Regional	2008	High
334	UDA	VECTOR.UT_Power_station	F	Utilities	Electric Facilities	Power Stations	Yes	Vector	GPS & Field work	1:10,000	Regional	2008	High
660	IWMI	Identification of Agro-Wells using High Resolution Satellite Images- Jaffna	F	Utilities	Potable water	Agro Wells	Yes	Shapefile	High Resolution Satellite images		Regional		Medium
344	UDA	VECTOR.UT_Utility_Li	F	Utilities	Electric Facilities	Electrical Distribution Line	Yes	Vector	Digitalized from satellite images (geodatabase)	1:10,000	Regional	2008	Medium
346	UDA	VECTOR.HY_Hydro_Pt	F	Utilities	Surficial Hydrology	Structures	Yes	Vector	Digitalized from satellite images (geodatabase)	1:10,000	Regional	2008	Medium
349	UDA	VECTOR.UT_Utility_Pt	F	Utilities	Surficial Hydrology	Structures	Yes	Vector	Digitalized from satellite images (geodatabase)	1:10,000	Regional	2008	Medium
1120	NWS&DB	Water Utility	F	Utilities	Portable Water Facilities	Water Pipeline and Storage		Vector	NWS&DB		Local		High
1121	NWS&DB	Sewar Utility	F	Utilities	Sanitary Sewer Facilities	Sewer Utility Network		Vector	NWS&DB		Local		High
1122	NWS&DB	Storm Water Utility	F	Utilities	Storm Water Sewer Facilities	Stormwater		Vecxtor			Local		High
1052	MyLG&PC	Trade Licenses Registers	F	Utilities	Electric/ Water/Sewer/ Stormwater/ Waste Management	Distribution, provision and maintenance of Electric/ Water/Sewer/ Stormwater/ Waste Management facilities	No	Vector	Distribution, provision and maintenance of Electric/ Water/Sewer/ Stormwater/ Waste Management facilities	1:50,000 / 1:10,000	Local		Medium

Urban Development Authority and Survey Department produced major part of fundamental vector data of which administrative boundaries and structure were dominant in UDA and Town Maps were dominant in SD as indicated in Table 4.5.

Table 4. 5 Organizations Producing Spatial Data Themes and Geo-Coverage of Fundamental Vector Data

	Geo_Coverage						Spatial Data Theme													
Organization	National	Regional	District	Urban	Local	Unspecified	Administrative & Political Boundary	Structures	Cadastral	Road Transport	Plot Bounary	Places	Elevation	Utilities_Water	Survey Control	Town maps	Thematic Images	Utilities_Electricty	Scanned Basemaps	DEM/DTM	**Total**
1. UDA	13	18	1	31	0	0	14	34	1	6	0	1	2	2	0	0	0	3	0	0	**63**
2. NARA	2	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	**3**
3. NBRO	1	0	3	0	0	0	1	1	0	0	0	0	2	0	0	0	0	0	0	0	**4**
4. SD	2	0	0	24	4	1	0	0	0	0	1	0	3	0	0	25	1	0	1	0	**31**
5. CCD	6	0	0	0	0	1	0	0	0	0	0	0	4	0	3	0	0	0	0	0	**7**
6. My PC&LG	0	3	0	0	3	3	0	3	0	2	4	0	0	0	0	0	0	0	0	0	**9**
7. STB	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
8. CFHC	1	0	0	0	3	0	0	2	1	0	0	0	1	0	0	0	0	0	0	0	**4**
9. My PA	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
10.LHI	0	0	0	0	4	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	**4**
11.UTDP,SJP	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
12.ID	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
13.CEA	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
14.RDA	7	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	**7**
15. IWMI	0	0	0	0	6	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	**6**
16.NWS&DB	0	0	1	0	3	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	**4**
Total	**35**	**22**	**5**	**55**	**24**	**7**	**16**	**46**	**2**	**15**	**5**	**1**	**17**	**12**	**3**	**25**	**1**	**3**	**1**	**1**	**148**

Source: Data Inventory, NSDI Baseline Study, 2016

Thematic Vector data represents all the other types of vector data produced by the organizations as indicated in Table 4.6.

Table 4. 6 NSDI Baseline Study _ Spatial Data Inventory _Thematic Vector Data

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
248	CCD	Special Area Management Plans (SAMP)	Areas	Special Management Areas	Coastal Management Zones	Yes	Shapefile	Lanka Hydraulic Institute		National	Since 2004	High
603	IWMI	Tourism sector vulnerability with flood expoure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
616	IWMI	Housing and urban development sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
1058	AD	Protected Areas	Areas	Special Management Areas	Protected Areas	Yes	Vector			National	2016	High
25	SD	Land Information Database	Areas	Cadastral	Plot Boundaries	yes	Vector	The LIS has been sourced with the field surveyed data under the Land Title Registration Project which proceeds as "Bimsaviya".		National		High
484	DA	Land and Crop Management Data	Areas	Special Management Areas			Vector			National		High
486	DA	Watershed based land database	Areas	Special Management Areas	Watershed Areas		Vector	DA		National		High
565	MyF&ARD	Fish Landing Points Map	Areas	Service Areas	Fish Landing Points	Yes	Vector	Compiled by CCD on information provided by the Ministry indicating the location of fish landing sites of coastal districts with landing site name and code		National		High
313	CEA	Industrial Directory-2014	Areas	Statistical Areas	Industry	Yes	Vector	Detailed GPS/Remote Sensing/Field Survey data related to all the industrial locations of the country	1:5,000	National	Ongoing	High
604	IWMI	Drinking water sctor vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
605	IWMI	Transport vulnerability with sea level rise	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
606	IWMI	Drinking water sctor vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
697	IWMI	Transport sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
698	IWMI	Drinking water sector vulnerability with sea level rise	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
609	IWMI	Housing and urban development sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
610	IWMI	Plantation sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
611	IWMI	Biodiversity sector vulnerability	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
612	IWMI	Paddy sector vulnerability with drouht exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
613	IWMI	Inland and brackish water fishery sector vulnerability with sea level rise	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
614	IWMI	Housing and urban development sector vulnerability with land slide exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
617	IWMI	Plantation sector vulnerability with landslide exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
618	IWMI	Plantation sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
619	IWMI	Paddy sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	High
1151	NLDB	Location of Farms	Areas	Statistical Areas	Location of Farms		Digital-Vector			National	2016	Medium

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
649	IWMI	Global Irrigated Area Map	Areas	Special Management Areas	Irrigated Areas	Yes	Shapefile	AVHRA-10km NDVI Data, SPOT 1 km, MODIS 500m, GTOPO 30- 1km & CRU Precipitation & Tempersature data	10km	National	2000	Medium
650	IWMI	Global Rainfed Area Map	Areas	Special Management Areas	Rainfed Areas	Yes	Shapefile	AVHRA-10km NDVI Data, SPOT 1 km, MODIS 500m, GTOPO 30- 1km & CRU Precipitation & Tempersature data	10km	National	2000	Medium
652	IWMI	Irrigated Area Map Asia (2000-2010)	Areas	Special Management Areas	Irrigated Areas	Yes	Shapefile	16 day MODIS 250m resoution data	500m	National	2000- 2015	Medium
1162	DWLC	Map of Protected Areas of Sri Lanka	Areas	Special Management Areas	Protected Areas Network Zone	Yes	Shapefile	DWLC	1:50,000/	National	2005	Medium
615	IWMI	livestock sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	Medium
620	IWMI	Marine fishery sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	Medium
621	IWMI	Inland and brackish water fishery sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	Medium
622	IWMI	Livestock sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	Medium
623	IWMI	Livestock sector vulnerabilityw with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	Medium
624	IWMI	Tourism sector vulnerability with sea level rise expoure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	Medium
625	IWMI	Transport sector vulnerability with landslide exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	Medium
626	IWMI	Irrigation sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	Medium
627	IWMI	Paddy sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	Medium
628	IWMI	Vulnerability to Dengue	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Shapefile	IWMI		National	Recent	Medium
1059	AD	Protected Monuments	Areas	Special Management Areas	Protected Monuments	Yes	Vector			National	2011	Medium
423	NPPD	Agro Ecological and Watersheds	Areas	Special Management Areas	Agro-ecological regions		Vector	DAD and SD	1:1,000,00	National	2011	Medium
424	DAD	Watersheds and Sub watersheds	Areas	Special Management Areas	Major and Minor Watersheds		Vector	DAD and SD	1:1,000,00	National	2011	Medium
425	DAD	Minor Irrigation Schemes	Areas	Special Management Areas	Irrigation schemes		Vector	DAD and SD	1:50,000	National		Medium
426	DAD	Medium and Majof Irrigation Schemes	Areas	Special Management Areas	Medium and Major Irrigation Schemes		Vector	DAD and SD	1:50,000	National		Medium
427	DAD	Working Irrigation Schemes	Areas	Special Management Areas	Working Irrigation Schemes		Vector	DAD and SD	1:50,000	National		Medium
432	DAD	Agrarian Services Areas over Agro Ecological Regions of Sri Lanka	Areas	Special Management Areas	Ecological Regions		Vector	DAD and SD	1:50,000	National	2011	Medium
674	NBRO	Landslide Hazard Zonation Maps 1:50	Areas	Special Management Areas	Land Slide Hazard Zones	Yes	Vector	ABMP maps of 1 : 50,0 00 scale published by the Survey Department use as Base maps for hazard mapping , and topographic details from these maps were adoptedmutatis mutandis.Ma pping based on ground surveys,maps of Solid Rock Geology of scale 1: 100 000 pu lished by the Geological Survey and Mines Bureau, maps of Slope Class of 1 : 63,360 scale publish ed by the Land Use Policy Planning Department and appropriate field checks.	1:50,000	National	current	Medium
675	NBRO	Landslide Hazard Zonation Maps 1:10	Areas	Special Management Areas	Land Slide Hazard Zones	Yes	Vector	1 : 10,0 00 scale topographic maps published by the Survey Department use as Base maps for hazard mapping.Mapping based on ground surveys and other techniques	1:10,000	National	current	Medium
288	CEA	Environmental Protected Area Networ	Areas	Special Management Areas	Environmental Protected Areas		Shapefile	CEA		National	2001	Medium
289	CEA	Environmental Sensitive Areas	Areas	Special Management Areas	Environmental Sensistive Areas		Shapefile	CEA		National	2001	Medium

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
312	CEA	Environmental Sensitive Areas	Areas	Special Management Areas	Environmental Sensitive Areas	Yes	Vector	1:50,000 topographic data and other siurces	1:50,000	National	2001	Medium
478	DA	Agro Ecological Regions of Sri Lanka	Areas	Special Management Areas	Agro Ecological Zones		Vector		1:500,000	National		Medium
383	NPPD	National Physical Plan	Areas	Planning Areas	Urban Areas		Shapefile	Urban Development Authority	1:100,000	National	2011	Low
387	NPPD	National Physical Plan	Areas	Planning Areas	Protected Area Network		Vector	NPPD	1:2000000	National	2011	Low
395	NPPD	National Physical Plan	Areas	Planning Areas	Protected Highways		Vector	Sri Lanka Tourism Development Authority		National	2011	Low
396	NPPD	National Physical Plan	Areas	Special Management Areas	Potential Areas_inland fisheries		Vector	NARA		National	2011	Low
397	NPPD	National Physical Plan	Areas	Planning Areas	Protected Area Network		Vector	CCD		National	2011	Low
398	NPPD	National Physical Plan	Areas	Planning Areas	Protected Area Network		Vector	DWLC		National	2011	Low
399	NPPD	National Physical Plan	Areas	Planning Areas	Protected Area Network		Vector	NARA		National	2011	Low
378	NPPD	National Physical Plan	Areas	Planning Areas	National Physical Plan		Vector			National	2011	Low
401	NPPD	Environmental Fragile Area Plan	Areas	Planning Areas	Central Fragile Area		Vector	NPPD		National	2011	Low
465	DAP&H	Cattle Population Distribution	Areas	Statistical Areas	Cattle Population Distribution		Vector	DAPH Survey		National		Low
466	DAP&H	Chicken Population Distribution	Areas	Statistical Areas	Chicken Population Distribution		Vector	DAPH Survey		National		Low
467	DAP&H	Goat/ Sheep Population Distribution	Areas	Statistical Areas	Goat/ Sheep Population Distribution		Vector	DAPH Survey		National		Low
468	DAP&H	Livestock Population Distribution	Areas	Statistical Areas	Livestock Population Distribution		Vector	DAPH Survey		National		Low
469	DAP&H	Swine Population Distribution	Areas	Statistical Areas	Swine Population Distribution		Vector	DAPH Survey		National		Low
470	DAP&H	BuffaloPopulation Distribution	Areas	Statistical Areas	BuffaloPopulation Distribution		Vector	DAPH Survey		National		Low
471	DAP&H	Outbreak Location & Diseases	Areas	Planning Areas	Outbreak Locations		Vector	DAPH Survey		National	2016	Low
472	DAP&H	Animal Diseases Surveilance Location	Areas	Planning Areas	Surveilence Locations		Vector	DAPH Survey		National	2016	Low
473	DAP&H	HPA1 Hot Spots Diseases	Areas	Planning Areas	Diseases Hot Spots		Vector	DAPH Survey		National	2016	Low
124	LUPPD	Regional Plans	Areas	Planning Areas	Regional Plans		Vector	LUPPD	1:10,000	Regional	Recent	Hgh
125	LUPPD	Special Development Area Plans	Areas	Planning Areas	Special Development Area Plans		Vector	LUPPD	1:10,000	Regional	Recent	Hgh
1131	CRI	Classification of Coconut Lands in Sou	Areas	Special Management Areas	Classification of Coconut Lands		Shape file	CRI		Regional		High
1133	CRI	Land Suitability for Coconut Cultvation	Areas	Special Management Areas	Land Suitability for Coconut Cultivation		Shape file	CRI		Regional		High
442	DMC	Disaster Preparedness Plans	Areas	Planning Areas	Disaster Preparedness		Vector	SD,DMC, Satellite, UAV, Met Dept, Irrigarion Department, etc		Regional	2010-2016	High
489	TRI	Sloping Agricultural Land Technology (SALT) in tea	Areas	Land & Abiotic Uze/Land Cov	Tea plantation Areas		Vector	TRI		Regional		High
490	TRI	Integrated weed management systems in tea	Areas	Land & Abiotic Uze/Land Cov	Tea plantation _Weed Management		Vector	TRI		Regional		High
294	CEA	Wild Life Conservation Areas	Areas	Special Management Areas	Wild Life		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
295	CEA	Wild Life Conservation Areas	Areas	Special Management Areas	Wild Life		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
296	CEA	Existing Forest Areas	Areas	Special Management Areas	Forest		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
297	CEA	Existing Forest Areas	Areas	Special Management Areas	Forest		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
298	CEA	Mineral Resources	Areas	Special Management Areas	Mineral Resources Areas		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
299	CEA	Mineral Resources	Areas	Special Management Areas	Mineral Resources Areas		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
307	CEA	Vulnerability to Natural Disasters	Areas	Special Management Areas	Vulnerability Zones		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
1171	NBRO	Landslide hazard zonation mapping programme	Areas	Special Management Areas	Landslides Hazard Zonation		Shapefile	NBRO	1:10,000	District	Current	High
532	MyAD&AS	Declared Soil Conservation Area	Areas	Special Management Areas	Soil Conservation Areas	Yes	Vector	NRMC		District	Recent	High
1177	NBRO	Human Settlement Data	Areas	Statiscal Areas	Housing and Population	Yes	Vector	Survey collection using satellite/ GPS by NBRO	1:10,000;	District	Current	High
1069	WRB	Pilot Areas Identified under Dam Safety Water Resources PlanningProject	Areas	Planning Area	Pilot Areas		Shapefile			Divisional		High
1170	NBRO	Landslide hazard zonation mapping programme	Areas	Special Management Areas	Landslides Hazard Zonation		Shapefile	NBRO	1:50,000	District	Current	Medium
791	UDA	Urban Centres- Sri Lanka	Areas	Boundaries of Urban Centres	Urban Land Use	No	Vector	UDA	1:50000	Urban	2000	Medium
126	LUPPD	Village Development Plans	Areas	Planning Areas	Village Development Plans		Vector	LUPPD	1:10,000	Local	Recent	Hgh
1198	UTDP	University Towsnhip Development Are	Areas	Planning Area	Special Development Areas	Yes	Vector	Satellite based extracted data	1:5,000	Local	2015	Medium

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
1199	UTDP	Development Zones	Areas	Special Management Areas	Development Zones	Yes	Vector	Defined by Proposed University Township Development Master Plan	1:10,000	Local	2015	Medium
1111	UTDP	UTDA_Electrical Distribution Pattern	Areas	Service Areas	Electricity distribution	Yes	Vector	Ground survey with GPS readings developed by CA	1:1,000	Local	2015	Medium
1112	UTDP	UTDA_Warer Distribution Pattern	Areas	Service Areas	Water distribution	Yes	Vector	Ground survey with GPS readings developed by CA	1:1,000	Local	2015	Medium
1113	UTDP	UTDA_Telephone Cable/Data Cables	Areas	Service Areas	Telephone distribution	Yes	Vector	Ground survey with GPS readings developed by CA	1:1,000	Local	2015	Medium
1196	MASL	Emergency Action Plans	Areas	Planning Areas	Emergency Action Plans		shapefile					
309	CEA	Comprehensive geospatial environmental resources database of Sri Lanka	Areas	Planning Areas	Environmental Resources	Yes	Shapefile	CEA				
455	ID	Land Use Mapping	Areas	Statistical Areas	Sustainability of Land		Shapefile	Surveys and other sources of data base by Irrigation Department.				
457	ID	Land Use Mapping	Areas	Statistical Areas	Laand Classification by Soil		Shapefile	Surveys and other sources of data base by Irrigation Department.				
458	ID	Land Use Mapping	Areas	Statistical Areas	Land Suitability		Shapefile	Surveys and other sources of data base by Irrigation Department.				
459	ID	Hazard of Salinity	Areas	Statistical Areas	Hazard Zones		Shapefile	Surveys and other sources of data base by Irrigation Department.				
314	CEA	Environmental Protection Area Boundary	Areas	Planning Areas	Environment Protection Area		Vector	EIA reports, ISEA Reports, CEA				
464	ID	Project areas	Areas	Planning Areas	Project Areas		Vector	DAPH Survey				
330	UDA	VECTOR.Hy_Stream	Environment	Surficial Hydrology	Rivers & Streama	Yes	Vector	QuickBIRD and SPOT 5 & Field work	1:10,000	Regional	2008	High
375	UDA	Urban Land Use Maps	Environment	Land & Aquatic Use/Cover	Urban Land Use			Land use data extracted by vectorization of VHR Quick Bird Images and GPS survey		Regional	2007	Medium
278	CCD	Coastal Land Use Maps	Environment	Land & Abiotic Uze/Land Cov	Coastal land Use		Vector				2016	
140	MD	Total annual rainfall deficit	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
141	MD	Highest Total Consecutive Deficit	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
142	MD	Total Number of Months with Deficit	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
143	MD	High Consecutive number of months w	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
144	MD	Total amount deficit over excess	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
145	MD	Higher deficit within a month	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
146	MD	Number of months per year with rainfall less than 30 mm	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
147	MD	Highest number of consecutive months where rainfall is less than 30mm	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
148	MD	Average rainfall of months where rainfall is less than 30 mm	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
149	MD	Lowest average rainfall where rainfall is less than 30 mm in consecutive months	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
150	MD	Total deficit rainfall less than 30 mm	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
151	MD	Mean annual daily deficit	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
152	MD	Mean annual non rainy days	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
153	MD	Mean number of days per year where rainfall is less than or equal 1 mm	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
154	MD	Draough Hazard Map of Sri Lanka	Environmental	Air & Climate	Metereology	Yes	Shapefile	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
157	MD	Average Thunder frequency in months January - December, Sri Lanka	Environmental	Air & Climate	Metereology	Yes	Shapefile	Average Thunder frequency in months January - December, Sri Lanka		National		High
158	MD	Average Annual Thunder Frequency in Sri Lanka	Environmental	Air & Climate	Metereology	Yes	Shapefile	Average Annual Thunder Frequency in Sri Lanka		National		High
159	MD	Tropical Cyclone	Environmental	Air & Climate	Metereology	Yes	Shapefile	Tropical Cyclone		National		High
160	MD	Wind Hazard Map	Environmental	Air & Climate	Metereology	Yes	Shapefile	Wind Hazard Map		National		High
161	MD	Maximum Sustained wind Speed	Environmental	Air & Climate	Metereology	Yes	Shapefile	Maximum Sustained wind Speed		National		High
249	CCD	Coastal Habitat Maps	Environmental	Biodiversity	HabitatTypes	Yes	Shapefile	Lanka Hydraulic Institute		National	Since 2004	High
251	CCD	Coastal Hazard maps by Tsunami	Environmental	Marine Abiotic	Tsunami	Yes	Shapefile	Lanka Hydraulic Institute		National	Since 2004	High
252	CCD	Coastal Hazard Maps by storm Surge	Environmental	Surficial Hydrology	Coastal Storm Surge	Yes	Shapefile	Lanka Hydraulic Institute		National	Since 2004	High
253	CCD	Coastal Hazard Maps by Coastal Eros	Environmental	Soils	Coastal erosion	Yes	Shapefile	Lanka Hydraulic Institute		National	Since 2004	High
254	CCD	Coastal Hazard Maps by Sea Level R	Environmental	Surficial Hydrology	Sea level rise	Yes	Shapefile	Lanka Hydraulic Institute		National	Since 2004	High
572	IWMI	**Understanding the physical setting of a water resources system**; **Water availability**; **Water demand and use**; **Water quality**; **Governance and management**; **Climate change**	Environmental	Surficial Hydrology	Water Information System	Yes	Shapefile	IWMI		National	Recent	High
574	IWMI	Ground Water	Environmental	Surficial Hydrology	Ground water	Yes	Shapefile	IWMI		National	Recent	High
575	IWMI	Runoff	Environmental	Subsurface Hydrology	Runoff water	Yes	Shapefile	IWMI		National	Recent	High
576	IWMI	Evaporation	Environmental	Air & Climate	Evaporation	Yes	Shapefile	IWMI		National	Recent	High
577	IWMI	River Basin & Catchment Area	Environmental	Surficial Hydrology	River Basin & Catchment Area	Yes	Shapefile	IWMI		National	Recent	High
578	IWMI	Rainfall	Environmental	Air & Climate	Rainfall	Yes	Shapefile	IWMI		National	Recent	High
578	IWMI	Tank	Environmental	Land & Aquatic Use/Cover	Water Bodies	Yes	Shapefile	IWMI		National	Recent	High
580	IWMI	Water Quality	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
581	IWMI	Governance	Environmental	Surface Hydrology	Irrigation schemes	Yes	Shapefile	IWMI		National	Recent	High
582	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
583	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
584	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
585	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
586	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
587	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
588	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
589	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
590	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
591	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
592	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
593	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
594	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
595	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
596	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
597	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
598	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
599	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
600	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
601	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High

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602	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Shapefile	IWMI		National	Recent	High
1056	AD	Location of Archaeology Sites and Mo	Environmental	Cultural Resources	Archaeological Sites	Yes	Vector	GPS readings of locations		National	2016	High
1057	AD	Designated Cultural Heritage	Environmental	Cultural Resources	Cultural Heritage Areas	Yes	Vector			National	2011	High
5	SD	1:10,000 topographic database	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	yes	Vector	Aerial Photographs, VHR Satellite images	1:10,000	National		High
310	CEA	Environment Resource Information System	Environmental	Biodiversity/ Cultural Resources/ Surficial Hydrology/Mineral Resources	Environmental Resources	Yes	Vector	Detailed GPS/Remote Sensing/Field Survey data related to all the environmetal resources of the country	1:5,000	National	Ongoing	High
481	DA	Geographical data for integrated land and water resources management	Environmental	Land & Aquatic Use/Cover	Water Resources		Vector			National		High
530	MyAD&AS	Agro Ecological Zone Map	Environmental	Air & Climate	Metereological Data	Yes	Vector	NRMC		National	Recent	High
536	MyAD&AS	Areas and mapping Climate Change Vulnerability	Environmental	Air & Climate	Climate Change	Yes	Vector	NRMC		National	Recent	High
537	MyAD&AS	Drought Assessment and Drought Proe Area Mapping	Environmental	Air & Climate	Drought Prone Area	Yes	Vector	NRMC		National	Recent	High
541	MyAD&AS	Mobile Application	Environmental	Land & Aquatic Use/Cover		Yes	Vector	NRMC		National	Recent	High
642	MyAD&AS	Rice Area Mapping	Environmental	Land & Aquatic Use/Cover	Agricultural Land Use	Yes	Vector	NRMC		National	Recent	High
543	MyAD&AS	Crop Suitability Mapping for Rice	Environmental	Land & Aquatic Use/Cover	Agricultural Land Use	Yes	Vector	NRMC		National	Recent	High
531	MyAD&AS	Mapping Paddy Lands Distribution for Crop Forecasting	Environmental	Land & Aquatic Use/Cover	Agricultural Land Use	Yes	Vector	NRMC		National	Recent	High
540	MyAD&AS	Disaster Crop Damage Estimate	Environmental	Land & Aquatic Use/Cover	Crop Damage	Yes	Vector	NRMC		National	Recent	High
547	NRMC	Seeding and Planting Material MIS	Environmental	Land & Aquatic Use/Cover	Agricultural Land Use		Vector	Department of Agriculture		National	Recent	High
315	CEA	Pollution Database-Pollution Source Inventory	Environmental	Waste	Pollution Source	Yes	Vector	EIA reports, ISEA Reports, CEA other studies	1:50,000	National	Ongoing	High
1189	NBRO	Landslide Early warning	Environmental	Air & Climate	Early Warning Towers		Vector	DMC/MD/My of DM/CEA		National	since 2007	High
110	GSMB	Geological Map	Environmental	Geology	Surficial Geology	Yes	Shapefile	GSMB	1:100,000	National		Medium
263	CCD	Predicted Sea level Rise 2025 in Sri L	Environmental	Marine Abiotic	Sea level rise		Shapefile	CCD	1:50,000	National	2016	Medium
264	CCD	Predicted Sea level Rise 2050 in Sri L	Environmental	Marine Abiotic	Sea level rise		Shapefile	CCD	1:50,000	National	2016	Medium
265	CCD	Predicted Sea level Rise 2075 in Sri L	Environmental	Marine Abiotic	Sea level rise		Shapefile	CCD	1:50,000	National	2016	Medium
266	CCD	Predicted Sea level Rise 2100 in Sri L	Environmental	Marine Abiotic	Sea level rise		Shapefile	CCD	1:50,000	National	2016	Medium
267	CCD	Distribution of Key areas and Singular Case in 1986	Environmental	Marine Abiotic	Sea level rise		Shapefile	CCD	1:50,000	National	1986	Medium
268	CCD	Coastal Changes in and around the country for 1961-1986	Environmental	Geomorphology	Coastal Change		Shapefile	CCD	1:50,000	National	1986	Medium
283	DWLC	Grass Lands of Sri Lanka	Environmental	Land & Abiotic Uze/Land Cover			Shapefile	FD		National		Medium
651	IWMI	Global Map of Land Use/ Land Cover	Environmental	Land & Abiotic Uze/Land Cov	Land Use Land Cover	Yes	Shapefile	AVHRA-10km NDVI Data, SPOT 1 km, MODIS 500m, GTOPO 30- 1km & CRU Precipitation & Tempersature data	10km	National	2000	Medium
281	FD	Sri Lanka Forest Map	Environmental	Biodiversity	Vegetation		Shapefile	FD		National		Medium
1152	DWLC	List of Sanctuaries of Sri Lanka	Environmental	Biodiversity	Habitat Type	Yes	Shapefile	DWLC		National	2005	Medium
1153	DWLC	Map of Sanctuaries in Sri Lanka	Environmental	Biodiversity	Habitat Type	Yes	Shapefile	DWLC	1:50,000/	National	2005	Medium
1154	DWLC	List of Strict Nature Reserves of Sri La	Environmental	Biodiversity	Habitat Type	Yes	Shapefile	DWLC	1:50,000/	National	2005	Medium
1155	DWLC	Map of Strict Nature Reserves in Sri L	Environmental	Biodiversity	Habitat Type	Yes	Shapefile	DWLC	1:50,000/	National	2005	Medium
1156	DWLC	List of Elephant Corridor of Sri Lanka	Environmental	Biodiversity	Habitat Type	Yes	Shapefile	DWLC	1:50,000/	National	2005	Medium
1157	DWLC	Map of Elephant Corridor of Sri Lanka	Environmental	Biodiversity	Habitat Type	Yes	Shapefile	DWLC	1:50,000/	National	2005	Medium
1158	DWLC	List of Nature Reserves of Sri Lanka	Environmental	Biodiversity	Habitat Type	Yes	Shapefile	DWLC	1:50,000/	National	2005	Medium
1159	DWLC	Map of Nature Reserves in Sri Lanka	Environmental	Biodiversity	Habitat Type	Yes	Shapefile	DWLC	1:50,000/	National	2005	Medium
1160	DWLC	List of National Parks of Sri Lanka	Environmental	Biodiversity	Habitat Type	Yes	Shapefile	DWLC	1:50,000/	National	2005	Medium
1161	DWLC	Map of National Parks in Sri Lanka	Environmental	Biodiversity	Habitat Type	Yes	Shapefile	DWLC	1:50,000/	National	2005	Medium
629	IWMI	Document Hub- Agriculture	Environmental	Land & Aquatic Use/Cover	Agricultural Land Use	Yes	Shapefile	IWMI		National	Recent	Medium

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630	IWMI	Document Hub - Climate Change and Disaster Management	Environmental	Air & Climate	Climate Change	Yes	Shapefile	IWMI		National	Recent	Medium
631	IWMI	Document Hub- Environment and Eco System Aspects	Environmental	Biodiversity	Eco Systems	Yes	Shapefile	IWMI		National	Recent	Medium
632	IWMI	Document Hub- Geology and Geo Informatics	Environmental	Geology	Geo Informatics	Yes	Shapefile	IWMI		National	Recent	Medium
633	IWMI	Document Hub-Water Borne Diseases and Health Problems	Environmental			Yes	Shapefile	IWMI		National	Recent	Medium
634	IWMI	Document Hub- Hydrology, Hydrodynamics and Irrigation Project	Environmental	surficial hydrology	ground water	Yes	Shapefile	IWMI		National	Recent	Medium
636	IWMI	Document Hub- Water Quality and Ground Water	Environmental	Subsurface Hydrology	Water Quality	Yes	Shapefile	IWMI		National	Recent	Medium
638	IWMI	Document Hub- Water & Food	Environmental	Surficial hydrology	Water	Yes	Shapefile	IWMI		National	Recent	Medium
639	IWMI	Document Hub -Water & Gender	Environmental	Surficial hydrology	Water	Yes	Shapefile	IWMI		National	Recent	Medium
640	IWMI	Document Hub- Policies, Standards & Strategic Plans in water sector	Environmental	Surficial hydrology	Water Sector Policies	Yes	Shapefile	IWMI		National	Recent	Medium
641	IWMI	Document Hub- Mahaweli Basin	Environmental	Surficial hydrology	Mahaweli Basin	Yes	Shapefile	IWMI		National	Recent	Medium
644	IWMI	Document Hub- Irrigation Management and Crop Diversification in Sri Lanka	Environmental	Land & Abiotic Uze/Land Cov	Crop Diversification	Yes	Shapefile	IWMI		National	Recent	Medium
646	IWMI	Document Hub- Water Quality related documents	Environmental	Subsurface Hydrology	Water Quality	Yes	Shapefile	IWMI		National	Recent	Medium
647	IWMI	Document Hub- Ground Water	Environmental	Subsurface Hydrology	ground water	Yes	Shapefile	IWMI		National	Recent	Medium
28	SD	GeoDatabase on Landuse/Land Cove	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	yes	Shapefile		1:50,000	National		Medium
29	SD	GeoDatabase on Landuse/Land Cove	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	yes	Shapefile	Data extracted from aerial photographs after 2010	1:10,000	National	2010	Medium
30	SD	GeoDatabase on Landuse/Land Cove	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	yes	Shapefile	Data updated using satellite images after 2009	1:10,000	National	2009	Medium
31	SD	GeoDatabase on Landuse/Land Cove	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	yes	Shapefile	Data extracted from aerial photographs after 1994	1:10,000	National	1994	Medium
6	SD	1:50,000 topographic database	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	yes	Vector	Aerial Photographs, VHR Satellite images	1:50,000	National		Medium
377	UDA	Sri Lanka Land Use Shapefiles_1:50,(	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Vector	Digitized 1:50,000 topographic maps	1:50,000	National	2001	Medium
431	DAD	Irrigation details of river basins	Environmental	Surface Hydrology	River Basins		Vector	DAD and SD	1:50,000	National	2011	Medium
1062	AD	Marine Archaeology	Environmental	Cultural Resources	Marine Archaeological Sites	Yes	Vector	AD		National		Medium
1063	AD	Geographical Information of Archaeological Sites and Monuments	Environmental	Cultural Resources	Archaeological Sites & Monuments	Yes	Vector	Archaeology Department/ Excavation Records/ Surveys		National		Medium
480	DA	Spatial databases on land and water resources	Environmental	Land & Aquatic Use/Cover	Land & Water Resources		Vector			National		Medium
382	NPPD	National Physical Plan	Environmental	Land & Aquatic Use/Cover	Settlement Areas		Shapefile	District Land Use Maps, SD	1:100,000	National	2011	Low
389	NPPD	National Physical Plan	Environmental	Land & Aquatic Use/Cover	Vegetation_Tea Cultivation Areas		Vector	1:50,000 maps of SD	1:50000	National	2011	Low
390	NPPD	National Physical Plan	Environmental	Land & Aquatic Use/Cover	Vegetation_Hghly Productive Tea Cultivation Areas		Vector	1:50,000 maps of SD	1;50,000	National	2011	Low
391	NPPD	National Physical Plan	Environmental	Land & Aquatic Use/Cover	Vegetation_Rubber Cultivation Areas		Vector	Tea Research Institute	1:50000	National	2011	Low
393	NPPD	National Physical Plan	Environmental	Land & Aquatic Use/Cover	New Tourism Areas		Vector	Sri Lanka Tourism Development Authority		National	2011	Low
394	NPPD	National Physical Plan	Environmental	Land & Aquatic Use/Cover	Ecotourism Areas		Vector	Sri Lanka Tourism Development Authority		National	2011	Low
400	NPPD	National Physical Plan	Environmental	Land & Aquatic Use/Cover	Forest		Vector	NPPD		National	2011	Low
163	NARA	Waves and Storm Surge	Environmental	Marine Abiotic	Waves and Storm Surge		CAD	Waves and Storm Surge		Regional		High

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1134	CRI	Agro-Metereorological data	Environmental	Air & Climate	Metereological Data		Digital-Vector	CRI		Regional		High
1132	CRI	Deep Ground Water Availability in Puttalam & Kurunegala Districts	Environmental	Subsurface Hydrology	Ground Water		Shape file	CRI		Regional		High
173	NARA	Sri Lanka Fisheries Atlas -Volume 1	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional		High
176	NARA	Percentage contribution of coarse sand (2 – 4 mm) in the sediment in FMA 1	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
177	NARA	Seabed habitat types in FMA 1.	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
178	NARA	Percentage contribution of pelite (< 0.063 mm) in the sediment in FMA1	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
179	NARA	Percentage contribution of fine sand (0.25 – 0.5 mm) in the sediment in FMA1	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
180	NARA	River discharge into the Gulf of Mannar, Region 1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
181	NARA	Land use in coastal strip 0 – 5 km and 5 – 10 km of Region 1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
182	NARA	Bathymetry of Region 2 South Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
183	NARA	Seabed habitats of Region 2 South Co	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
184	NARA	Percentage contribution of pelite (< 0.063 mm) in the sediment; (b) Percentage contribution of silt (0.063 – 0.125 mm) in the sediment in Region 2 South Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
185	NARA	Percentage contribution of fine sand (0.25 - 0.5 mm) in the sediment; (b) Percentage contribution of coarse sand (2-4 mm) in the sediment in Region 2 South Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
186	NARA	Rivers and basins and river discharge in Region 2 South Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
187	NARA	Land use in coastal strip 0 – 5 km and 5 – 10 km - Region 2 South Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
188	NARA	Seabed habitats of middle section of Region 3 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
189	NARA	Seabed habitats of northern section of Region 3 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
190	NARA	Percentage contribution of fine sand (0.25 – 0.5 mm) in the sediment FMA4 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
191	NARA	Percentage contribution of silt (0.063 – 0.125) in the sediment FMA4 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
192	NARA	The distribution of coarse sand in FMA4 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
19	NARA	Percentage contribution of coarse sand (2 – 4 mm) in the sediment FMA4 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High

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194	NARA	Percentage contribution of sand (1 – 2 mm) in the sediment FMA4 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
195	NARA	Rivers, basins and river discharge in Region 3 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
203	NARA	Abundance and Biomass of Holothuria atra in FMA 1 year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
204	NARA	Abundance and Biomass of Holothuria atra in FMA 2 year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
205	NARA	Abundance and Biomass of Holothuria atra in FMA 3 year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
206	NARA	Abundance and Biomass of Holothuria atra in FMA 4 year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
207	NARA	Abundance and Biomass of Turbinella pyrum in FMA 1, Year 2008	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
208	NARA	Abundance and Biomass by Strata of Turbinella pyrum in FMA 1, Year 2008	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
209	NARA	Abundance and Biomass of Turbinella pyrum in FMA 2, Year 2008	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
210	NARA	Abundance and Biomass by Strata of Turbinella pyrum in FMA 2, Year 2008	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
211	NARA	Abundance and Biomass of Turbinella pyrum in FMA 4, Year 2008	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
212	NARA	Abundance and Biomass by Strata of Turbinella pyrum in FMA 4, Year 2008	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
213	NARA	Spiny lobster fishing grounds in FMA1 North West Coast (Puttalam & Mannar districts)	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
214	NARA	Main landing sites for lobster in FMA2 South Coast (Hambantota)	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
215	NARA	Abundance and Biomass of Panulirus homarus in FMA 1, Year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
216	NARA	Abundance and Biomass of Panulirus ornatus in FMA 1, Year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
217	NARA	Abundance and Biomass of Panulirus versicolor in FMA 1, Year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
218	NARA	Abundance and Biomass of Panulirus homarus in FMA 4, Year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High

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219	NARA	Abundance and Biomass of Panulirus ornatus in FMA 4, Year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
220	NARA	Abundance and Biomass of Panulirus versicolor in FMA 4, Year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
221	NARA	Main Aquarium Fish Fishing Grounds in Sri Lanka	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
222	NARA	Abundance of Acanthurus leucosternon in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
223	NARA	Abundance of Amphiprion nigripes in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
224	NARA	Abundance of Centropyge flavipectoralis in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
225	NARA	Abundance of Chaetodon auriga in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
226	NARA	Abundance of Chaetodon meyeri in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
227	NARA	Abundance of Labroides dimidiatus in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
228	NARA	Abundance of Pomacanthus imperator in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
229	NARA	Abundance of Acanthurus leucosternon & Amphiprion nigripes in FMA 3, Year 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
230	NARA	Abundance of Chaetodon lunula & Chaetodon meyeri in FMA 3, Year 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
231	NARA	Abundance of Labroides dimidiatus & Pomacanthus imperator in FMA 3, Year 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
232	NARA	Abundance of Acanthurus leucosternon in FMA 4, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
233	NARA	Abundance of Amphiprion nigripes in FMA 4, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
234	NARA	Abundance of Centropyge flavipectoralis in FMA 4, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
235	NARA	Abundance of Chaetodon meyeri in FMA 4, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
236	NARA	Abundance of Labroides dimidiatus in FMA 4, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
237	NARA	Abundance of Pomacanthus imperator in FMA 4, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
238	NARA	Survey area for sea cucumber and chank FMA1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High

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239	NARA	Areas prohibited for scuba diving for sea cucumber in FMA1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
240	NARA	Areas fished for chank in FMA1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
241	NARA	Areas prohibited for scuba diving for chank in FMA1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
242	NARA	Main lobster fishing areas in FMA1 No	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
243	NARA	Areas prohibited for scuba diving in FMA1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
244	NARA	Proposed Marine Protected Area in the FMA2 South Coast (Hambantota)	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
245	NARA	Seabed habitats mapped in the existing and proposed new trawl grounds in the northwest, Sri Lanka	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional	2010	High
169	NARA	Sea grass bed mapping	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional		High
170	NARA	Mangrove mapping	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional		High
171	NARA	Oyster bed mapping	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional		High
172	NARA	Zonation for oyster and shrimp	Environmental	Biodiversity	Habitat of Species	Yes	Shapefile	NARA		Regional		High
327	UDA	VECTOR.LU_Existing_landuse	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Vector	QuickBIRD and SPOT 5 & Field work	1:10,000	Regional	2008	High
336	UDA	VECTOR.HY_Hydro_Landmark	Environmental	Surficial Hydrology	Structures	Yes	Vector	QuickBIRD and SPOT 5 & Field work	1:10,000	Regional	2008	High
337	UDA	VECTOR.LA_Landmark	Environmental	Land & Aquatic Use/Cover	Landmarks	Yes	Vector	QuickBIRD and SPOT 5 & Field work	1:10,000	Regional	2008	High
438	DMC	Situation Maps	Environmental	Surficial Hydrolgy/Marine Abio	Natural Disasters	Yes	Vector	Situation Report, Satellite images		Regional	2010-2016	High
439	DMC	Flood Inundation Maps	Environmental	Surficial Hydrolgy	Floods (River, storm water, flash)		Vector	Radar, UAV and Drona		Regional	2010-2016	High
440	DMC	Current Cloud Cover	Environmental	Air & Climate	Cloud Cover		Vector	Satellite images		Regional	2010-2016	High
483	DA	National Agro-Met Database	Environmental	Air & Climate			Vector			Regional		High
485	DA	Soil Database	Environmental	Soils	Soil Database		Vector			Regional		High
488	TRI	Screening tea cultivars tolerant to drought	Environmental	Air & Climate	Drought Tolerance		Vector	TRI		Regional		High
654	IWMI	Basin Kits (V1.0)	Environmental	Surficial hydrology	River Basin	Yes	Shapefile	IWMI	2006	Regional	2008	High
659	IWMI	Water Quality Map- Jaffna	Environmental	surficial hydrology	Water Quality	Yes	Shapefile	Field Data		Regional		High
322	UDA	Landuse/Land Cover Maps 1:20,000	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Vector	Extraction of Land Cover from LANSAT Images of 2001 covering Southern & Eastern Provinces	1:20,000	Regional	2008	Medium
323	UDA	Landuse/Land Cover Maps 1:20,000	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Vector	Extraction of Land Cover from LANSAT Images of 2007 covering Southern &Eastern Provinces	1:20,000	Regional	2008	Medium
324	UDA	Landuse/Land Cover Maps 1:20,000	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Vector	Digitalized from SPOT satellite images (geodatabase)	1:20,000	Regional	2008	Medium
325	UDA	Landuse/Land Cover Maps 1:20,000	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Vector	Digitalized from SPOT satellite images (geodatabase)	1:20,000	Regional	2008	Medium
338	UDA	VECTOR.LU_Landuse_10k	Environmental	Land & Aquatic Use/Cover	Landuse, Land Cover, Vegetation	Yes	Vector	Digitalized from satellite images (geodatabase)	1:10,000	Regional	2008	Medium
340	UDA	VECTOR.HY_Hydro_Pg	Environmental	Surficial Hydrology	Waterbodies	Yes	Vector	Digitalized from satellite images (geodatabase)	1:10,000	Regional	2008	Medium
341	UDA	VECTOR.HY_Hydro_Li	Environmental	Surficial Hydrology	Rivers & Streama	Yes	Vector	Digitalized from satellite images (geodatabase)	1:10,000	Regional	2008	Medium
655	IWMI	Eco Hydrological Data	Environmental	Surficial hydrology	Eco Hydrologial Data		Vector	IWMI		Regional		Medium
656	IWMI	Eco Hydrological Data	Environmental	Surficial hydrology	Eco Hydrologial Data		Vector	IWMI		Regional		Medium
657	IWMI	Eco Hydrological Data	Environmental	Surficial hydrology	Eco Hydrologial Data		Vector	IWMI		Regional		Medium
658	IWMI	Mapping Drought Pattern and Impacts: a Global Perspective	Environmental	Air & Climate	Drought Pattern		Vector	Publicly available demographic and socio economic data to natural resources and climate		Regional		Medium
115	LUPPD	Land Use Intensity Map	Environmental	Land & Aquatic Use/Cover		yes	Shapefile	SD 1:10,000 maps used as base data and other related data collected by field survey	1:10,000	Regional		Medium

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
1190	MyMD&E	Natural Resource Distribution Pattern	Environmental	Biodiversity	Biodiversity Type		Vector			Regional		Medium
1183	NBRO	Areas of Landslide hazard Zonation M	Environmental	Special Management Areas	Landslides Hazard Zonation	Yes	Vector	Survey collection using satellite/ GPS by NBRO	1:50,000;	Regional		Medium
292	CEA	Network of Surface Water	Environmental	Surficial Hydrology	Waterbodies		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
293	CEA	Network of Surface Water	Environmental	Serficial Hydrology	Waterbodies		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
300	CEA	Types of Aquifers	Environmental	Surficial Hydrology	Aquifers		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
301	CEA	Ground Water	Environmental	Surficial Hydrology	Ground water		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
302	CEA	Salinity of Ground Water	Environmental	Surficial Hydrology	Ground water		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
303	CEA	Archaeological Sites	Environmental	Ciltural resources	Archaeological Sites		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
304	CEA	Archaeological Sites	Environmental	Ciltural resources	Archaeological Sites		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
305	CEA	Type of Soil	Environmental	Soils	Soil Types		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
306	CEA	Type of Soil	Environmental	Soils	Soil Types		Shapefile	CEA, DMC, UNDP	1:50,000	Regional	2012	Low
1070	WRB	Long Term Monitoring Network- Jaffna	Environmental	Subsurface Hydrology	Monitoring Network		Shapefile	ERB Ground Sampling Tested at Laboratory		District		High
1071	WRB	Water Level Elevation Contours	Environmental	Subsurface Hydrology	Water Level Elevation Contours		Shapefile	ERB Ground Sampling Tested at Laboratory	1:135,000	District		High
1072	WRB	PO4 Variation	Environmental	Subsurface Hydrology	Groud water quality_PO4 Variation Pattern		Shapefile	ERB Ground Sampling Tested at Laboratory	1:137,000	District		High
1073	WRB	EC Distribution	Environmental	Subsurface Hydrology	Groud water quality_EC Distribution Pattern		Shapefile	ERB Ground Sampling Tested at Laboratory	1:120,000	District		High
1074	WRB	pH Variation	Environmental	Subsurface Hydrology	Groud water quality_pH Variation Pattern		Shapefile	ERB Ground Sampling Tested at Laboratory	1:137,000	District		High
1075	WRB	NO3 Variation	Environmental	Subsurface Hydrology	Groud water quality_NO3 Variation Pattern		Shapefile	ERB Ground Sampling Tested at Laboratory	1:137,000	District		High
535	MyAD&AS	Storm Water Management Planning	Environmental	Air & Climate	Storm water	Yes	Vector	NRMC		District	Recent	High
1178	NBRO	Metereological Data	Environmental	Air & Climate	Metereological Data	Yes	Vector	Survey collection using satellite/ GPS by NBRO	1:10,000;	District	Current	High
1179	NBRO	Land Use Land Cover	Environmental	Land & Aquatic Use/ Cover	Land Use	Yes	Vector	Survey collection using satellite/ GPS by NBRO	1:10,000;	District	Current	High
1180	NBRO	Ground Water	Environmental	Subsurface Hydrology	Groundwater	Yes	Vector	Survey collection using satellite/ GPS by NBRO	1:10,000;	District	Current	High
1181	NBRO	Soil samples, Geotechnical study locations & related Data	Environmental	Soil	Geotechnical Study Location & Data	Yes	Vector	Survey collection using satellite/ GPS by NBRO	1:10,000;	District	Current	High
116	LUPPD	Divisional Land Use Plans	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Shapefile	Divisional Land Use maps 1:10,000 prepared based on 1:10,000 scale print outs and field updation at DS D level,	1:10,000	District/Divis	Recent	Hgh
117	LUPPD	Land Suitability Maps	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Shapefile	Land use, land cover, vegetation, agricultural, forest	1:10,000	District/Divis	Recent	Hgh
118	LUPPD	Village Level Land Use Plans	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Shapefile	Land use, land cover, vegetation, agricultural, forest	1:10,000	District/Divis	Recent	Hgh
119	LUPPD	National Land Ue Database	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Shapefile	Land use, land cover, vegetation, agricultural, forest	1:10,000	District/Divis	Recent	Hgh
120	LUPPD	Land Use Issues	Environmental	Land & Aquatic Use/Cover	Land use related Issues at DSD and District Level	Yes	Shapefile	Land use related Issues at DSD and District Level	1:10,000	District/Divis	Recent	Hgh
121	LUPPD	Ownership of Land	Environmental	Land & Aquatic Use/Cover	Land Ownership	Yes	Shapefile	Land Ownership	1:10,000	District/Divis	Recent	Hgh
122	LUPPD	Land Use Conflict Data	Environmental	Land & Aquatic Use/Cover	Land Use Conflict Mapping	Yes	Shapefile	Land Use Conflict Mapping	1:10,000	District/Divis	Recent	Hgh
679	UDA	Land Use-Colombo MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:1000	Urban	2000	Medium
680	UDA	Land Use-Dehiwala-Mt.Lavinia MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:1000	Urban	2000	Medium
681	UDA	Land Use- Beruwala UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:1000	Urban	2004	Medium
682	UDA	Land Use- Kurunegala MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2002	Medium
683	UDA	Land Use-Negombo MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2002	Medium
684	UDA	Land Use-Negombo MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2012	Medium
685	UDA	Land Use -Beruwala UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2002	Medium
686	UDA	Land Use -Horana UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2000	Medium
687	UDA	Land Use-Horana UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2004	Medium
688	UDA	Land Use-Horana UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2009	Medium
689	UDA	Land Use -Horana UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2011	Medium
691	UDA	Land Use-Ja-ela UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2000	Medium
692	UDA	Land Use-Ja-ela UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2004	Medium
693	UDA	Land Use -Kalutara UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2003	Medium
694	UDA	Land Use -Kalutara UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2011	Medium
695	UDA	Land Use -Maharagama UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2000	Medium

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696	UDA	Land Use -Maharagama UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2004	Medium
698	UDA	Land Use-Panadura UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2000	Medium
699	UDA	Land Use -Panadura UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2006	Medium
700	UDA	Land Use-Warakapola UDA Dec. Are	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2004	Medium
701	UDA	Land Use -Warakapola UDA Dec. Are	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2011	Medium
702	UDA	Land Use -Colombo MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:1000	Urban	2000	Medium
703	UDA	Land Use -Colombo MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:4chain	Urban	2005	Medium
704	UDA	Land Use -Colombo MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:4chain	Urban	2000	Medium
705	UDA	Land Use -Kataragama PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:4chain	Urban	2013	Medium
707	UDA	Land Use -Mullaitivu PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:4000	Urban	2003	Medium
708	UDA	Land Use-Mullaitivu PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:4000	Urban	2005	Medium
709	UDA	Land Use -Peliyagoda UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:4000	Urban	2003	Medium
710	UDA	Land Use-Dehiwala-Mt.Lavinia MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:1000	Urban	2000	Medium
711	UDA	Land Use -Dehiwala-Mt.Lavinia MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2005	Medium
713	UDA	Land Use-Dehiwala-Mt.Lavinia MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2004	Medium
714	UDA	Land Use-Jaffna MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2010	Medium
715	UDA	Land Use-Panadura DSD	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2006	Medium
717	UDA	Land Use -Bentota PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2007	Medium
718	UDA	Land Use-Matale MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2005	Medium
719	UDA	Land Use-Matara MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2005	Medium
720	UDA	Land Use -Greater Matara	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2005	Medium
721	UDA	Land Use -Moratuwa MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2003	Medium
723	UDA	Land Use -Bandaragama PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2007	Medium
724	UDA	Land Use -Milleniya DSD	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2008	Medium
725	UDA	Land Use -Dambulla PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2012	Medium
726	UDA	Land Use -Kaduwela MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2003	Medium
727	UDA	Land Use -Kaduwela MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2007	Medium
728	UDA	Land Use -Rambukkana PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2002	Medium
729	UDA	Land Use -Rambukkana PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2007	Medium
730	UDA	Land Use-Warakapola PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2008	Medium
731	UDA	Land Use -Warakapola PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2011	Medium
732	UDA	Land Use -Warakapola - UDA Declar	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2011	Medium
733	UDA	Land Use -Ambalangoda UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2005	Medium
734	UDA	Land Use -Ambalangoda UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2011	Medium
735	UDA	Land Use -Chavakachcheri UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2008	Medium
736	UDA	Land Use -Hambantota UDA Dec. Are	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2006	Medium
737	UDA	Land Use -Galle MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1: 34000	Urban	2007	Medium
738	UDA	Land Use -Galle MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2008	Medium
739	UDA	Land Use -Kandy MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:16chain	Urban	2000	Medium
740	UDA	Land Use -Mannar UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:20000	Urban	2004	Medium
741	UDA	Land Use -Mannar UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:20000	Urban	2006	Medium
742	UDA	Land Use-Mannar UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2004	Medium
743	UDA	Land Use -Mannar UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2009	Medium
744	UDA	Land Use -Nallur PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:20000	Urban	2004	Medium
746	UDA	Land Use -Vavuniya UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:20000	Urban	2004	Medium
748	UDA	Land Use -Vavuniya UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:20000	Urban	2009	Medium
750	UDA	Land Use -Anuradhapura MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2005	Medium
752	UDA	Land Use -Kalmunai MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2006	Medium
754	UDA	Land Use -Kalmunai to Ninthavur	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2006	Medium
756	UDA	Land Use -Karativu DSD	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2006	Medium
758	UDA	Land Use -Ninthavur DSD	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2006	Medium
760	UDA	Land Use-Sainthamarathu DSD	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2006	Medium

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762	UDA	Land Use -Kotte_ Sri Jayawardenepu	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2004	Medium
763	UDA	Land Use -Greater Matara UDA Dec.	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2006	Medium
764	UDA	Land Use-Hanwella PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2007	Medium
765	UDA	Land Use -Homagama PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2006	Medium
766	UDA	Land Use -Homagama PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2008	Medium
767	UDA	Land Use-Kaduwela MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2003	Medium
768	UDA	Land Use -Kaduwela MC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2007	Medium
769	UDA	Land Use -Kotikawatta_Mulleriyawa P	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2007	Medium
771	UDA	Land Use -Muttur PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2006	Medium
772	UDA	Land Use -Muttur - UDA Declared Are	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2007	Medium
773	UDA	Land Use -Boraresgamuwa UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2005	Medium
774	UDA	Land Use -Boraresgamuwa UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2008	Medium
776	UDA	Land Use -Kesbewa PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2005	Medium
777	UDA	Land Use -Kesbewa PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2008	Medium
778	UDA	Land Use -Kesbewa PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2011	Medium
780	UDA	Land Use -Kolonnawa UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2007	Medium
782	UDA	Land Use -Wattala UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2003	Medium
783	UDA	Land Use -Anuradhapura-Nawagamp	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2012	Medium
784	UDA	Land Use-Greater Dambulla UDA Dec	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2006	Medium
785	UDA	Land Use -Greater Dambulla UDA De	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2012	Medium
786	UDA	Land Use -Trincomalee UDA Dec. Are	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2006	Medium
787	UDA	Land Use -Rambukkana PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2007	Medium
788	UDA	Land Use -Rambukkana PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2002	Medium
792	UDA	Land Use -Deniyaya UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2008	Medium
793	UDA	Land Use -Attanagalla PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2011	Medium
795	UDA	Land Use -Bentota DSD	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2007	Medium
796	UDA	Land Use -Hikkaduwa UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2011	Medium
797	UDA	Land Use -Thalawakele UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2011	Medium
798	UDA	Land Use -Chilaw UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:2chain	Urban	2006	Medium
799	UDA	Land Use -Deniyaya UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2012	Medium
800	UDA	Land Use -Akuressa PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2011	Medium
801	UDA	Land Use -Hanwella PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2007	Medium
802	UDA	Land Use -Gampaha, Minuwangoda, Mahara, Attanagalle - UDA Dec. Area	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2010	Medium
805	UDA	Land Use -Kalutara UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2003	Medium
806	UDA	Land Use -Kalutara UC	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2013	Medium
807	UDA	Land Use -Mahiyangana PS	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2010	Medium
808	UDA	Land Use -Killinochchi UDA Dec. Area	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:10000	Urban	2010	Medium
809	UDA	Land Use -Potuvil	Environmental	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:5000	Urban	2009	Medium
811	UDA	Land Use -Kalmunai	Environmental	Land and Aquatic Use / Cove	Urban Land Use		Vector	UDA	1:5000	Urban	2009	Medium
815	UDA	Land Use -Hambantota	Environmental	Land and Aquatic Use / Cove	Urban Land Use		Vector	UDA	1:5000	Urban	2009	Medium
817	UDA	Land Use -Kinniya	Environmental	Land and Aquatic Use / Cove	Urban Land Use		Vector	UDA	1:5000	Urban	2009	Medium
819	UDA	Land Use -Valachchenai	Environmental	Land and Aquatic Use / Cove	Urban Land Use		Vector	UDA	1:5000	Urban	2009	Medium
821	UDA	Land Use -Trincomalee	Environmental	Land and Aquatic Use / Cove	Urban Land Use		Vector	UDA	1:5000	Urban	2009	Medium
823	UDA	Land Use -Matara	Environmental	Land and Aquatic Use / Cove	Urban Land Use		Vector	UDA	1:5000	Urban	2009	Medium
825	UDA	Land Use -Muttur	Environmental	Land and Aquatic Use / Cove	Urban Land Use		Vector	UDA	1:5000	Urban	2009	Medium
827	UDA	Land Use --Eatsen & Southern Provin	Environmental	Land and Aquatic Use / Cove	Urban Land Use		Vector	UDA	1:10000	Urban	2007	Medium
1096	LHI	Sea Outfall for Treated Effluent of Wastewater Treatment Plant at Base Hospital, Tangalle: Field	Environmental	Marine abiotic	Sea Outfall	Yes	Digital	LHI		Local		High

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
1097	LHI	Trincomalee Thermal Power Project: Thermal Dispersion Study for NTPC	Environmental	Marine abiotic	Thermal Dispersion	Yes	Digital	LHI, SPC		Local		High
1098	LHI	Monitoring and Evaluation of Watershed Hydrology - Measurement of Suspended Sediment Load at Kotmale Oya	Environmental	Surficial Hydrology	Watershed Hydrology	Yes	Digital	LHI, CEB		Local		High
1099	LHI	Upper Kotmale Hydropower Project: Flood Forecasting	Environmental	Surficial Hydrology	Flood Forecasting	Yes	Digital	LHI		Local		High
1100	LHI	Extension of Southern Highway from Matara to Hambantota: Phase I – from Matara to Beliatta - Study on the Hydrological Implications	Environmental	Surficial Hydrology	Hydrologcal Implications	Yes	Digital	LHI, RDA		Local		High
1102	LHI	Sampur Thermal Power Project: Area Drainage and Ground Water Study	Environmental	Surficial Hydrology	Ground water study	Yes	Digital	LHI		Local		High
1103	LHI	Update / Upgrade of the Hydrologic-Hydraulic Model and New Urban Micro-Drainage System Model for Greater Colombo Basin	Environmental	Surficial Hydrology	Hydrologcal Implications	Yes	Digital	LHI, WB		Local	2009	High
1104	LHI	Puttalam Coal-Fired Thermal Power Plant Project – Wave Study	Environmental	Marine abiotic	Wave Study	Yes	Digital	LHI		Local	2009	High
533	MyAD&AS	Soil Survey & Land Use planning	Environmental	Soils	Sutrvey Location and Data	Yes	Vector	NRMC		Local	Recent	High
1185	NBRO	Landslide hazard identification and assessment of landslide risk	Environmental	Geomorphology	Landslides	Yes	Vector	DMC	1:5,000	Local		High
1138	CMC	Location of Health Institutions	Environmental	Land & Aquatic Use/ Cover	Location of Health Institutions		Shapefile	CMC	1:10,000	Local	2007	Medium
1139	CMC	Location of Market Places	Environmental	Land & Aquatic Use/ Cover	Location of Market Places		Shapefile	CMC	1:10,000	Local	2007	Medium
1140	CMC	Location of Government Institutions	Environmental	Land & Aquatic Use/ Cover	Location of Government Institutions		Shapefile	CMC	1:10,000	Local	2007	Medium
1141	CMC	Location of Plagrounds	Environmental	Land & Aquatic Use/ Cover	Location of Plagrounds		Shapefile	CMC	1:10,000	Local	2007	Medium
1142	CMC	Location of Religious Places	Environmental	Land & Aquatic Use/ Cover	Location of Religious Places		Shapefile	CMC	1:10,000	Local	2007	Medium
1143	CMC	Location of Rivers and Canals	Environmental	Land & Aquatic Use/ Cover	Location of Rivers and Canals		Shapefile	CMC	1:10,000	Local	2007	Medium
1144	CMC	Location of Protected Areas	Environmental	Land & Aquatic Use/ Cover	Location of Protected Areas		Shapefile	CMC	1:10,000	Local	2007	Medium
1145	CMC	Location of Schools	Environmental	Land & Aquatic Use/ Cover	Location of Schools		Shapefile	CMC	1:10,000	Local	2007	Medium
1110	UTDP	UTDA_Township Land Use	Environmental	Land and Aquatic Use / Cover	Land use	Yes	Vector	Ground survey with GPS readings developed by CA	1:1,000	Local	2015	Medium
1195	MASL	Flood Inundation Maps	Environmental	Surficial Hydrology	Flood Inundation Area		shapefile					
445	ID	Soil Investigation Details	Environmental	Soils	Properties		Shapefile	Surveys and other sources of data base by Irrigation Department.				
446	ID	Field and laboratory test data	Environmental	Soils	Moisture content		Shapefile	Surveys and other sources of data base by Irrigation Department.				
447	ID	Rock Drilling Data	Environmental	Geology	Drilling tube wells		Shapefile	Surveys and other sources of data base by Irrigation Department.				
448	ID	Hydraulic Research Data	Environmental	Surficial Hydrology	Rivers & Steams		Shapefile	Surveys and other sources of data base by Irrigation Department.				
449	ID	Hourly Water Levels and 3 hrs Rainfal	Environmental	Surficial Hydrology	Rivers & Streama		Shapefile	Surveys and other sources of data base by Irrigation Department.				
450	ID	Hourly Water Levels and 3 hrs Rainfal	Environmental	Surficial Hydrology	Hydrodynamic Station		Shapefile	Surveys and other sources of data base by Irrigation Department.				
451	ID	Hourly Water Levels and 3 hrs Rainfal	Environmental	Surficial Hydrology	Rainfall station		Shapefile	Surveys and other sources of data base by Irrigation Department.				
452	ID	Hydro-meteorological Information System (HMIS)	Environmental	Surficial Hydrology	Hydrometereologicak data		Shapefile	Surveys and other sources of data base by Irrigation Department.				

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
453	ID	Land Productivity Data	Environmental	Land & Aquatic Use/Cover	Land Productivity		Shapefile	Surveys and other sources of data base by Irrigation Department.				
454	ID	Land Productivity Data	Environmental	Land & Aquatic Use/Cover	Land Productivity		Shapefile	Surveys and other sources of data base by Irrigation Department.				
456	ID	Land Use Mapping	Environmental	Soils	Soil Survey		Shapefile	Surveys and other sources of data base by Irrigation Department.				
460	ID	Existing Land Use	Environmental	Land and Aquatic Use/Cover	Agricultural Land Use		Shapefile	Surveys and other sources of data base by Irrigation Department.				
461	ID	Soils Samples	Environmental	Soils	Soil Samples		Shapefile					
463	ID	Water Resources	Environmental	Surficial Hydrology	Water Resources		Vector					
534	MyAD&AS	Soil Erosion / Sediment and Hazard mapping	Environmental/ Areas	Soils/ Special Management Areas	Soil Erosion / Soil Erosion hazard Zones	Yes	Vector	NRMC		District	Recent	High
790	UDA	Land Use -Wetlands - Western Provin	Wetlands	Land and Aquatic Use / Cove	Urban Land Use	No	Vector	UDA	1:50000	Urban	2008	Medium
114	LUPPD	Land Bank				Yes	Shapefile	SD 1:10,000 maps used as base data and other related data collected by field survey	1:10,000	National	2015	High
174	NARA	Marine Resource Survey Areas (2008-2010)			Marine Resource Survey Areas (2008-2010)	Yes	Shapefile	NARA		National	2008	Medium

Table 4. 7 Organizations Producing Spatial Data Themes and Geo-Coverage of Thematic Vector Data

Organization	Geo_Coverage							Spatial Data Theme																	
	National	Regional	District	Urban	Local	Unspecified	Total	Special Management Area	Service Area	Planning Area	Statistical Area	Boundaries	Land & Abiotic Use	Surficial Hydrology	Air & Climate	Subsurface Hydrology	Soil	Biodiversity	Marine Abiotic	Cultural Resources	Land & Aquatic Resources	Utilities _Waste Management	Geomorphological	Geology	Unspecified	**Total**
1.UDA	1	12	0	116	0	0	129	0	0	0	0	1	1	4	0	0	0	0	0	0	123	0	0	0	0	**129**
2.NARA	1	69	0	0	0	0	70	0	0	0	0	0	0	0	1	0	0	68	1	0	0	0	0	0	0	**70**
3.NBRO	11	5	7	0	1	0	24	3	0	9	1	1	0	1	2	1	0	0	0	0	0	1	1	0	4	**24**
4.SD	6	0	0	0	0	0	6	0	0	0	0	0	1	0	0	0	0	0	0	0	5	0	0	0	0	**6**
5.CCD	12	0	0	0	0	1	13	1	0	0	0	0	1	2	0	0	1	1	6	0	0	0	1	0	0	**13**
6.My MD&E	0	1	0	1	0	0	2	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	**2**
7.CMC	0	0	0	0	8	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	**8**
8.GSMB	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**1**
9.FD	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**1**
10.LHI	0	0	0	0	7	0	7	0	0	0	0	0	0	5	0	0	0	0	2	0	0	0	0	0	0	**7**
11.UTDP,SJP	0	0	0	0	6	0	6	1	3	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**6**
12.ID	0	0	0	0	0	18	18	0	0	1	4	0	0	5	0	0	4	0	0	0	2	1	0	1	0	**18**
13.CEA	8	16	0	0	0	2	26	12	0	0	3	0	0	5	0	0	2	1	0	2	1	0	0	0	0	**26**
14.NRMC	2	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	**2**
15.IWMI	75	4	0	0	0	0	79	29	0	0	0	0	4	37	4	4	0	1	0	0	0	0	0	0	0	**79**
16.DAP&H	9	0	0	0	0	0	9	0	0	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**9**
17.MD	20	0	0	0	0	0	20	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	**20**
18.MASL	0	0	0	0	0	3	3	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	**3**
19.WRB	0	0	7	0	0	0	7	0	0	1	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	**7**
20.MyAD&AS	8	0	3	0	0	0	11	1	0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	**11**
21.TRI	0	3	0	0	0	0	3	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	**3**
22.DMC	1	4	0	0	0	0	5	0	0	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	**5**
23.LUPPD	1	3	7	0	0	1	12	0	0	2	1	0	0	0	0	0	0	0	0	0	9	0	0	0	0	**12**
24.DWLC	12	0	0	0	0	0	12	1	0	0	0	0	1	0	0	0	0	10	0	0	0	0	0	0	0	**12**
25.CRI	0	4	0	0	0	0	4	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	**4**
26.AD	6	0	0	0	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	**6**
27.DA	4	2	0	0	0	0	6	2	0	0	0	0	1	0	1	0	1	0	0	0	1	0	0	0	0	**6**
28.MyF&ARD	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
29.NLDB	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
30.NPPD	8	0	0	0	0	0	8	1	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	**8**
31.DAD	6	0	0	0	0	0	6	5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**6**
Total	**195**	**123**	**24**	**117**	**22**	**25**	**506**	**60**	**4**	**19**	**16**	**2**	**16**	**69**	**38**	**6**	**10**	**83**	**9**	**6**	**159**	**2**	**2**	**1**	**4**	**506**

According to Table 4.7 the following organizations are produced large number of thematic vector data sets:

	Organization	No. of thematic vector data sets
1	Urban Development Authority	129
2	International Water management Institute	79
3	NARA	70
4	National Building Research Organization	24
5	Central Environmental authority	26
6	Irrigation Department	18
7	Coast Conservation Department	13
8	Survey Department	13
9	Land Use Policy Planning Department	12
10	Department of Wild life Conservation	12

Altogether these 10 organizations provide 416 data topics the balance 90 data topics by all the other 21 organizations. The thematic data layers are available in all five levels such as National, Regional, District, Urban and Local levels containing:

LEVEL	THEMATIC DATA TOPICS
National	195
Regional	123
Urban	117
Local	22
Unclassified	25
Total Number of Data	506

Table 4.8 presents the details of databases and the geodatabases produced by the organizations involved in the NSDI Baseline Study.

Table 4. 8 NSDI Baseline Study _ Spatial Data Inventory _Digital Databases/ GeoDatabases

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
1109	RDA	Traffic Count Sureys	Transportation	Land Transportation	NHN Traffic Data		Database	RDA		Local	2015	High
363	UDA	VECTOR.SO_CESUS2001_HOU_GND	Areas	Statistical Areas	Housing Census	Yes	Database	2001 Census of Population and Housing Access Database linked to diigital GN Division boundary maps	1:50,000	National	2001	High
364	UDA	VECTOR.SO_CESUS2001_POP_GND	Areas	Statistical Areas	Population Census	Yes	Database	2001 Census of Population and Housing Access Database linked to diigital GN Division boundary maps	1:50,000	National	2001	High
365	UDA	VECTOR.SO_CESUS2011_HOU_GND	Areas	Statistical Areas	Housing Census	Yes	Database	2001 Census of Population and Housing Access Database linked to diigital GN Division boundary maps	1:50,000	National	2011	High
366	UDA	VECTOR.SO_CESUS2011_POP_GND	Areas	Statistical Areas	Population Census	Yes	Database	2001 Census of Population and Housing Access Database linked to diigital GN Division boundary maps	1:50,000	National	2011	High
371	UDA	VECTOR.SO_CE2011_DIS	Areas	Political/Administrative Areas	Districts	Yes	Database	2001 Census of Population and Housing Access Database linked to diigital GN Division boundary maps	1:50,000	National	2011	High
373	UDA	VECTOR.SO_CE2011_GND_POP	Areas	Statistical Areas	Population Census	Yes	Database	2001 Census of Population and Housing Access Database linked to diigital GN Division boundary maps	1:50,000	National	2001	High
1113	RDA	Databases with respect to road condition, project data and bridge inventory data	Transportation	Land Transportation	Bridge Inventory		Database	RDA		National	2015	High
1114	RDA	Road Network Condition Database	Transportation	Land Transportation	Road network Condition		Database	RDA		National	2015	High
1120	RDA	JICA STRADA traffic forecasting model.	Transportation	Land Transportation	Traffic Forcasting		Database	RDA		National	2015	High
1121	RDA	Sri Lanka Road Asset Management System (SLRAMS).	Transportation	Land Transportation	Road Assets		Database	RDA		National	2015	High
1122	RDA	Highway Development and Management (HDM – 4) and Road Information System (RIS) using Highway Development and Management-4 Information Management	Transportation	Land Transportation	Road Information		Database	RDA		National	2015	High
1127	RDA	Traffic Data Base	Transportation	Land Transportation	Road Traffic data		Database	RDA		National		High
1128	RDA	Management Information System	Transportation	Land Transportation	Road Information		Database	RDA		National		High
1129	RDA	Land Acquisition Information System (LAIS System) for RDA	Environmental	Land Transportation	Land use		Database	RDA		National		High
1149	TRC	National Frequency Allocation Table (NFAT)	Utilities	Telecommunication Facilities	National Frequency					National	2017	High
1150	TRC	Number of fixed and mobile monitoring stations to monitor the frequency spectrum effectively in various frequency bands ranging from 3 kHz to 26 GHz.	Utilities	Telecommunication Facilities	National Frequency					National	2017	High
309	CEA	Comprehensive geospatial environmental resources database of Sri Lanka	Areas	Planning Areas	Environmental Resources	Yes	Databae	CEA	1:10,000	National	2016	High
308	CEA	Industrial Database	Basemap	Structures	Building Type	Yes	Databae	CEA	1:1,000	National	2015	High
279	FD	Environment Information Management System database	Environmental	Biodiversity	Vegetation	Yes	Database	FD		National		Medium
280	FD	Inventorying forest resources	Environmental	Biodiversity	Vegetation		Database	FD		National		Medium
367	UDA	VECTOR.TR_Road_info	Transportation	Land Transportation	Roads	Yes	Database	2001 Census of Population and Housing Access Database linked to diigital GN Division boundary maps	1:50,000	National	2001	Medium
368	UDA	VECTOR.SO_CE2001_DIS	Areas	Political/Administrative Areas	Districts	Yes	Database	2001 Census of Population and Housing Access Database linked to diigital GN Division boundary maps	1:50,000	National	2001	Medium

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
370	UDA	VECTOR.SO_CE2001_GND_POP	Areas	Statistical Areas	Population Census	Yes	Database	2001 Census of Population and Housing Access Database linked to diigital GN Division boundary maps	1:50,000	National	2001	Medium
372	UDA	VECTOR.SO_CE2011_DSD	Areas	Political/Administrative Areas	Divisional Secretariat Divisions	Yes	Database	2001 Census of Population and Housing Access Database linked to diigital GN Division boundary maps	1:50,000	National	2011	Medium
28	SD	GeoDatabase on Landuse/Land Cover	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	yes	Geodb/shp		1:50,000	National		Medium
29	SD	GeoDatabase on Landuse/Land Cover	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	yes	Geodb/shp	Data extracted from aerial photographs after 2010	1:10,000	National	2010	Medium
30	SD	GeoDatabase on Landuse/Land Cover	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	yes	Geodb/shp	Data updated using satellite images after 2009	1:10,000	National	2009	Medium
31	SD	GeoDatabase on Landuse/Land Cover	Environmental	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	yes	Geodb/shp DGN	Data extracted from aerial photographs after 1994	1:10,000	National	1994	Medium
1131	CRI	Classification of Coconut Lands in Southern Region	Areas	Special Management Areas	Classification of Coconut Lands		database/ Shape file	CRI		Regional		High
1132	CRI	Deep Ground Water Availability in Puttalam & Kurunegala Districts	Environmental	Subsurface Hydrology	Ground Water		database/ Shape file	CRI		Regional		High
1133	CRI	Land Suitability for Coconut Cultvation	Areas	Special Management Areas	Land Suitability for Coconut Cultivation		database/ Shape file	CRI		Regional		High
1134	CRI	Agro-Metereorological data	Environmental	Air & Climate	Metereological Data		database/ Shape file	CRI		Regional		High
1191	MyMD&E	Database on Natural Resources	Environmental	Biodiversity	Biodiversity Type		Database			Regional		High
80	SD	Town Area Maps	Basemap	Land & Aquatic Use/Cover	Town Map-SIIRM-Matara		Geodatabase	Satellite images and field survey	1:5,000	Urban		High
81	SD	Town Area Maps	Basemap	Land & Aquatic Use/Cover	Town Map-SIIRM-Hambantota		Geodatabase	Satellite images and field survey	1:5,000	Urban		High
82	SD	Town Area Maps	Basemap	Land & Aquatic Use/Cover	Town Map-SIIRM-Karativu		Geodatabase	Satellite images and field survey	1:5,000	Urban		High
83	SD	Town Area Maps	Basemap	Land & Aquatic Use/Cover	Town Map-SIIRM-Potuvil		Geodatabase	Satellite images and field survey	1:5,000	Urban		High
84	SD	Town Area Maps	Basemap	Land & Aquatic Use/Cover	Town Map-SIIRM-Kalmunai		Geodatabase	Satellite images and field survey	1:5,000	Urban		High
85	SD	Town Area Maps	Basemap	Land & Aquatic Use/Cover	Town Map-SIIRM-Samanthurai		Geodatabase	Satellite images and field survey	1:5,000	Urban		High
86	SD	Town Area Maps	Basemap	Land & Aquatic Use/Cover	Town Map-SIIRM-Batticaloa		Geodatabase	Satellite images and field survey	1:5,000	Urban		High
87	SD	Town Area Maps	Basemap	Land & Aquatic Use/Cover	Town Map-SIIRM-Valachchenai		Geodatabase	Satellite images and field survey	1:5,000	Urban		High
88	SD	Town Area Maps	Basemap	Land & Aquatic Use/Cover	Town Map-SIIRM-Trincomalee		Geodatabase	Satellite images and field survey	1:5,000	Urban		High
829	UDA	Land Use -Eatsen & Southern Provinces	Land Cover- Pr	Land and Aquatic Use / Cover	Urban Land Use		Geodatabase	SIIRM/UDA/SD	1:10000	Urban	2001	Medium
830	UDA	Land Use -Eatsen & Southern Provinces	Land Cover- Po	Land and Aquatic Use / Cover	Urban Land Use		Geodatabase	SIIRM/UDA/SD	1:10000	Urban	2007	Medium
1130	RDA	Information system to manage day to day documents.	Transportation	Land Transportation	Documentation		Database	RDA		Local	2015	Low

Table 4. 9 Organizations Producing Spatial Databases/ Geo databases

	Geo_Coverage							Spatial Data Theme										
Organization	National	Regional	District	Urban	Local	Unspecified	Total	Administrative & Political Boundary	Planning Area	Statistical Area	Land Transportation	Land & Aquatic Use/Cover	Structures	Utilities_Telecommunication	Biodivrsity	Special Management Areas	Air & Climate	Subsurface Hydrology	**Total**
1. UDA	10	2	0	0	0	0	12	3	0	6	1	2	0	0	0	0	0	0	**12**
2. TRC	2	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	**2**
3. CEA	2	0	0	0	0	0	2	0	1	0	0	0	1	0	0	0	0	0	**2**
4. SD	4	0	0	9	0	0	13	0	0	0	0	13	0	0	0	0	0	0	**13**
5. FD	2	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	**2**
6. My MD&E	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	**1**
7.RDA	8	0	0	0	2	0	10	0	0	0	10	0	0	0	0	0	0	0	**10**
8.CRI	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	2	1	1	**4**
Total	**28**	**7**	**0**	**9**	**2**	**0**	**46**	**3**	**1**	**6**	**11**	**15**	**3**	**2**	**1**	**2**	**1**	**1**	**46**

Source: ICTA NSDI Baseline Study, 2016

According to Table 4.9 the following organizations have produced databases / Geospatial databases:

Survey Department	13
Urban Development Authority	12
Road Development Authority	10

These databases were developed in four levels such as National, Regional, Urban and Local levels containing:

LEVEL	DATABASES
National Level	28
Regional Level	07
Urban Level	09
Local Level	02
Total No of Databases	46

Table 4.10 presents the details of hard copy data that has been produced by the organizations involved in the NSDI Baseline Study.

Table 4. 10 NSDI Baseline Study _ Spatial Data Inventory _Hard Copy Data

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
571	MyF&ARD	Sri Lanka Fisheries Atlas- Status of resources, fisheries and management initiatives on sea cucumber,chank, lobster, shrimp and marine aquarium fish	Areas	Planning Areas	Marine Resurces Survey Area		Hard copy	NARA		National	2006-2008	High
1118	RDA	P Plans	Transportation	Land Transportation	P Plans		Hard Copy	RDA		National	2015	High
1119	RDA	As built drawings	Transportation	Land Transportation	As built drawings		Hard Copy	RDA		National	2015	High
1106	RDA	National Road Network	Transportation	Land Transportation	National Road Network	Yes	Hard Copy	RDA	1:50,000	National		High
1107	RDA	Expressway Network	Transportation	Land Transportation	National Road Network	Yes	Hard Copy	RDA	1:50,000	National		High
1108	RDA	Road Network Under Rehabilitation	Transportation	Land Transportation	National Road Network	Yes	Hard Copy	RDA	1:50,000	National	2015	High
174	NARA	Marine Resource Survey Areas (2008-2010)	Environmental	Marine Abiotic	Marine Resource Survey Areas (2008-2010)	Yes	Hard Copy	NARA		National	2008	High
140	MD	Total annual rainfall deficit	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
141	MD	Highest Total Consecutive Deficit	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
142	MD	Total Number of Months with Deficit	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
143	MD	High Consecutive number of months with deficit	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
144	MD	Total amount deficit over excess	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
145	MD	Higher deficit within a month	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
146	MD	Number of months per year with rainfall less than 30 mm	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
147	MD	Highest number of consecutive months where rainfall is less than 30mm	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
148	MD	Average rainfall of months where rainfall is less than 30 mm	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
149	MD	Lowest average rainfall where rainfall is less than 30 mm in consecutive months	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
150	MD	Total deficit rainfall less than 30 mm	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
151	MD	Mean annual daily deficit	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
152	MD	Mean annual non rainy days	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
153	MD	Mean number of days per year where rainfall is less than or equal 1 mm	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
154	MD	Draough Hazard Map of Sri Lanka	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
157	MD	Average Thunder frequency in months January - December, Sri Lanka	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Average Thunder frequency in months January - December, Sri Lanka		National		High
158	MD	Average Annual Thunder Frequency in Sri Lanka	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Average Annual Thunder Frequency in Sri Lanka		National		High
159	MD	Tropical Cyclone	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Tropical Cyclone		National		High
160	MD	Wind Hazard Map	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Wind Hazard Map		National		High
161	MD	Maximum Sustained wind Speed	Environmental	Air & Climate	Metereology	Yes	Hard Copy	Maximum Sustained wind Speed		National		High
1056	AD	Location of Archaeology Sites and Monuments	Environmental	Cultural Resources	Archaeological Sites	Yes	Hard Copy	GPS readings of locations		National	2016	High
1057	AD	Designated Cultural Heritage	Environmental	Cultural Resources	Cultural Heritage Areas	Yes	Hard Copy			National	2011	High
1058	AD	Protected Areas	Areas	Special Management Areas	Protected Areas	Yes	Hard Copy			National	2016	High
1067	AD	Archaeological Museums	Basemap	Structures	Building Points		Hard Copy	Archaeology Department/ Excavation Records/ Surveys		National		High
572	IWMI	**Understanding the physical setting of a water reso**	Environmental	Surficial Hydrology	Water Information System	Yes	Hard Copy	IWMI		National	Recent	High
573	IWMI	Water Asset Management	Utilities	Potable water	Water Assets	Yes	Hard Copy	IWMI		National	Recent	High

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
574	IWMI	Ground Water	Environmental	Surficial Hydrology	Ground water	Yes	Hard Copy	IWMI		National	Recent	High
575	IWMI	Runoff	Environmental	Subsurface Hydrology	Runoff water	Yes	Hard Copy	IWMI		National	Recent	High
576	IWMI	Evaporation	Environmental	Air & Climate	Evaporation	Yes	Hard Copy	IWMI		National	Recent	High
577	IWMI	River Basin & Catchment Area	Environmental	Surficial Hydrology	River Basin & Catchment Area	Yes	Hard Copy	IWMI		National	Recent	High
578	IWMI	Rainfall	Environmental	Air & Climate	Rainfall	Yes	Hard Copy	IWMI		National	Recent	High
578	IWMI	Tank	Environmental	Land & Aquatic Use/Cover	Water Bodies	Yes	Hard Copy	IWMI		National	Recent	High
580	IWMI	Water Quality	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
581	IWMI	Governance	Environmental	Surface Hydrology	Irrigation schemes	Yes	Hard Copy	IWMI		National	Recent	High
582	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
583	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
584	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
585	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
586	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
587	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
588	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
589	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
590	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
591	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
592	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
593	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
594	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
595	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
596	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
597	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
598	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
599	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
600	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
601	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
602	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Hard Copy	IWMI		National	Recent	High
603	IWMI	Tourism sector vulnerability with flood expoure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	High
616	IWMI	Housing and urban development sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	High
565	MyF&ARD	Fish Landing Points Map	Areas	Service Areas	Fish Landing Points	Yes	Hard Copy	Compiled by CCD on information provided by the Ministry indicating the location of fish landing sites of coastal districts with landing site name and code		National		High
106	GSMB	Provincial Mineral Resources Map	Environmental	Geology	Mineral Resources Areas		Hard Copy	GSMB	1:506,800	National		Medium
107	GSMB	Metamorphic Map	Environmental	Geology	Metamorphic Areas		Hard Copy	GSMB	1:506,800	National		Medium
108	GSMB	Structural Map	Environmental	Geology	Structural areas		Hard Copy	GSMB	1:506,800	National		Medium
109	GSMB	Geological Map	Environmental	Geology	Surficial Geology		Hard Copy	GSMB	1:506,800	National		Medium
112	GSMB	Geological Map	Environmental	Geology	Surficial Geology		Hard Copy	GSMB	1:50,000	National		Medium
111	GSMB	Quadrant Geological Map	Environmental	Geology	Surficial Geology		Hard Copy	GSMB	1:250,000	National		Medium
110	GSMB	Geological Map	Environmental	Geology	Surficial Geology	Yes	Hard Copy	GSMB	1:100,000	National		Medium
263	CCD	Predicted Sea level Rise 2025 in Sri Lanka	Environmental	Marine Abiotic	Sea level rise		Hard Copy	CCD	1:50,000	National	2016	Medium
264	CCD	Predicted Sea level Rise 2050 in Sri Lanka	Environmental	Marine Abiotic	Sea level rise		Hard Copy	CCD	1:50,000	National	2016	Medium
265	CCD	Predicted Sea level Rise 2075 in Sri Lanka	Environmental	Marine Abiotic	Sea level rise		Hard Copy	CCD	1:50,000	National	2016	Medium
266	CCD	Predicted Sea level Rise 2100 in Sri Lanka	Environmental	Marine Abiotic	Sea level rise		Hard Copy	CCD	1:50,000	National	2016	Medium
267	CCD	Distribution of Key areas and Singular Case in 1986	Environmental	Marine Abiotic	Sea level rise		Hard Copy	CCD	1:50,000	National	1986	Medium
268	CCD	Coastal Changes in and around the country for 1961-1986	Environmental	Geomorphology	Coastal Change		Hard Copy	CCD	1:50,000	National	1986	Medium
1059	AD	Protected Monuments	Areas	Special Management Areas	Protected Monuments	Yes	Hard Copy			National	2011	Medium
281	FD	Sri Lanka Forest Map	Environmental	Biodiversity	Vegetation		Hard Copy	FD		National		Medium
615	IWMI	livestock sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
620	IWMI	Marine fishery sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
621	IWMI	Inland and brackish water fishery sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
622	IWMI	Livestock sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
623	IWMI	Livestock sector vulnerabilityw with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
624	IWMI	Tourism sector vulnerability with sea level rise expoure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
625	IWMI	Transport sector vulnerability with landslide exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
626	IWMI	Irrigation sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
627	IWMI	Paddy sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
628	IWMI	Vulnerability to Dengue	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
629	IWMI	Document Hub- Agriculture	Environmental	Land & Aquatic Use/Cover	Agricultural Land Use	Yes	Hard Copy	IWMI		National	Recent	Medium
630	IWMI	Document Hub - Climate Change and Disaster Management	Environmental	Air & Climate	Climate Change	Yes	Hard Copy	IWMI		National	Recent	Medium
631	IWMI	Document Hub- Environment and Eco System Aspects	Environmental	Biodiversity	Eco Systems	Yes	Hard Copy	IWMI		National	Recent	Medium
632	IWMI	Document Hub- Geology and Geo Informatics	Environmental	Geology	Geo Informatics	Yes	Hard Copy	IWMI		National	Recent	Medium
633	IWMI	Document Hub-Water Borne Diseases and Health Problems	Environmental			Yes	Hard Copy	IWMI		National	Recent	Medium
634	IWMI	Document Hub- Hydrology, Hydrodynamics and Irrigation Project	Environmental	surficial hydrology	ground water	Yes	Hard Copy	IWMI		National	Recent	Medium
636	IWMI	Document Hub- Water Quality and Ground Water	Environmental	Subsurface Hydrology	Water Quality	Yes	Hard Copy	IWMI		National	Recent	Medium
636	IWMI	Document Hub- Water Supply, Waste Water & Sanitation	Utilities	Water supply, sanitation	water distribution	Yes	Hard Copy	IWMI		National	Recent	Medium
637	IWMI	Document Hub- Water & Energy	Utilities	Electric Facilities	Energy	Yes	Hard Copy	IWMI		National	Recent	Medium
638	IWMI	Document Hub- Water & Food	Environmental	Surficial hydrology	Water	Yes	Hard Copy	IWMI		National	Recent	Medium
639	IWMI	Document Hub -Water & Gender	Environmental	Surficial hydrology	Water	Yes	Hard Copy	IWMI		National	Recent	Medium
640	IWMI	Document Hub- Policies, Standards & Strategic Plans in water sector	Environmental	Surficial hydrology	Water Sector Policies	Yes	Hard Copy	IWMI		National	Recent	Medium
641	IWMI	Document Hub- Mahaweli Basin	Environmental	Surficial hydrology	Mahaweli Basin	Yes	Hard Copy	IWMI		National	Recent	Medium
642	IWMI	Document Hub- Irrigation Projects	Utilities	Potable water	Irrigation Projects	Yes	Hard Copy	IWMI		National	Recent	Medium
643	IWMI	Document Hub- Village Irrigation Systems in Sri Lanka	Utilities	Potable water	Village Irrigation Systems	Yes	Hard Copy	IWMI		National	Recent	Medium
644	IWMI	Document Hub- Irrigation Management and Crop Diversification in Sri Lanka	Environmental	Land & Abiotic Uze/Land Cover	Crop Diversification	Yes	Hard Copy	IWMI		National	Recent	Medium
645	IWMI	Document Hub- Irrigation Investment Projects	Utilities	Potable water	Irrigation investmet Projects	Yes	Hard Copy	IWMI		National	Recent	Medium
646	IWMI	Document Hub- Water Quality related documents	Environmental	Subsurface Hydrology	Water Quality	Yes	Hard Copy	IWMI		National	Recent	Medium
647	IWMI	Document Hub- Ground Water	Environmental	Subsurface Hydrology	ground water	Yes	Hard Copy	IWMI		National	Recent	Medium
674	NBRO	Landslide Hazard Zonation Maps 1:50,000	Areas	Special Management Areas	Land Slide Hazard Zones	Yes	Hard Copy	ABMP maps of 1 : 50,0 00 scale published by the Survey Department use as Base maps for hazard mapping , and topographic details from these maps were adoptedmutatis mutandis.Ma pping based on ground surveys,maps of Solid Rock Geology of scale 1: 100 000 pu lished by the Geological Survey and Mines Bureau, maps of Slope Class of 1 : 63,360 scale publish ed by the Land Use Policy Planning Department and appropriate field checks.	1:50,000	National	current	Medium
675	NBRO	Landslide Hazard Zonation Maps 1:10,000	Areas	Special Management Areas	Land Slide Hazard Zones	Yes	Hard Copy	1 : 10,0 00 scale topographic maps published by the Survey Department use as Base maps for hazard mapping.Mapping based on ground surveys and other techniques	1:10,000	National	current	Medium
19	SD	Scanned Aerial Photographs	Basemap	Imagery	Flying Charts		Hard Copy			National	since 1956	Medium
474	DAP&H	Diseases Location	Areas	Planning Areas	Diseases Location		Hard Copy	DAPH Survey		National	2016	Medium
475	DAP&H	Milk Production Areas	Areas	Planning Areas	Milk Production Areas		Hard Copy	DAPH Survey		National	2013	Medium
476	DAP&H	Meat Production Areas	Areas	Planning Areas	Meat Production Areas		Hard Copy	DAPH Survey		National	2015	Medium
477	DAP&H	Animal Production Areas	Areas	Planning Areas	Animal Production Areas		Hard Copy	DAPH Survey		National	2015	Medium

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
36	SD	Hard Copies of Survey Documents	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Hard Copy			National		Medium
38	SD	Hard Copies of Survey Documents	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Hard Copy			National		Medium
39	SD	Hard Copies of Survey Documents	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Hard Copy			National		Medium
40	SD	Hard Copies of Survey Documents	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Hard Copy			National		Medium
41	SD	Hard Copies of Survey Documents	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Hard Copy			National		Medium
42	SD	Hard Copies of Survey Documents	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Hard Copy			National		Medium
316	CEA	National Wetland Directory of Sri Lanka	Environment	Land & Aquatic Use/Cover	National Wetlands		Hard Copy	CEA, IUCN IWMI		National	2006	Medium
37	SD	Hard Copies of Survey Documents	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Hard Copy			National		Medium
11	SD	Sri LankaNational Atlas	Basemap	Imagery	Thematic Images of individual sectors	yes	Hard Copy	SD		National		Medium
604	IWMI	Drinking water sctor vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
605	IWMI	Transport vulnerability with sea level rise	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
606	IWMI	Drinking water sctor vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
697	IWMI	Transport sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
698	IWMI	Drinking water sector vulnerability with sea level rise	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
609	IWMI	Housing and urban development sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
610	IWMI	Plantation sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
611	IWMI	Biodiversity sector vulnerability	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
612	IWMI	Paddy sector vulnerability with drouht exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
613	IWMI	Inland and brackish water fishery sector vulnerability with sea level rise	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
614	IWMI	Housing and urban development sector vulnerability with land slide exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
617	IWMI	Plantation sector vulnerability with landslide exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
618	IWMI	Plantation sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
619	IWMI	Paddy sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Hard Copy	IWMI		National	Recent	Medium
478	DA	Agro Ecological Regions of Sri Lanka	Areas	Special Management Areas	Agro Ecological Zones		Hard Copy		1:500,000	National	Medium	Medium
1118	DLTR	Land Plot Nos, Land Plot Area, Land PlotOwnership, Land Gazetted or Not, Plan No , Folio No	Areas	Cadastral	Plot Boundaries/ Block Boundaries		Hard Copy	DLTS	1:1,000	National	2016	Medium
379	NPPD	National Physical Plan	Areas	Planning Areas	Protected Area Network		Hard Copy	Forest Department, Department of Wild Life Conseration, Archaeology Department, Sri Lanka Tourism Development Authority	1:2000000	National	2011	Low
380	NPPD	National Physical Plan	Areas	Planning Areas	Protected Area Network		Hard Copy	Forest Department, Sri Lanka Tourism Development Authority	1:2000000	National	2011	Low
381	NPPD	National Physical Plan	Areas	Planning Areas	Protected Area Network		Hard Copy	Forest Department, Department of Wild Life Conseration, Archaeology Department, Sri Lanka Tourism Development Authority	1:2000000	National	2011	Low
384	NPPD	National Physical Plan	Areas	Planning Areas	Urban Areas		Hard Copy	NPPD	1:2000000	National	2011	Low
385	NPPD	National Physical Plan	Areas	Planning Areas	Metropolitan Areas		Hard Copy	NPPD	1:2000000	National	2011	Low
388	NPPD	National Physical Plan	Areas	Political/Administrative Areas	Granary Areas		Hard Copy	Prepared for Granary Area program by Miistry of Agriculture, Mahaweli Development & Irrigation,Water Resources Management	1:2000000	National	2011	Low
392	NPPD	National Physical Plan	Environmental	Land & Aquatic Use/Cover	Vegetation_Coconut Cultvation Areas		Hard copy	Coconut Research Institute		National	2011	Low

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386	NPPD	National Physical Plan	Transportation	Land Transportation	Transport Links		Hard Copy	NPPD	1:2000000	National	2011	Low
387	NPPD	National Physical Plan	Areas	Planning Areas	Protected Area Network		Hard Copy	NPPD	1:2000000	National	2011	Low
389	NPPD	National Physical Plan	Environmental	Land & Aquatic Use/Cover	Vegetation_Tea Cultivation Areas		Hard Copy	1:50,000 maps of SD	1:50000	National	2011	Low
390	NPPD	National Physical Plan	Environmental	Land & Aquatic Use/Cover	Vegetation_Hghly Productive Tea Cultivation Areas		Hard Copy	1:50,000 maps of SD	1:50,000	National	2011	Low
391	NPPD	National Physical Plan	Environmental	Land & Aquatic Use/Cover	Vegetation_Rubber Cultivation Areas		Hard Copy	Tea Research Institute	1:50000	National	2011	Low
393	NPPD	National Physical Plan	Environmental	Land & Aquatic Use/Cover	New Tourism Areas		Hard Copy	Sri Lanka Tourism Development Authority		National	2011	Low
394	NPPD	National Physical Plan	Environmental	Land & Aquatic Use/Cover	Ecotourism Areas		Hard Copy	Sri Lanka Tourism Development Authority		National	2011	Low
395	NPPD	National Physical Plan	Areas	Planning Areas	Protected Highways		Hard Copy	Sri Lanka Tourism Development Authority		National	2011	Low
396	NPPD	National Physical Plan	Areas	Special Management Areas	Potential Areas_inland fisheries		Hard Copy	NARA		National	2011	Low
397	NPPD	National Physical Plan	Areas	Planning Areas	Protected Area Network		Hard Copy	CCD		National	2011	Low
398	NPPD	National Physical Plan	Areas	Planning Areas	Protected Area Network		Hard Copy	DWLC		National	2011	Low
399	NPPD	National Physical Plan	Areas	Planning Areas	Protected Area Network		Hard Copy	NARA		National	2011	Low
124	LUPPD	Regional Plans	Areas	Planning Areas	Regional Plans		Hard Copy	LUPPD	1:10,000	Regional	Recent	Hgh
125	LUPPD	Special Development Area Plans	Areas	Planning Areas	Special Development Area Plans		Hard Copy	LUPPD	1:10,000	Regional	Recent	Hgh
173	NARA	Sri Lanka Fisheries Atlas -Volume 1	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional		High
176	NARA	Percentage contribution of coarse sand (2 – 4 mm) in the sediment in FMA 1	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
177	NARA	Seabed habitat types in FMA 1.	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
178	NARA	Percentage contribution of pelite (< 0.063 mm) in the sediment in FMA1	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
179	NARA	Percentage contribution of fine sand (0.25 – 0.5 mm) in the sediment in FMA1	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
180	NARA	River discharge into the Gulf of Mannar, Region 1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
181	NARA	Land use in coastal strip 0 – 5 km and 5 – 10 km of Region 1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
182	NARA	Bathymetry of Region 2 South Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
183	NARA	Seabed habitats of Region 2 South Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
184	NARA	Percentage contribution of pelite (< 0.063 mm) in the sediment; (b) Percentage contribution of silt (0.063 – 0.125 mm) in the sediment in Region 2 South Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
185	NARA	Percentage contribution of fine sand (0.25 - 0.5 mm) in the sediment; (b) Percentage contribution of coarse sand (2-4 mm) in the sediment in Region 2 South Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
186	NARA	Rivers and basins and river discharge in Region 2 South Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
187	NARA	Land use in coastal strip 0 – 5 km and 5 – 10 km - Region 2 South Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
188	NARA	Seabed habitats of middle section of Region 3 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
189	NARA	Seabed habitats of northern section of Region 3 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
190	NARA	Percentage contribution of fine sand (0.25 – 0.5 mm) in the sediment FMA4 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
191	NARA	Percentage contribution of silt (0.063 – 0.125) in the sediment FMA4 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
192	NARA	The distribution of coarse sand in FMA4 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
19	NARA	Percentage contribution of coarse sand (2 – 4 mm) in the sediment FMA4 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High

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194	NARA	Percentage contribution of sand (1 – 2 mm) in the sediment FMA4 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
195	NARA	Rivers, basins and river discharge in Region 3 East Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
203	NARA	Abundance and Biomass of Holothuria atra in FMA 1 year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
204	NARA	Abundance and Biomass of Holothuria atra in FMA 2 year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
205	NARA	Abundance and Biomass of Holothuria atra in FMA 3 year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
206	NARA	Abundance and Biomass of Holothuria atra in FMA 4 year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
207	NARA	Abundance and Biomass of Turbinella pyrum in FMA 1, Year 2008	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
208	NARA	Abundance and Biomass by Strata of Turbinella pyrum in FMA 1, Year 2008	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
209	NARA	Abundance and Biomass of Turbinella pyrum in FMA 2, Year 2008	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
210	NARA	Abundance and Biomass by Strata of Turbinella pyrum in FMA 2, Year 2008	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
211	NARA	Abundance and Biomass of Turbinella pyrum in FMA 4, Year 2008	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
212	NARA	Abundance and Biomass by Strata of Turbinella pyrum in FMA 4, Year 2008	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
213	NARA	Spiny lobster fishing grounds in FMA1 North West Coast (Puttalam & Mannar districts)	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
214	NARA	Main landing sites for lobster in FMA2 South Coast (Hambantota)	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
215	NARA	Abundance and Biomass of Panulirus homarus in FMA 1, Year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
216	NARA	Abundance and Biomass of Panulirus ornatus in FMA 1, Year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
217	NARA	Abundance and Biomass of Panulirus versicolor in FMA 1, Year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
218	NARA	Abundance and Biomass of Panulirus homarus in FMA 4, Year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
219	NARA	Abundance and Biomass of Panulirus ornatus in FMA 4, Year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
220	NARA	Abundance and Biomass of Panulirus versicolor in FMA 4, Year 2008 and 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
221	NARA	Main Aquarium Fish Fishing Grounds in Sri Lanka	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
222	NARA	Abundance of Acanthurus leucosternon in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
223	NARA	Abundance of Amphiprion nigripes in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
224	NARA	Abundance of Centropyge flavipectoralis in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
225	NARA	Abundance of Chaetodon auriga in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High

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226	NARA	Abundance of Chaetodon meyeri in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
227	NARA	Abundance of Labroides dimidiatus in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
228	NARA	Abundance of Pomacanthus imperator in FMA 1, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
229	NARA	Abundance of Acanthurus leucosternon & Amphiprion nigripes in FMA 3, Year 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
230	NARA	Abundance of Chaetodon lunula & Chaetodon meyeri in FMA 3, Year 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
231	NARA	Abundance of Labroides dimidiatus & Pomacanthus imperator in FMA 3, Year 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
232	NARA	Abundance of Acanthurus leucosternon in FMA 4, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
233	NARA	Abundance of Amphiprion nigripes in FMA 4, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
234	NARA	Abundance of Centropyge flavipectoralis in FMA 4, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
235	NARA	Abundance of Chaetodon meyeri in FMA 4, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
236	NARA	Abundance of Labroides dimidiatus in FMA 4, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
237	NARA	Abundance of Pomacanthus imperator in FMA 4, Years 2008 & 2009	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
238	NARA	Survey area for sea cucumber and chank FMA1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
239	NARA	Areas prohibited for scuba diving for sea cucumber in FMA1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
240	NARA	Areas fished for chank in FMA1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
241	NARA	Areas prohibited for scuba diving for chank in FMA1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
242	NARA	Main lobster fishing areas in FMA1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
243	NARA	Areas prohibited for scuba diving in FMA1 North West Coast	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
244	NARA	Proposed Marine Protected Area in the FMA2 South Coast (Hambantota)	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
245	NARA	Seabed habitats mapped in the existing and proposed new trawl grounds in the northwest, Sri Lanka	Environmental	Biodiversity	Habitat of Species	Yes	Hard Copy	NARA		Regional	2010	High
403	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Western		Hard copy	NPPD		Regional	2005-2008	Medium
404	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Industrial Estates		Hard copy	NPPD		Regional	2005-2008	Medium
405	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Tourism Development Plan		Hard copy	NPPD		Regional	2005-2008	Medium
409	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Protected Area		Hard Copy	NPPD		Regional	2005-2008	Medium
410	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Sabaragamuwa		Hard Copy	NPPD		Regional	2005-2008	Medium

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412	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Transport		Hard Copy	NPPD		Regional	2005-2008	Medium
413	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Crop Suitability		Hard Copy	NPPD		Regional	2005-2008	Medium
414	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Uva		Hard Copy	NPPD		Regional	2005-2008	Medium
1046	MyLG&PC	Provincial Road Network	Transportation	Land Transportation	Provincial Roads_C Class	No	Hard Copy	Provincial Road Development Departments/ Authorities are responsible to managed and update the respective Provincial level C Class Roads	1:50,000	Regional		Medium
1047	MyLG&PC	Provincial Road Network	Transportation	Land Transportation	Provincial Roads_D Class	No	Hard Copy	Provincial Road Development Departments/ Authorities are responsible to managed and update the respective Provincial level D Class Roads	1:50,000	Regional		Medium
292	CEA	Network of Surface Water	Environment	Surficial Hydrology	Waterbodies		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
293	CEA	Network of Surface Water	Environment	Serficial Hydrology	Waterbodies		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
294	CEA	Wild Life Conservation Areas	Areas	Special Management Areas	Wild Life		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
295	CEA	Wild Life Conservation Areas	Areas	Special Management Areas	Wild Life		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
296	CEA	Existing Forest Areas	Areas	Special Management Areas	Forest		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
297	CEA	Existing Forest Areas	Areas	Special Management Areas	Forest		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
298	CEA	Mineral Resources	Areas	Special Management Areas	Mineral Resources Areas		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
299	CEA	Mineral Resources	Areas	Special Management Areas	Mineral Resources Areas		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
300	CEA	Types of Aquifers	Environmental	Surficial Hydrology	Aquifers		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
301	CEA	Ground Water	Environmental	Surficial Hydrology	Ground water		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
302	CEA	Salinity of Ground Water	Environmental	Surficial Hydrology	Ground water		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
303	CEA	Archaeological Sites	Environmental	Ciltural resources	Archaeological Sites		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
304	CEA	Archaeological Sites	Environmental	Ciltural resources	Archaeological Sites		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
305	CEA	Type of Soil	Environmental	Soils	Soil Types		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
306	CEA	Type of Soil	Environmental	Soils	Soil Types		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
307	CEA	Vulnerability to Natural Disasters	Areas	Special Management Areas	Vulnerability_Zones		Hard Copy	CEA, DMC, UNDP	1:50,000	Regional	2012	Medium
1183	NBRO	Areas of Landslide hazard Zonation Mapping	Areas	Special Management Areas	Landslides Hazard Zonation	Yes	Hard Copy	Survey collection using satellite/ GPS by NBRO	1:50,000; 1	Regional		Medium
1192	MASL	Integrated Mahaweli Development Plan	Areas	Planning Area	Development Plans		Hard Copy	Aerial photographs, topography maps, engineering survey maps	1:20,000-40,000 a/p 1:63,360	Regional		Medium
1193	MASL	Integrated Settlement Development Plan	Areas	Planning Area	Settlement Plan		Hard Copy	Aerial photographs, topography maps, engineering survey maps	1:20,000	Regional		Medium
1194	MASL	Block Plans	Areas	Cadastral	Block Boundaries		Hard Copy	Aerial photographs, topography maps, engineering survey maps	1:1000	Regional		Medium
272	CCD	Storm Surge	Environment	Surficial Hydrology	Coastal Storm Surge		Hard Copy	CCD		Regional		Medium
273	CCD	Storm Surge	Environment	Surficial Hydrology	Coastal Storm Surge		Hard Copy	CCD		Regional		Medium
274	CCD	Storm Surge	Environment	Surficial Hydrology	Coastal Storm Surge		Hard Copy	CCD		Regional		Medium
275	CCD	Storm Surge	Environment	Surficial Hydrology	Coastal Storm Surge		Hard Copy	CCD		Regional		Medium
276	CCD	Storm Surge	Environment	Surficial Hydrology	Coastal Storm Surge		Hard Copy	CCD		Regional		Medium
1070	WRB	Long Term Monitoring Network- Jaffna	Environmental	Subsurface Hydrology	Monitoring Network		Hard Copy	ERB Ground Sampling Tested at Laboratory		District		High
1071	WRB	Water Level Elevation Contours	Environmental	Subsurface Hydrology	Water Level Elevation Contours		Hard Copy	ERB Ground Sampling Tested at Laboratory	1:135,000	District		High
1072	WRB	PO4 Variation	Environmental	Subsurface Hydrology	Groud water quality_PO4 Variation Pattern		Hard Copy	ERB Ground Sampling Tested at Laboratory	1:137,000	District		High
1073	WRB	EC Distribution	Environmental	Subsurface Hydrology	Groud water quality_EC Distribution Pattern		Hard Copy	ERB Ground Sampling Tested at Laboratory	1:120,000	District		High
1074	WRB	pH Variation	Environmental	Subsurface Hydrology	Groud water quality_pH Variation Pattern		Hard Copy	ERB Ground Sampling Tested at Laboratory	1:137,000	District		High
1075	WRB	NO3 Variation	Environmental	Subsurface Hydrology	Groud water quality_NO3 Variation Pattern		Hard Copy	ERB Ground Sampling Tested at Laboratory	1:137,000	District		High
1171	NBRO	Landslide hazard zonation mapping programme	Areas	Special Management Areas	Landslides Hazard Zonation		Hard Copy	NBRO	1:10,000	District	Current	High
1172	NBRO	Topographic slope, Elevation Regimes	Basemap	Elevation	Topographic/ Bathymtric/Contour		Hard Copy	NBRO		District	Current	High
1175	NBRO	Building Foot Prints	Basemap	Structures	Building Type	Yes	Hard Copy	Survey collection using satellite/ GPS by NBRO	1:10,000; 1	District	Current	High
1176	NBRO	Grama Niladhari Divisions	Areas	Political / Administrative Areas	Grama Niladhari Divisions	Yes	Hard Copy	Survey collection using satellite/ GPS by NBRO	1:10,000; 1	District	Current	High
1177	NBRO	Human Settlement Data	Areas	Statiscal Areas	Housing and Population	Yes	Hard Copy	Survey collection using satellite/ GPS by NBRO	1:10,000; 1	District	Current	High

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1178	NBRO	Metereological Data	Environmental	Air & Climate	Metereological Data	Yes	Hard Copy	Survey collection using satellite/ GPS by NBRO	1:10,000;	District	Current	High
1179	NBRO	Land Use Land Cover	Environmental	Land & Aquatic Use/ Cover	Land Use	Yes	Hard Copy	Survey collection using satellite/ GPS by NBRO	1:10,000;	District	Current	High
1180	NBRO	Ground Water	Environmental	Subsurface Hydrology	Groundwater	Yes	Hard Copy	Survey collection using satellite/ GPS by NBRO	1:10,000;	District	Current	High
1181	NBRO	Soil samples, Geotechnical study locations & related Data	Environmental	Soil	Geotechnical Study Location & Dat	Yes	Hard Copy	Survey collection using satellite/ GPS by NBRO	1:10,000;	District	Current	High
1182	NBRO	Topographic Slope, Elevation Regimes, Landform, Hill shade	Basemap	Elevation	Topographic	Yes	Hard Copy	Survey collection using satellite/ GPS by NBRO	1:10,000;	District	Current	High
1069	WRB	Pilot Areas Identified under Dam Safety Water Resources PlanningProject	Areas	Planning Area	Pilot Areas		Hard Copy			Divisional		High
1170	NBRO	Landslide hazard zonation mapping programme	Areas	Special Management Areas	Landslides Hazard Zonation		Hard Copy	NBRO	1:50,000	District	Current	Medium
53	SD	Town Survey Sheets	Basemap	Scanned Basemaps	Scanned Townsurvey Sheets		Hard Copy		1:10,000	Urban		Medium
54	SD	Town Survey Sheets	Basemap	Scanned Basemaps	Scanned Townsurvey Sheets		Hard Copy			Urban		Medium
55	SD	Town Survey Sheets	Basemap	Scanned Basemaps	Scanned Townsurvey Sheets		Hard Copy			Urban		Medium
679	UDA	Land Use-Colombo MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:1000	Urban	2000	Medium
680	UDA	Land Use-Dehiwala-Mt.Lavinia MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:1000	Urban	2000	Medium
681	UDA	Land Use- Beruwala UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:1000	Urban	2004	Medium
682	UDA	Land Use- Kurunegala MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2002	Medium
683	UDA	Land Use-Negombo MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2002	Medium
684	UDA	Land Use-Negombo MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2012	Medium
685	UDA	Land Use -Beruwala UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2002	Medium
685	UDA	Building Type -Beruwala UC	BaseMap	Structures	Building Type	No	Hard Copy	UDA	1:2chain	Urban	2002	Medium
686	UDA	Land Use -Horana UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2000	Medium
687	UDA	Land Use-Horana UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2004	Medium
688	UDA	Land Use-Horana UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2009	Medium
689	UDA	Land Use -Horana UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2011	Medium
691	UDA	Land Use-Ja-ela UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2000	Medium
692	UDA	Land Use-Ja-ela UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2004	Medium
693	UDA	Land Use -Kalutara UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2003	Medium
694	UDA	Land Use -Kalutara UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2011	Medium
695	UDA	Land Use -Maharagama UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2000	Medium
696	UDA	Land Use -Maharagama UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2004	Medium
697	UDA	Building Footprint -Maharagama UC	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2004	Medium
698	UDA	Land Use-Panadura UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2000	Medium
699	UDA	Land Use -Panadura UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2006	Medium
700	UDA	Land Use-Warakapola UDA Dec. Area	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2004	Medium
701	UDA	Land Use -Warakapola UDA Dec. Area	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2011	Medium
702	UDA	Land Use -Colombo MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:1000	Urban	2000	Medium
703	UDA	Land Use -Colombo MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:4chain	Urban	2005	Medium
704	UDA	Land Use -Colombo MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:4chain	Urban	2000	Medium
705	UDA	Land Use -Kataragama PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:4chain	Urban	2013	Medium
706	UDA	Plot Boundaries - Mullaitivu PS	Areas	Cadastral	Plot Boundary	No	Hard Copy	UDA	1:4000	Urban	2003	Medium
707	UDA	Land Use -Mullaitivu PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:4000	Urban	2003	Medium
708	UDA	Land Use-Mullaitivu PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:4000	Urban	2005	Medium
709	UDA	Land Use -Peliyagoda UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:4000	Urban	2003	Medium
710	UDA	Land Use-Dehiwala-Mt.Lavinia MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:1000	Urban	2000	Medium
711	UDA	Land Use -Dehiwala-Mt.Lavinia MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2005	Medium
712	UDA	Building Footprint -Dehiwala-Mt.Lavinia MC	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2005	Medium
713	UDA	Land Use-Dehiwala-Mt.Lavinia MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2004	Medium
714	UDA	Land Use-Jaffna MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2010	Medium
715	UDA	Land Use-Panadura DSD	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2006	Medium

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
716	UDA	Building Footprint-Panadura DSD	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
717	UDA	Land Use -Bentota PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
718	UDA	Land Use-Matale MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2005	Medium
719	UDA	Land Use-Matara MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2005	Medium
720	UDA	Land Use -Greater Matara	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2005	Medium
721	UDA	Land Use -Moratuwa MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2003	Medium
722	UDA	Building Footprint-Moratuwa MC	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2003	Medium
723	UDA	Land Use -Bandaragama PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2007	Medium
724	UDA	Land Use -Milleniya DSD	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2008	Medium
725	UDA	Land Use -Dambulla PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2012	Medium
726	UDA	Land Use -Kaduwela MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2003	Medium
727	UDA	Land Use -Kaduwela MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
728	UDA	Land Use -Rambukkana PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2002	Medium
729	UDA	Land Use -Rambukkana PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
730	UDA	Land Use-Warakapola PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2008	Medium
731	UDA	Land Use -Warakapola PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2011	Medium
732	UDA	Land Use -Warakapola - UDA Declared Area	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2011	Medium
733	UDA	Land Use -Ambalangoda UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2005	Medium
734	UDA	Land Use -Ambalangoda UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2011	Medium
735	UDA	Land Use -Chavakachcheri UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2008	Medium
736	UDA	Land Use -Hambantota UDA Dec. Area	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
737	UDA	Land Use -Galle MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1: 34000	Urban	2007	Medium
738	UDA	Land Use -Galle MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2008	Medium
739	UDA	Land Use -Kandy MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:16chain	Urban	2000	Medium
740	UDA	Land Use -Mannar UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:20000	Urban	2004	Medium
741	UDA	Land Use -Mannar UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:20000	Urban	2006	Medium
742	UDA	Land Use-Mannar UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2004	Medium
743	UDA	Land Use -Mannar UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2009	Medium
744	UDA	Land Use -Nallur PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:20000	Urban	2004	Medium
745	UDA	Plot Boundaries -Nallur PS	Base Map	Planimetric Features	Building Type	No	Hard Copy	UDA	1:20000	Urban	2004	Medium
746	UDA	Land Use -Vavuniya UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:20000	Urban	2004	Medium
747	UDA	Land Use -Vavuniya UC	Base Map	Planimetric Features	Urban Land Use	No	Hard Copy	UDA	1:20000	Urban	2004	Medium
748	UDA	Land Use -Vavuniya UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:20000	Urban	2009	Medium
749	UDA	Land Use -Anuradhapura MC	Base Map	Planimetric Features	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2005	Medium
750	UDA	Land Use -Anuradhapura MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2005	Medium
751	UDA	Land Use -Anuradhapura MC	Base Map	Structures	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2005	Medium
752	UDA	Land Use -Kalmunai MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
753	UDA	Building Footprint -Kalmunai MC	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
754	UDA	Land Use -Kalmunai to Ninthavur	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
755	UDA	Building Footprint -Kalmunai to Ninthavur	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
756	UDA	Land Use -Karativu DSD	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
757	UDA	Building Footprint -Karativu DSD	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
758	UDA	Land Use -Ninthavur DSD	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
759	UDA	Building Footprint -Ninthavur DSD	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
760	UDA	Land Use-Sainthamarathu DSD	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
761	UDA	Building Footprint -Sainthamarathu DSD	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
762	UDA	Land Use -Kotte_ Sri Jayawardenepura MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2004	Medium
763	UDA	Land Use -Greater Matara UDA Dec. Area	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
764	UDA	Land Use-Hanwella PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
765	UDA	Land Use -Homagama PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
766	UDA	Land Use -Homagama PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2008	Medium

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
767	UDA	Land Use-Kaduwela MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2003	Medium
768	UDA	Land Use -Kaduwela MC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
769	UDA	Land Use -Kotikawatta_Mulleriyawa PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
770	UDA	Building Type -Kotikawatta_Mulleriyawa PS	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
771	UDA	Land Use -Muttur PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
772	UDA	Land Use -Muttur - UDA Declared Area	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
773	UDA	Land Use -Boraresgamuwa UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2005	Medium
774	UDA	Land Use -Boraresgamuwa UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2008	Medium
775	UDA	Building Footprint -Boraresgamuwa UC	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2008	Medium
776	UDA	Land Use -Kesbewa PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2005	Medium
777	UDA	Land Use -Kesbewa PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2008	Medium
778	UDA	Land Use -Kesbewa PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2011	Medium
779	UDA	Building Footprint -Kesbewa PS	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
780	UDA	Land Use -Kolonnawa UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
781	UDA	Building Type -Kolonnawa UC	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
782	UDA	Land Use -Wattala UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2003	Medium
783	UDA	Land Use -Anuradhapura-Nawagampalatha DSD	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2012	Medium
784	UDA	Land Use-Greater Dambulla UDA Dec. Area	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
785	UDA	Land Use -Greater Dambulla UDA Dec. Area	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2012	Medium
786	UDA	Land Use -Trincomalee UDA Dec. Area	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2006	Medium
787	UDA	Land Use -Rambukkana PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
788	UDA	Land Use -Rambukkana PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2002	Medium
789	UDA	UDA Declared Areas - Sri Lanka	Areas	Political / Administrative Areas	Municipal & Urban Councils, Pradeshiya Sabhas, Coaslal Belt, Districts, GN Divisions,	No	Hard Copy	UDA	1:50000	Urban	2015	Medium
790	UDA	Land Use -Wetlands - Western Province	Wetlands	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:50000	Urban	2008	Medium
791	UDA	Urban Centres- Sri Lanka	Areas	Boundaries of Urban Centres	Urban Land Use	No	Hard Copy	UDA	1:50000	Urban	2000	Medium
792	UDA	Land Use -Deniyaya UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2008	Medium
793	UDA	Land Use -Attanagalla PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2011	Medium
794	UDA	Building Footprint -Attanagalla PS	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2011	Medium
795	UDA	Land Use -Bentota DSD	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
796	UDA	Land Use -Hikkaduwa UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2011	Medium
797	UDA	Land Use -Thalawakele UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2011	Medium
798	UDA	Land Use -Chilaw UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:2chain	Urban	2006	Medium
799	UDA	Land Use -Deniyaya UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2012	Medium
800	UDA	Land Use -Akuressa PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2011	Medium
801	UDA	Land Use -Hanwella PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2007	Medium
802	UDA	Land Use -Gampaha, Minuwangoda, Mahara, Attanagalle - UDA Dec. Area	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2010	Medium
803	UDA	Building Footprint -Gampaha, Minuwangoda, Mahara, Attanagalle - UDA Dec. Area	Base Map	Structures	Building Type	No	Hard Copy	UDA	1:10000	Urban	2010	Medium
804	UDA	Land Use -Gampaha MC	Base Map	Structures	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2012	Medium
805	UDA	Land Use -Kalutara UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2003	Medium
806	UDA	Land Use -Kalutara UC	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2013	Medium
807	UDA	Land Use -Mahiyangana PS	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2010	Medium
808	UDA	Land Use -Killinochchi UDA Dec. Area	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:10000	Urban	2010	Medium
809	UDA	Land Use -Potuvil	Environmental	Land and Aquatic Use / Cover	Urban Land Use	No	Hard Copy	UDA	1:5000	Urban	2009	Medium
810	UDA	Building Type -Potuvil	Base Map	Structures	Building Type		Hard Copy	UDA	1:5000	Urban	2009	Medium
811	UDA	Land Use -Kalmunai	Environmental	Land and Aquatic Use / Cover	Urban Land Use		Hard Copy	UDA	1:5000	Urban	2009	Medium
812	UDA	Building Type -Kalmunai	Base Map	Structures	Building Type		Hard Copy	UDA	1:5000	Urban	2009	Medium
814	UDA	Building Type -Batticaloa	Base Map	Structures	Building Type		Hard Copy	UDA	1:5000	Urban	2009	Medium
815	UDA	Land Use -Hambantota	Environmental	Land and Aquatic Use / Cover	Urban Land Use		Hard Copy	UDA	1:5000	Urban	2009	Medium

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
816	UDA	Building Type -Hambantota	Base Map	Structures	Building Type		Hard Copy	UDA	1:5000	Urban	2009	Medium
817	UDA	Land Use -Kinniya	Environmental	Land and Aquatic Use / Cover	Urban Land Use		Hard Copy	UDA	1:5000	Urban	2009	Medium
818	UDA	Building Type -Kinniya	Base Map	Structures	Building Type		Hard Copy	UDA	1:5000	Urban	2009	Medium
819	UDA	Land Use -Valachchenai	Environmental	Land and Aquatic Use / Cover	Urban Land Use		Hard Copy	UDA	1:5000	Urban	2009	Medium
820	UDA	Building Type -Valachchenai	Base Map	Structures	Building Type		Hard Copy	UDA	1:5000	Urban	2009	Medium
821	UDA	Land Use -Trincomalee	Environmental	Land and Aquatic Use / Cover	Urban Land Use		Hard Copy	UDA	1:5000	Urban	2009	Medium
822	UDA	Building Type -Trincomalee	Base Map	Structures	Building Type		Hard Copy	UDA	1:5000	Urban	2009	Medium
823	UDA	Land Use -Matara	Environmental	Land and Aquatic Use / Cover	Urban Land Use		Hard Copy	UDA	1:5000	Urban	2009	Medium
824	UDA	Building Type -Matara	Base Map	Structures	Building Type		Hard Copy	UDA	1:5000	Urban	2009	Medium
825	UDA	Land Use -Muttur	Environmental	Land and Aquatic Use / Cover	Urban Land Use		Hard Copy	UDA	1:5000	Urban	2009	Medium
826	UDA	Building Type -Muttur	Base Map	Structures	Building Type		Hard Copy	UDA	1:5000	Urban	2009	Medium
827	UDA	Land Use --Eatsen & Southern Provinces	Environmental	Land and Aquatic Use / Cover	Urban Land Use		Hard Copy	UDA	1:10000	Urban	2007	Medium
828	UDA	Building Footprint -Eatsen & Southern Provinces	Base Map	Structures	Building Type		Hard Copy	UDA	1:10000	Urban	2007	Medium
126	LUPPD	Village Development Plans	Areas	Planning Areas	Village Development Plans		Hard Copy	LUPPD	1:10,000	Local	Recent	Hgh
1138	CMC	Location of Health Institutions	Environment	Land & Aquatic Use/ Cover	Location of Health Institutions		Hard Copy	CMC	1:10,000	Local	2007	Medium
1139	CMC	Location of Market Places	Environment	Land & Aquatic Use/ Cover	Location of Market Places		Hard Copy	CMC	1:10,000	Local	2007	Medium
1140	CMC	Location of Government Institutions	Environment	Land & Aquatic Use/ Cover	Location of Government Institutions		Hard Copy	CMC	1:10,000	Local	2007	Medium
1141	CMC	Location of Plagrounds	Environment	Land & Aquatic Use/ Cover	Location of Plagrounds		Hard Copy	CMC	1:10,000	Local	2007	Medium
1142	CMC	Location of Religious Places	Environment	Land & Aquatic Use/ Cover	Location of Religious Places		Hard Copy	CMC	1:10,000	Local	2007	Medium
1143	CMC	Location of Rivers and Canals	Environment	Land & Aquatic Use/ Cover	Location of Rivers and Canals		Hard Copy	CMC	1:10,000	Local	2007	Medium
1144	CMC	Location of Protected Areas	Environment	Land & Aquatic Use/ Cover	Location of Protected Areas		Hard Copy	CMC	1:10,000	Local	2007	Medium
1145	CMC	Location of Schools	Environment	Land & Aquatic Use/ Cover	Location of Schools		Hard Copy	CMC	1:10,000	Local	2007	Medium
1049	MyLG&PC	Local Authority Roads	Transportation	Land Transportation	Local Authoity Roads	No	Hard Copy	Each Municipal Councils is responsible to managed and update the respective Municipal Council Roads	1:50,000 / 1:10,000	Local		Medium
1050	MyLG&PC	Local Authority Roads	Transportation	Land Transportation	Local Authoity Roads	No	Hard Copy	Each Urban Councils is responsible to managed and update the respective Urban Council Roads	1:50,000 / 1:10,000	Local		Medium
1051	MyLG&PC	Local Authority Roads	Transportation	Land Transportation	Local Authoity Roads	No	Hard Copy	Each Pradeshiya Sabhas isresponsible to managed and update the respective Pradeshiya Sabha Roads	1:50,000 / 1:10,000	Local		Medium
1052	MyLG&PC	Trade Licenses Registers	Utilities	Electric/ Water/Sewer/ Stormwater/ Waste Management	Distribution, provision and maintenance of Electric/ Water/Sewer/ Stormwater/ Waste Management facilities	No	Hard Copy	Distribution, provision and maintenance of Electric/ Water/Sewer/ Stormwater/ Waste Management facilities	1:50,000 / 1:10,000	Local		Medium
44	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Hard Copy			Local		Medium
45	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Hard Copy			Local		Medium
46	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Hard Copy			Local		Medium
47	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Hard Copy			Local		Medium
48	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Hard Copy			Local		Medium
49	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Hard Copy			Local		Medium
50	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Hard Copy			Local		Medium
51	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Hard Copy			Local		Medium
52	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Hard Copy			Local		Medium
102	SD	Hard Copies of Survey Documents	Environmental	Land & Aquatic Use/Cover	Scanned Other Maps		Planimetric or Altimetric data		1:10,000			Medium
103	SD	Hard Copies of Survey Documents	Environmental	Land & Aquatic Use/Cover	Scanned Other Maps		Planimetric or Altimetric data		1:5,000			Medium
104	SD	Hard Copies of Survey Documents	Environmental	Land & Aquatic Use/Cover	Scanned Other Maps		Planimetric or Altimetric data		1:2,000			Medium

Table 4. 11 Organizations Producing Spatial Data Themes and Geo-Coverage of Hard Copy Data

	Geo_Coverage							Spatial Data Theme																									
Organization	National	Regional	District	Urban	Local	Unspecified	**Total**	Planning Area	Administration/Political Boundary	Land Transportation	Statistical Area	Marine Abiotic	Air & Climate	Cultural Resources	Elevation	Structures	Imagery	Special Area Management	Land & Aquatic Resources	Surficial Hydrology	Subsurface Hydrology	Portable Water	Surface Hydrology	Service Area	Geology	Soil	Geomorphological	Biodiversity	Utilities _Waste Management	Utilities_Electrical	Scanned Basemaps	Cadastral	**Total**
1.UDA	150	0	0	0	0	0	**150**	0	1	0	0	0	0	0	0	9	0	0	140	0	0	0	0	0	0	0	0	0	0	0	0	0	**150**
2.NARA	1	64	0	0	0	0	**65**	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64	0	0	0	0	**65**
3.NBRO	0	1	11	0	0	0	**12**	1	1	0	1	0	1	0	2	1	0	2	0	0	2	0	0	0	0	1	0	0	0	0	0	0	**12**
4.SD	9	0	0	3	9	3	**24**	0	0	0	0	0	0	0	0	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	19	0	24
5.CCD	6	5	0	0	0	0	**11**	0	0	0	0	5	0	0	0	0	0	0	0	5	0	0	0	0	0	0	1	0	0	0	0	0	11
6.My PC&LG	0	2	0	0	4	0	**6**	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**6**
7.DA	1	0	0	0	0	0	**1**	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
8.GSMB	7	0	0	0	0	0	**7**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	**7**
9.FD	1	0	0	0	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**1**
10.DLTR	1	0	0	0	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**1**
11.DAP&H	4	0	0	0	0	0	**4**	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
12.MASL	0	3	0	0	0	0	**3**	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**3**
13.CEA	1	16	0	0	0	0	**17**	0	0	1	0	0	0	1	0	0	0	7	1	0	5	0	0	0	0	2	0	0	0	0	0	0	**17**
14.CMC	0	0	0	0	8	0	**8**	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**8**
15.IWMI	76	0	0	0	0	0	**76**	0	0	0	0	0	3	0	0	0	0	27	2	8	4	4	24	0	1	0	0	1	1	1	0	0	**76**
16.MD	20	0	0	0	0	0	**20**	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**20**
17.WRB	0	0	7	0	0	0	**7**	1	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	**7**
18.LUPPD	0	2	0	0	1	0	**3**	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
19.RDA	5	0	0	0	0	0	**5**	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
20.MyF&ARD	2	0	0	0	0	0	**2**	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
21.NPPD	19	8	0	0	0	0	**27**	18	1	1	0	0	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	**27**
Total	**303**	**101**	**18**	**3**	**22**	**3**	**450**	**31**	**3**	**13**	**1**	**6**	**24**	**1**	**2**	**10**	**2**	**46**	**152**	**13**	**17**	**4**	**24**	**7**	**1**	**3**	**1**	**66**	**1**	**1**	**19**	**2**	**450**

Source: ICTA NSDI Baseline Study, 2016

According to Table 4.11 the following organizations have produced about 450 Hard Copy data related to spatial activities of which following organizations produced more than 379 data topics:

Spatial Data Themes and Geo-Coverage of Hard Copy Data	
Urban Development Authority	150
International Water management Institute	76
NARA	65
National Physical Planning Department	27
Survey Department	24
Meteorology Department	20
Central Environmental Authority	17

These hard copy data were available in all five levels such as National, Regional, District Urban and Local levels containing:

LEVEL	Number of hard copy data
National Level	303
Regional Level	101
District Level	18
Urban Level	03
Local Level	22
Unclassified	03
Total No of Databases	**450**

Table 4.12 presents the details on digital images available in the organizations involved in the NSDI Baseline Study.

Table 4. 12 NSDI Baseline Study _ Spatial Data Inventory _Images

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
567	MyF&ARD	Tuna Identification Cards	Environmental	Bio Diversity	Species Range data		Image			National		High
255	CCD	Coastal Habitat Maps	Environment	Biodiversity	Coastal Habitats		Images	Lanka Hydraulic Institute	1:250,000	National	Since 2004	High
1067	AD	Archaeological Museums	Basemap	Structures	Building Points		Images	Archaeology Department/ Excavation Records/ Surveys		National		High
572	IWMI	**Understanding the physical setting of a**	Environmental	Surficial Hydrology	Water Information System	Yes	Images	IWMI		National	Recent	High
573	IWMI	Water Asset Management	Utilities	Potable water	Water Assets	Yes	Images	IWMI		National	Recent	High
574	IWMI	Ground Water	Environmental	Surficial Hydrology	Ground water	Yes	Images	IWMI		National	Recent	High
575	IWMI	Runoff	Environmental	Subsurface Hydrology	Runoff water	Yes	Images	IWMI		National	Recent	High
576	IWMI	Evaporation	Environmental	Air & Climate	Evaporation	Yes	Images	IWMI		National	Recent	High
577	IWMI	River Basin & Catchment Area	Environmental	Surficial Hydrology	River Basin & Catchment Area	Yes	Images	IWMI		National	Recent	High
578	IWMI	Rainfall	Environmental	Air & Climate	Rainfall	Yes	Images	IWMI		National	Recent	High
578	IWMI	Tank	Environmental	Land & Aquatic Use/Cover	Water Bodies	Yes	Images	IWMI		National	Recent	High
580	IWMI	Water Quality	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
581	IWMI	Governance	Environmental	Surface Hydrology	Irrigation schemes	Yes	Images	IWMI		National	Recent	High
582	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
583	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
584	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
585	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
586	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
587	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
588	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
589	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
590	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
591	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
592	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
593	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
594	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
595	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
596	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
597	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
598	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
599	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
600	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
601	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
602	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Images	IWMI		National	Recent	High
603	IWMI	Tourism sector vulnerability with flood expoure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
616	IWMI	Housing and urban development sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
250	CCD	Set Back Standards for Development Activities	Areas	Special Management Areas	Coastal Management Zones	Yes	Images	Lanka Hydraulic Institute		National	Since 2004	High
1067	AD	Archaeological Museums	Basemap	Structures	Building Points		Text	Archaeology Department/ Excavation Records/ Surveys		National		High
316	CEA	National Wetland Directory of Sri Lanka	Environment	Land & Aquatic Use/Cover	National Wetlands		Image	CEA, IUCN IWMI		National	2006	High
604	IWMI	Drinking water sctor vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High

Doc Id	Admin_L	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
605	IWMI	Transport vulnerability with sea level rise	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
606	IWMI	Drinking water sctor vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
697	IWMI	Transport sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
698	IWMI	Drinking water sector vulnerability with sea level rise	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
609	IWMI	Housing and urban development sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
610	IWMI	Plantation sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
611	IWMI	Biodiversity sector vulnerability	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
612	IWMI	Paddy sector vulnerability with drouht exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
613	IWMI	Inland and brackish water fishery sector vulnerability with sea level rise	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
614	IWMI	Housing and urban development sector vulnerability with land slide exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
617	IWMI	Plantation sector vulnerability with landslide exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
618	IWMI	Plantation sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
619	IWMI	Paddy sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	High
1065	AD	Pre History of Sri Lanka	Environment	Cultural Resources	Paleontological Sites		Images	Archaeology Department/ Excavation Records/ Surveys		National	Recent	High
1066	AD	Pre History Excavation Data of Sri Lanka	Environment	Cultural Resources	Paleontological Sites		Images	Archaeology Department/ Excavation Records/ Surveys		National	Recent	High
1064	AD	Irigational technology of Ancient Sri Lanka	Environment	Cultural Resources	Archaeological Sites		Images	Archaeology Department/ Excavation Records/ Surveys		National	Recent	High
1118	DLTR	Land Plot Nos, Land Plot Area, Land PlotOwnership, Land Gazetted or Not, Plan No , Folio No	Areas	Cadastral	Plot Boundaries/ Block Boundaries		Images	DLTS	1:1,000	National	2016	High
12	SD	Airborne Spatial data	Basemap	Imagery	Aerial Photography	yes	Images	SD acquired aerial photographs of the country since 1956 and thereafter in every 10 years full country coverage in b/w panchromatic negatives. Country coverage at various scales but in either 40,000 and 20,000 depending on the phenomena covered	1:40,000 1:20,000, 1:10,000	National/prd	since 1956	Hgh
1061	AD	Sites & Monuments	Areas	Special Management Areas	Protected Monuments		Photos			National	1900-2016	High
111	GSMB	Quadrant Geological Map	Environment	Geology	Surficial Geology		Image	GSMB	1:250,000	National		Medium
615	IWMI	livestock sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	Medium
620	IWMI	Marine fishery sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	Medium
621	IWMI	Inland and brackish water fishery sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	Medium

Doc Id	Admin_L	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
14	SD	Scanned Aerial Photographs	Basemap	Imagery	Scanned Aerial Photographs		Images	B/W Panchromatic positive prints of vertical photographs scanned at the SD		National	since 1956	Medium
15	SD	Scanned Aerial Photographs	Basemap	Imagery	Scanned Aerial Photographs		Images	B/W Panchromatic positive prints of vertical photographs scanned at the SD		National	since 1956	Medium
16	SD	Scanned Aerial Photographs	Basemap	Imagery	Scanned Aerial Photographs		Images	B/W Panchromatic positive prints of vertical photographs scanned at the SD		National	since 1956	Medium
17	SD	Scanned Aerial Photographs	Basemap	Imagery	Scanned Aerial Photographs		Images	B/W Panchromatic positive prints of vertical photographs scanned at the SD		National	since 1956	Medium
18	SD	Scanned Aerial Photographs	Basemap	Imagery	Scanned Aerial Photographs		Images			National	since 1956	Medium
89	SD	Hard Copies of Survey Documents	Areas	Political/Administrative Area	Scanned Administration Maps		Images	The imperial scale topographic map series	1:63,360	National		Medium
317	UDA	Scanned Topography Maps; 1:50,000	Basemap	Scanned Basemaps	Scanned Topographic Basemaps	Yes	Images	UDA, SD	1:50,000	National	2001	Medium
318	UDA	Scanned Topography Maps; 1:63,360	Basemap	Scanned Basemaps	Scanned Topographic Basemaps	Yes	Images	UDA, SD	1:63,360	National	2001	Medium
1060	AD	Scanned Images of Protected Monuments But	Areas	Special Management Areas	Protected Areas		Images			National	2010	Medium
319	UDA	Satellite images	Basemap	Imagery	Orthophotography	Yes	Images	UDA		Regional	2007	Medium
320	UDA	Satellite images	Basemap	Imagery	Orthophotography	Yes	Images	UDA		Regional	2007	Medium
321	UDA	Satellite images	Basemap	Imagery	Orthophotography	Yes	Images	UDA		Regional	2007	Medium
1046	MyLG&PC	Provincial Road Network	Transportation	Land Transportation	Provincial Roads_C Class	No	Image	Provincial Road Development Departments/ Authorities are responsible to managed and update the respective Provincial level C Class Roads	1:50,000	Regional		Medium
1047	MyLG&PC	Provincial Road Network	Transportation	Land Transportation	Provincial Roads_D Class	No	Image	Provincial Road Development Departments/ Authorities are responsible to managed and update the respective Provincial level D Class Roads	1:50,000	Regional		Medium
326	UDA	Landuse/Land Cover Maps 1:100,000	Basemap	Scanned Basemaps	Scanned District Land Use	Yes	Image	UDA, SD	1:100,000	Regional	2008	Medium
376	UDA	Satellite images	Basemap	Imagery	IKONOS, GeoEYE, IRS, QuickBIRD, WorldVIEW, SPOT,	Yes	Image	Purchased from commercial suppliers of Pan Sharpened images having 1 meter or less resolution		Regional	2007	Medium
1183	NBRO	Areas of Landslide hazard Zonation Mapping	Areas	Special Management Areas	Landslides Hazard Zonation	Yes	Images	Survey collection using satellite/ GPS by NBI	1:50,000; 1	Regional		Medium
272	CCD	Storm Surge	Environment	Surficial Hydrology	Coastal Storm Surge		Image	CCD		Regional		Medium
273	CCD	Storm Surge	Environment	Surficial Hydrology	Coastal Storm Surge		Image	CCD		Regional		Medium
274	CCD	Storm Surge	Environment	Surficial Hydrology	Coastal Storm Surge		Image	CCD		Regional		Medium
275	CCD	Storm Surge	Environment	Surficial Hydrology	Coastal Storm Surge		Image	CCD		Regional		Medium
276	CCD	Storm Surge	Environment	Surficial Hydrology	Coastal Storm Surge		Image	CCD		Regional		Medium
256	CCD	Strategic Conservation Sites/Protected Areas	Areas	Special Management Areas	Protected Area		Image	CCD		Regional		Medium
257	CCD	Coastal Habitats	Environment	Biodiversity	Coastal Habitats		Image	CCD		Regional		Medium
258	CCD	Sand Dunes	Environment	Soils	Sand Dunes		Image	CCD		Regional		Medium
270	CCD	Major and MinorSediment cell distribution in South West Coast Region in Sri Lanka	Environment	Geomorphology	Coastal Change		Image	CCD		Regional		Medium
2	SD	1:10,000 topographic database	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Images	10,000 scale hard copy maps	1:10,000	Regional		Medium
4	SD	1:50,000 topographic database	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Images	50,000 scale hard copy maps	1:50,000	Regional		Medium
90	SD	Hard Copies of Survey Documents	Environment	Land & Aquatic Use/Cover	Scanned Other Maps		Images	Original 1:100,000 District Land Use Maps b	1:100,000	Regional		Medium
91	SD	Hard Copies of Survey Documents	Environment	Land & Aquatic Use/Cover	Scanned Other Maps		Images		1:506,880	Regional		Low
92	SD	Hard Copies of Survey Documents	Environment	Land & Aquatic Use/Cover	Scanned Other Maps		Images		1:1,000,000	Regional		Low
93	SD	Hard Copies of Survey Documents	Environment	Land & Aquatic Use/Cover	Scanned Other Maps		Images		1:1,000,000	Regional		Low

Doc Id	Admin_L	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
622	IWMI	Livestock sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	Medium
623	IWMI	Livestock sector vulnerabilityw with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	Medium
624	IWMI	Tourism sector vulnerability with sea level rise expoure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	Medium
625	IWMI	Transport sector vulnerability with landslide exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	Medium
626	IWMI	Irrigation sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	Medium
627	IWMI	Paddy sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	Medium
628	IWMI	Vulnerability to Dengue	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Images	IWMI		National	Recent	Medium
629	IWMI	Document Hub- Agriculture	Environmental	Land & Aquatic Use/Cover	Agricultural Land Use	Yes	Images	IWMI		National	Recent	Medium
630	IWMI	Document Hub - Climate Change and Disaster Management	Environmental	Air & Climate	Climate Change	Yes	Images	IWMI		National	Recent	Medium
631	IWMI	Document Hub- Environment and Eco System Aspects	Environmental	Biodiversity	Eco Systems	Yes	Images	IWMI		National	Recent	Medium
632	IWMI	Document Hub- Geology and Geo Informatics	Environmental	Geology	Geo Informatics	Yes	Images	IWMI		National	Recent	Medium
633	IWMI	Document Hub-Water Borne Diseases and Health Problems	Environmental			Yes	Images	IWMI		National	Recent	Medium
634	IWMI	Document Hub- Hydrology, Hydrodynamics and Irrigation Project	Environmental	surficial hydrology	ground water	Yes	Images	IWMI		National	Recent	Medium
636	IWMI	Document Hub- Water Quality and Ground Water	Environmental	Subsurface Hydrology	Water Quality	Yes	Images	IWMI		National	Recent	Medium
636	IWMI	Document Hub- Water Supply, Waste Water & Sanitation	Utilities	Water supply, sanitation	water distribution	Yes	Images	IWMI		National	Recent	Medium
637	IWMI	Document Hub- Water & Energy	Utilities	Electric Facilities	Energy	Yes	Images	IWMI		National	Recent	Medium
638	IWMI	Document Hub- Water & Food	Environmental	Surficial hydrology	Water	Yes	Images	IWMI		National	Recent	Medium
639	IWMI	Document Hub -Water & Gender	Environmental	Surficial hydrology	Water	Yes	Images	IWMI		National	Recent	Medium
640	IWMI	Document Hub- Policies, Standards & Strategic Plans in water sector	Environmental	Surficial hydrology	Water Sector Policies	Yes	Images	IWMI		National	Recent	Medium
641	IWMI	Document Hub- Mahaweli Basin	Environmental	Surficial hydrology	Mahaweli Basin	Yes	Images	IWMI		National	Recent	Medium
642	IWMI	Document Hub- Irrigation Projects	Utilities	Potable water	Irrigation Projects	Yes	Images	IWMI		National	Recent	Medium
643	IWMI	Document Hub- Village Irrigation Systems in Sri Lanka	Utilities	Potable water	Village Irrigation Systems	Yes	Images	IWMI		National	Recent	Medium
644	IWMI	Document Hub- Irrigation Management and Crop Diversification in Sri Lanka	Environmental	Land & Abiotic Uze/Land C	Crop Diversification	Yes	Images	IWMI		National	Recent	Medium
645	IWMI	Document Hub- Irrigation Investment Projects	Utilities	Potable water	Irrigation investmet Projects	Yes	Images	IWMI		National	Recent	Medium
646	IWMI	Document Hub- Water Quality related documents	Environmental	Subsurface Hydrology	Water Quality	Yes	Images	IWMI		National	Recent	Medium
647	IWMI	Document Hub- Ground Water	Environmental	Subsurface Hydrology	ground water	Yes	Images	IWMI		National	Recent	Medium
36	SD	Hard Copies of Survey Documents	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Image			National		Medium
38	SD	Hard Copies of Survey Documents	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Image			National		Medium
39	SD	Hard Copies of Survey Documents	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Image			National		Medium
40	SD	Hard Copies of Survey Documents	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Image			National		Medium
41	SD	Hard Copies of Survey Documents	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Image			National		Medium
42	SD	Hard Copies of Survey Documents	Basemap	Scanned Basemaps	Scanned Topographic Basemaps		Image			National		Medium

Doc Id	Admin_L	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
94	SD	Hard Copies of Survey Documents	Environment	Land & Aquatic Use/Cover	Scanned Other Maps		Images			Regional		Low
95	SD	Hard Copies of Survey Documents	Environment	Land & Aquatic Use/Cover	Scanned Other Maps		Images			Regional		Low
96	SD	Hard Copies of Survey Documents	Environment	Land & Aquatic Use/Cover	Scanned Other Maps		Images			Regional		Low
97	SD	Hard Copies of Survey Documents	Environment	Land & Aquatic Use/Cover	Scanned Other Maps		Images		1:500,000	Regional		Low
98	SD	Hard Copies of Survey Documents	Environment	Land & Aquatic Use/Cover	Scanned Other Maps		Images		1:10,000	Regional		Low
99	SD	Hard Copies of Survey Documents	Environment	Land & Aquatic Use/Cover	Scanned Other Maps		Images		1:500,000	Regional		Low
100	SD	Hard Copies of Survey Documents	Environment	Land & Aquatic Use/Cover	Scanned Other Maps		Images			Regional		Low
105	SD	Hard Copies of Survey Plans	Environment	Land & Aquatic Use/Cover	Scanned Survey plans		Images			Regional		Low
101	SD	Hard Copies of Survey Documents	Environment	Land & Aquatic Use/Cover	Scanned Other Maps		Images			Regional		Low
1175	NBRO	Building Foot Prints	Basemap	Structures	Building Type	Yes	Images	Survey collection using satellite/ GPS by NB	1:10,000; 1	District	Current	High
1176	NBRO	Grama Niladhari Divisions	Areas	Political / Administrative Are	Grama Niladhari Divisions	Yes	Images	Survey collection using satellite/ GPS by NB	1:10,000; 1	District	Current	High
1177	NBRO	Human Settlement Data	Areas	Statiscal Areas	Housing and Population	Yes	Images	Survey collection using satellite/ GPS by NB	1:10,000; 1	District	Current	High
1178	NBRO	Metereological Data	Environment	Air & Climate	Metereological Data	Yes	Images	Survey collection using satellite/ GPS by NB	1:10,000; 1	District	Current	High
1179	NBRO	Land Use Land Cover	Environment	Land & Aquatic Use/ Cover	Land Use	Yes	Images	Survey collection using satellite/ GPS by NB	1:10,000; 1	District	Current	High
1180	NBRO	Ground Water	Environment	Subsurface Hydrology	Groundwater	Yes	Images	Survey collection using satellite/ GPS by NB	1:10,000; 1	District	Current	High
1181	NBRO	Soil samples, Geotechnical study locations & related Data	Environment	Soil	Geotechnical Study Location & Data	Yes	Images	Survey collection using satellite/ GPS by NB	1:10,000; 1	District	Current	High
1182	NBRO	Topographic Slope, Elevation Regimes, Landform, Hill shade	Basemap	Elevation	Topographic	Yes	Images	Survey collection using satellite/ GPS by NB	1:10,000; 1	District	Current	High
53	SD	Town Survey Sheets	Basemap	Scanned Basemaps	Scanned Townsurvey Sheets		Image		1:10,000	Urban		Medium
54	SD	Town Survey Sheets	Basemap	Scanned Basemaps	Scanned Townsurvey Sheets		Image			Urban		Medium
55	SD	Town Survey Sheets	Basemap	Scanned Basemaps	Scanned Townsurvey Sheets		Image			Urban		Medium
20	SD	Scanned Aerial Photographs	Basemap	Imagery	Colour Aerial Photography		Images	Colour positive prints of vertical photographs scanned at the SD		Local	since 1990	High
21	SD	Scanned Aerial Photographs	Basemap	Imagery	Colour Aerial Photography		Images	Colourpositive prints of vertical photographs scanned at the SD		Local	since 1990	High
22	SD	Scanned Aerial Photographs	Basemap	Imagery	Colour Aerial Photography		Images	Colour positive prints of vertical photographs scanned at the SD		Local	since 1990	High
43	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Images			Local		High
443	ID	Borrow Materials	Environment	Soils	Filling Materials	Yes	Image/ Text	Surveys and other sources of data base by Irrigation Department.		Local		Medium
1049	MyLG&PC	Local Authority Roads	Transportation	Land Transportation	Local Authoity Roads	No	Images	Each Municipal Councils is responsible to managed and update the respective Municipal Council Roads	1:50,000 / 1:10,000	Local		Medium
1050	MyLG&PC	Local Authority Roads	Transportation	Land Transportation	Local Authoity Roads	No	Images	Each Urban Councils is responsible to managed and update the respective Urban Council Roads	1:50,000 / 1:10,000	Local		Medium
1051	MyLG&PC	Local Authority Roads	Transportation	Land Transportation	Local Authoity Roads	No	Images	Each Pradeshiya Sabhas isresponsible to managed and update the respective Pradeshiya Sabha Roads	1:50,000 / 1:10,000	Local		Medium
1052	MyLG&PC	Trade Licenses Registers	Utilities	Electric/ Water/Sewer/ Stormwater/ Waste Management	Distribution, provision and maintenance of Electric/ Water/Sewer/ Stormwater/ Waste Management facilities	No	Images	Distribution, provision and maintenance of Electric/ Water/Sewer/ Stormwater/ Waste Management facilities	1:50,000 / 1:10,000	Local		Medium

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
44	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Image			Local		Low
45	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Image			Local		Low
46	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Image			Local		Low
47	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Image			Local		Low
48	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Image			Local		Low
49	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Image			Local		Low
50	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Image			Local		Low
51	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Image			Local		Low
52	SD	Hitorical Maps	Basemap	Scanned Basemaps	Scanned Historical Maps		Image			Local		Low

Table 4. 13 Organizations Producing Spatial Data Themes and Geo-Coverage of Digital Images

	Geo_Coverage							Spatial Data Theme																						
Organization	National	Regional	District	Urban	Local	Unspecified	**Total**	Biodiversity	Land Transportation	Structures	Scanned Basemaps	Surficial Hydrology	Soils	Portable Water	Statistical Area	Subsurface Hydrology	Air & Climate	Land & Aquatic Resources	Surficial Hydrology	Special Area Management	Cultural Resources	Geomorphological	Cadastral	Elevation	Imagery	Geology	Subsurface Hydrology	Utilities _Water	Utilities_Electrical	Administration/Political Boundary	**Total**
1.UDA	2	5	0	0	0	0	**7**	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	**7**
2.NBRO	0	1	8	0	0	0	**9**	0	0	1	0	0	1	1	1	0	1	1	0	1	0	0	0	1	0	0	0	0	1	**9**
3.SD	13	16	0	0	13	0	**42**	0	0	0	21	0	0	0	0	0	0	10	1	0	0	0	0	0	10	0	0	0	0	42
4.CCD	2	9	0	0	0	0	**11**	2	0	0	0	5	1	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	11
5.My PC&LG	0	2	0	0	4	0	**6**	0	5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**6**
6.AD	7	0	0	0	0	0	**7**	0	0	2	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	**7**
7.GSMB	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**1**
8.ID	0	0	0	0	1	0	**1**	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
9.DLTR	1	0	0	0	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**1**
10.CEA	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
11.IWMI	75	0	0	0	0	0	**75**	1	0	0	0	4	0	7	0	1	3	2	27	25	0	0	0	0	0	1	1	2	1	0	**75**
12.MyF&ARD	1	0	0	0	0	0	**1**	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Total	**103**	**33**	**8**	**0**	**18**	**0**	**162**	**4**	**5**	**3**	**24**	**9**	**3**	**8**	**1**	**1**	**4**	**14**	**28**	**31**	**3**	**1**	**1**	**1**	**14**	**2**	**1**	**2**	**1**	**1**	**162**

Source: ICTA NSDI Baseline Study, 2016

According to Table 4.13 the organizations have produced about 162 digital image data related to spatial activities of which following two organizations produced more than 117 data topics:

- International Water Management Institute - 75
- Survey Department - 42

These databases were developed in four levels such as National, Regional, District and Local levels containing:

LEVEL	Number of databases
National Level	103
Regional Level	33
District Level	08
Local Level	18
Total No of Databases	162

Table 4.14 presents the details on availability of text data in the organizations involved in the NSDI Baseline Study.

Table 4. 14 NSDI Baseline Study _ Spatial Data Inventory _Text Data

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
251	CCD	Coastal Hazard maps by Tsunami	Environment	Marine Abiotic	Tsunami	Yes	Text	Lanka Hydraulic Institute		National	Since 2004	High
252	CCD	Coastal Hazard Maps by storm Surges	Environment	Surficial Hydrology	Coastal Storm Surge	Yes	Text	Lanka Hydraulic Institute		National	Since 2004	High
253	CCD	Coastal Hazard Maps by Coastal Erosin	Environment	Soils	Coastal erosion	Yes	Text	Lanka Hydraulic Institute		National	Since 2004	High
254	CCD	Coastal Hazard Maps by Sea Level Rise	Environment	Surficial Hydrology	Sea level rise	Yes	Text	Lanka Hydraulic Institute		National	Since 2004	High
114	LUPPD	Land Bank				Yes	Text	SD 1:10,000 maps used as base data and other related data collected by field survey	1:10,000	National	2015	High
130	MD	Temperature Data	Environment	Air & Climate	Air Temperature	Yes	Text	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
131	MD	Rainfall Data	Environment	Air & Climate	Rainfall	Yes	Text	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
132	MD	Precipitation Data	Environment	Air & Climate	Precipitation	Yes	Text	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
133	MD	Atmospheric pressure	Environment	Air & Climate	Atmospheric pressure	Yes	Text	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
134	MD	Wind	Environment	Air & Climate	Wind speed and direction	Yes	Text	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
135	MD	Humiditity	Environment	Air & Climate	Humidity	Yes	Text	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
137	MD	Climate Change	Environment	Air & Climate	Climate	Yes	Text	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
138	MD	Climatological Database	Environment	Air & Climate	Climate	Yes	Text	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
139	MD	Metereological Database	Environment	Air & Climate	Metereology	Yes	Text	Collection from Metereological Stations operated by MD since 1869		National	Since 1869	High
155	MD	Mothly average Thunder days	Environment	Air & Climate	Metereology	Yes	Text	Mothly average Thunder days		National		High
156	MD	Monthly behaviour of highly phenomena	Environment	Air & Climate	Metereology	Yes	Text	Monthly behaviour of highly phenomena		National		High
175	NARA	Fisheries Management Plan	Environment	Biodiversity	Fisheries Management Plan		Text	NARA		National	2008	High
433	DMC	Disaster Information System (DisInventar)	Environment	Surficial Hydrology/Marine Abiotic	Natural Disasters	Yes	Text	Grama Niladharis and Divisional Secretararies	1:1,000	National	2016	High
434	DMC	Composition of disasters	Environment	Surficial Hydrolgy/Marine Abiotic	Natural Disasters	Yes	Text	Grama Niladharis and Divisional Secretararies		National	2016	High
482	DA	Crop Suitability Assessment	Areas	Special Management Areas	Crop Suitability		Text			National		High
524	MyAD&AS	Agriculture Management Information System	Environmental	Land & Abiotic Uze/Land Cover	Agriculture Management Information System		Text			National		High
525	MyAD&AS	Rice Knowledge Bank	Environmental	Land & Abiotic Uze/Land Cover	Rice Knowledge Bank		Text			National		High
526	MyAD&AS	Rice-Pest Analyis System	Environmental	Bio Diversity	Pest Analysis System		Text			National		High
527	MyAD&AS	Information System for Bio-Diversity of Food and Nutrition System	Environmental	Bio Diversity	Habitat of Species of Special Concern		Text			National	Recent	High
528	MyAD&AS	National Agro-Meteorological Database	Environmental	Air & Climate	Metereological Data		Text	NRMC		National	Recent	High
529	MyAD&AS	Quality controlled Agro Met Data	Environmental	Air & Climate	Metereological Data		Text	NRMC		National	Recent	High
538	MyAD&AS	Crop Cultivation & Program Monitoring	Environmental	Land & Aquatic Use/Cover	Cultivation program monitoring		Text	NRMC		National	Recent	High
539	MyAD&AS	Crop Extent & Production Forecatsig	Environmental	Land & Aquatic Use/Cover	Production Forecasting		Text	NRMC		National	Recent	High
544	NRMC	Pest Servilience	Environment	Bio Diversity			Text	NRMC		National	Recent	High
545	NRMC	Germ Plasm Experiment	Environmet	Bio Diversity			Text	NRMC		National	Recent	High
546	NRMC	Observance of Standards	Environmental	Land & Aquatic Use/Cover	Agricultural Land Use		Text	Department of Agriculture		National	Recent	High
548		QRCode System for GAP Certification Programme	Environmental	Bio Diversity	Biological analysis		Text	Department of Agriculture		National	Recent	High
549	NRMC	Market Price Information System	Environmental	Land & Aquatic Use/Cover	Agricultural Market Information		Text	Department of Agriculture		National	Recent	High
550	CBSL	Statistics	Areas	Statistical Areas	Economic Sectors		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
551	CBSL	Observance of Standards	Areas	Statistical Areas	Document Guidelines_GDSS		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High

Doc Id	Admin_L	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
552	CBSL	Real Sector	Areas	Statistical Areas	Real Estate		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
553	CBSL	External Sector	Areas	Statistical Areas	External Sector		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
554	CBSL	Fiscal Sector	Areas	Statistical Areas	Fiscal Sector		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
555	CBSL	Fiscal Sector	Areas	Statistical Areas	Fiscal Sector_Socio Economic		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
556	CBSL	Fiscal Sector	Areas	Statistical Areas	Fiscal Sector_Economic & Social Statistics		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
557	CBSL	Fiscal Sector	Areas	Statistical Areas	Fiscal Sector_Fiscal Policy		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
558	CBSL	Fiscal Sector	Areas	Statistical Areas	Fiscal Sector_Recent Economic Development		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
559	CBSL	Fiscal Sector	Areas	Statistical Areas	Fiscal Sector_Government Finance		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
560	CBSL	Finnacial Sector	Areas	Statistical Areas	Financial Sector		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
561	CBSL	Banlking Sector Statistics	Areas	Statistical Areas	Banking Sector_Quarterly Financial Data		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
562	CBSL	Banlking Sector Statistics	Areas	Statistical Areas	Banking Sector_Assets and Liabilities		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
563	CBSL	Banlking Sector Statistics	Areas	Statistical Areas	Banking Sector_Earnings & Profits		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
564	CBSL	Banking Sector Statistics	Areas	Statistical Areas	Banking Sector_Banking Sector		Text	Analyticalminformation obtained from all the soues and published secondary data		National	Recent	High
566	MyF&ARI	Fish Processing Establishment	Areas	Service Areas	Fish Procesing locations		Text	Registered under the Ministry		National		High
568	MyF&ARI	Special Commodity Levy on Fish and Fishery Products	Areas	Statistical Areas	Commodity Levy		Text			National		High
569	MyF&ARI	Major Marine Fish Types by commercial gr	Environmental	Bio Diversity	Species Range data		Text			National		High
570	MyF&ARI	Census of Fishing Boats	Areas	Statistical Areas	Census of Fishing Boats		Text			National		High
1083	LHI	Fish Harbour Repair	Utilities	Water Transportation	Fish Harbour		Text			National		High
1110	RDA	Data on Road Traffic Accidenct	Transportation	Land Transportation	NHN Traffic Data		Text	RDA		National	2015	High
1111	RDA	Data on Traffic Signal Light System of National Highway network	Transportation	Land Transportation	NHN Traffic Data		Text	RDA		National	2015	High
1112	RDA	ADT, AADT, MCC, Turning Movemet Count, Axel Load Data	Transportation	Land Transportation	NHN Traffic Data		Text	RDA		National	2015	High
1115	RDA	Visual Road Condition data	Transportation	Land Transportation	Road network Condition		Text	RDA		National	2015	High
1116	RDA	Pavement Structural Condition	Transportation	Land Transportation	Road network Condition		Text	RDA		National	2015	High
1117	RDA	Bridge & Culvert Location Data	Transportation	Land Transportation	Bridge & Culvert Location Data		Text	RDA		National	2015	High
1067	AD	Archaeological Museums	Basemap	Structures	Building Points		Text	Archaeology Department/ Excavation Records/ Surveys		National		High
572	IWMI	**Understanding the physical setting of a water resources system; Water availability; Water demand and use; Water quality; Governance and management; Climate change**	Environmental	Surficial Hydrology	Water Information System	Yes	Text	IWMI		National	Recent	High
573	IWMI	Water Asset Management	Utilities	Potable water	Water Assets	Yes	Text	IWMI		National	Recent	High
574	IWMI	Ground Water	Environmental	Surficial Hydrology	Ground water	Yes	Text	IWMI		National	Recent	High
575	IWMI	Runoff	Environmental	Subsurface Hydrology	Runoff water	Yes	Text	IWMI		National	Recent	High
576	IWMI	Evaporation	Environmental	Air & Climate	Evaporation	Yes	Text	IWMI		National	Recent	High
577	IWMI	River Basin & Catchment Area	Environmental	Surficial Hydrology	River Basin & Catchment Area	Yes	Text	IWMI		National	Recent	High

Doc Id	Admin_L	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
578	IWMI	Rainfall	Environmental	Air & Climate	Rainfall	Yes	Text	IWMI		National	Recent	High
578	IWMI	Tank	Environmental	Land & Aquatic Use/Cover	Water Bodies	Yes	Text	IWMI		National	Recent	High
580	IWMI	Water Quality	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
581	IWMI	Governance	Environmental	Surface Hydrology	Irrigation schemes	Yes	Text	IWMI		National	Recent	High
582	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
583	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
584	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
585	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
586	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
587	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
588	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
589	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
590	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
591	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
592	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
593	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
594	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
595	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
596	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
597	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
598	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
599	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
600	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
601	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
602	IWMI	Water Quality Dataset-Maps	Environmental	Surface Hydrology	Water Quality in Jaffna	Yes	Text	IWMI		National	Recent	High
603	IWMI	Tourism sector vulnerability with flood expoure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	High
616	IWMI	Housing and urban development sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	High
250	CCD	Set Back Standards for Development Activiti	Areas	Special Management Areas	Coastal Management Zones	Yes	Text	Lanka Hydraulic Institute		National	Since 2004	High
531	MyAD&AS	Mapping Paddy Lands Distribution for Crop Forecasting	Environmental	Land & Aquatic Use/Cover	Agricultural Land Use	Yes	Text	NRMC		National	Recent	High
540	MyAD&AS	Disaster Crop Damage Estimate	Environmental	Land & Aquatic Use/Cover	Crop Damage	Yes	Text	NRMC		National	Recent	High
547	NRMC	Seeding and Planting Material MIS	Environmental	Land & Aquatic Use/Cover	Agricultural Land Use		Text	Department of Agriculture		National	Recent	High
313	CEA	Industrial Directory-2014	Areas	Statistical Areas	Industry	Yes	Text	Detailed GPS/Remote Sensing/Field Survey data related to all the industrial locations of the country	1:5,000	National	Ongoing	High
1067	AD	Archaeological Museums	Basemap	Structures	Building Points		Text	Archaeology Department/ Excavation Records/ Surveys		National		High
259	CCD	Coastal Wetlands	Environment	Biodiversity	Coastal Habitats		Text	CCD		National		High
260	CCD	Global Average Surface Warning & Sea Level Rise at the end of 21st Century	Environment	Marine Abiotic	Sea level rise		Text	CCD		National		High
1068	AD	Ancient Coins in Sri Lanka	Environment	Cultural Resources	Ancient Coins		Text	Archaeology Department/ Excavation Records/ Surveys		National		High
282	FD	Biomass and Carbon Stock of Forests	Environment	Biodiversity	Habitat Type		Text	FD		National		High
284	DWLC	Wild Life Conservation Areas	Areas	Special Management Areas	Protected Area		Text	DWLC		National		High
285	DWLC	Habitat Management Plans	Environment	Biodiversity	Habitat Type		Text	DWLC		National		High
286	DWLC	Elephant Corridors	Areas	Special Management Areas	Protected Area		Text	DWLC		National		High
287	DWLC	Elephant Corridors	Environment	Biodiversity	Protection Status		Text	DWLC		National		High

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
669	NSF	Vulnerability of low-lying plains in the coastal zone to any future rise in sea level and affects tourism and fisheries could be affected due to impacts of sea level rise	Areas	Special Management Areas	Vulnerability to Natural Disasters		Text			National		Medium
670	NSF	Adversely affects due to impacts of climate change on livelihoods connected to agriculture and food security of the nation	Areas	Special Management Areas	Climate Change		Text			National		Medium
671	NSF	Pattern of climate change in altering natural systems connected to water cycle, eco systems and bio-diversity to decline of various ecosystem services that are indispensable for the welfare of human population.	Environmental	Air & Climate	Eco System Services		Text			National		Medium
672	NSF	Significant repercussions on health of the citizens and human settlements of the country by Impacts of climate change	Areas	Special Management Areas	Climate Change		Text			National		Medium
673	NSF	Negative socio-economic outcomes on many sectors in Sri Lanka with widespread climate change	Areas	Special Management Areas	Climate Change		Text			National		Medium
676	NBRO	Research Publications - Air Quality	Areas	Statistical Areas	Document_Research	No	Text	25 research publications related to air quality		National		Medium
677	NBRO	Research Publications - Landslides	Areas	Statistical Areas	Document_Research	No	Text	30 research publications related to Landslides		National		Medium
678	NBRO	Research Publications - Water Quality	Areas	Statistical Areas	Document_Research	No	Text	03 research publications related to water quality		National		Medium
668	IWMI	IWMI Research Data- CGIAR Data Guidelines	Areas	Statistical Areas	Data Guidelines		Text	CIGAR		National		Medium
1152	DWLC	List of Sanctuaries of Sri Lanka	Environment	Biodiversity	Habitat Type	Yes	Text	DWLC		National	2005	Medium
1153	DWLC	Map of Sanctuaries in Sri Lanka	Environment	Biodiversity	Habitat Type	Yes	Text	DWLC	1:50,000/ GP	National	2005	Medium
1154	DWLC	List of Strict Nature Reserves of Sri Lanka	Environment	Biodiversity	Habitat Type	Yes	Text	DWLC	1:50,000/ GP	National	2005	Medium
1155	DWLC	Map of Strict Nature Reserves in Sri Lanka	Environment	Biodiversity	Habitat Type	Yes	Text	DWLC	1:50,000/ GP	National	2005	Medium
1156	DWLC	List of Elephant Corridor of Sri Lanka	Environment	Biodiversity	Habitat Type	Yes	Text	DWLC	1:50,000/ GP	National	2005	Medium
1157	DWLC	Map of Elephant Corridor of Sri Lanka	Environment	Biodiversity	Habitat Type	Yes	Text	DWLC	1:50,000/ GP	National	2005	Medium
1158	DWLC	List of Nature Reserves of Sri Lanka	Environment	Biodiversity	Habitat Type	Yes	Text	DWLC	1:50,000/ GP	National	2005	Medium
1159	DWLC	Map of Nature Reserves in Sri Lanka	Environment	Biodiversity	Habitat Type	Yes	Text	DWLC	1:50,000/ GP	National	2005	Medium
1160	DWLC	List of National Parks of Sri Lanka	Environment	Biodiversity	Habitat Type	Yes	Text	DWLC	1:50,000/ GP	National	2005	Medium
1161	DWLC	Map of National Parks in Sri Lanka	Environment	Biodiversity	Habitat Type	Yes	Text	DWLC	1:50,000/ GP	National	2005	Medium
1162	DWLC	Map of Protected Areas of Sri Lanka	Areas	Special Management Areas	Protected Areas Network Zone	Yes	Text	DWLC	1:50,000/ GP	National	2005	Medium
428	DAD	Seasonal rainfall for Maha and Yala	Environment	Air & Climate	Rainfall		Text	DAD and SD		National	2011	Medium
429	DAD	Maximum Specific Yield for Maha and Yala	Areas	Statistical Areas	Yield		Text	DAD and SD		National	2011	Medium
430	DAD	Annual Rainfall and Specific Yield	Environment	Air & Climate	Rainfall		Text	DAD and SD		National	2011	Medium
1163	DWLC	Databases with respect to Wild Life Bibliogra	Areas	Statiscal Areas	Document Guideline_Biliography		Text	DWLC		National		Medium
1164	DWLC	Databases with respect to BBS Field Manua	Areas	Statistical Areas	Document_BBS Field Manual		Text	DWLC		National		Medium
615	IWMI	livestock sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
620	IWMI	Marine fishery sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
621	IWMI	Inland and brackish water fishery sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
622	IWMI	Livestock sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium

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623	IWMI	Livestock sector vulnerabilityw with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
624	IWMI	Tourism sector vulnerability with sea level rise expoure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
625	IWMI	Transport sector vulnerability with landslide exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
626	IWMI	Irrigation sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
627	IWMI	Paddy sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
628	IWMI	Vulnerability to Dengue	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
629	IWMI	Document Hub- Agriculture	Environmental	Land & Aquatic Use/Cover	Agricultural Land Use	Yes	Text	IWMI		National	Recent	Medium
630	IWMI	Document Hub - Climate Change and Disaster Management	Environmental	Air & Climate	Climate Change	Yes	Text	IWMI		National	Recent	Medium
631	IWMI	Document Hub- Environment and Eco System Aspects	Environmental	Biodiversity	Eco Systems	Yes	Text	IWMI		National	Recent	Medium
632	IWMI	Document Hub- Geology and Geo Informatics	Environmental	Geology	Geo Informatics	Yes	Text	IWMI		National	Recent	Medium
633	IWMI	Document Hub-Water Borne Diseases and Health Problems	Environmental			Yes	Text	IWMI		National	Recent	Medium
634	IWMI	Document Hub- Hydrology, Hydrodynamics and Irrigation Project	Environmental	surficial hydrology	ground water	Yes	Text	IWMI		National	Recent	Medium
636	IWMI	Document Hub- Water Quality and Ground Water	Environmental	Subsurface Hydrology	Water Quality	Yes	Text	IWMI		National	Recent	Medium
636	IWMI	Document Hub- Water Supply, Waste Water & Sanitation	Utilities	Water supply, sanitation	water distribution	Yes	Text	IWMI		National	Recent	Medium
637	IWMI	Document Hub- Water & Energy	Utilities	Electric Facilities	Energy	Yes	Text	IWMI		National	Recent	Medium
638	IWMI	Document Hub- Water & Food	Environmental	Surficial hydrology	Water	Yes	Text	IWMI		National	Recent	Medium
639	IWMI	Document Hub -Water & Gender	Environmental	Surficial hydrology	Water	Yes	Text	IWMI		National	Recent	Medium
640	IWMI	Document Hub- Policies, Standards & Strategic Plans in water sector	Environmental	Surficial hydrology	Water Sector Policies	Yes	Text	IWMI		National	Recent	Medium
641	IWMI	Document Hub- Mahaweli Basin	Environmental	Surficial hydrology	Mahaweli Basin	Yes	Text	IWMI		National	Recent	Medium
642	IWMI	Document Hub- Irrigation Projects	Utilities	Potable water	Irrigation Projects	Yes	Text	IWMI		National	Recent	Medium
643	IWMI	Document Hub- Village Irrigation Systems in Sri Lanka	Utilities	Potable water	Village Irrigation Systems	Yes	Text	IWMI		National	Recent	Medium
644	IWMI	Document Hub- Irrigation Management and Crop Diversification in Sri Lanka	Environmental	Land & Abiotic Uze/Land Cover	Crop Diversification	Yes	Text	IWMI		National	Recent	Medium
645	IWMI	Document Hub- Irrigation Investment Projects	Utilities	Potable water	Irrigation investmet Projects	Yes	Text	IWMI		National	Recent	Medium
646	IWMI	Document Hub- Water Quality related documents	Environmental	Subsurface Hydrology	Water Quality	Yes	Text	IWMI		National	Recent	Medium
647	IWMI	Document Hub- Ground Water	Environmental	Subsurface Hydrology	ground water	Yes	Text	IWMI		National	Recent	Medium
653	IWMI	Global Water Scarcity Map	Environmental	Air & Climate	Water Scarcity		Text	IWMI		National		Medium
290	CEA	National Wetland Action Plan	Areas	Special Management Areas	Environmental Protected Areas		Text	CEA		National		Medium
479	DA	Agro Ecological Regions of Sri Lanka	Areas	Special Management Areas	Agro Ecological Zones		Text			National		Medium
1076	WRB	Tube wells data- Tactical & Chemical	Environment	Subsurface Hydrology	Groud water quality_tactical & Chemical		Text			National		Medium
1077	STC	Standard Timber Classification System	Areas	Statiscal Areas	Timber Classification		Text	STC		National		Medium
1078	STC	Selection of Timber Species	Areas	Statiscal Areas	Timber Classification for Requirements		Text	STC		National		Medium
1119	NTC	Bus Routes	Transportation	Land Transportation	Bus Routes		Text	NTC		National	2013	Medium

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604	IWMI	Drinking water sctor vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
605	IWMI	Transport vulnerability with sea level rise	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
606	IWMI	Drinking water sctor vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
697	IWMI	Transport sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
698	IWMI	Drinking water sector vulnerability with sea level rise	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
609	IWMI	Housing and urban development sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
610	IWMI	Plantation sector vulnerability with flood exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
611	IWMI	Biodiversity sector vulnerability	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
612	IWMI	Paddy sector vulnerability with drouht exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
613	IWMI	Inland and brackish water fishery sector vulnerability with sea level rise	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
614	IWMI	Housing and urban development sector vulnerability with land slide exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
617	IWMI	Plantation sector vulnerability with landslide exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
618	IWMI	Plantation sector vulnerability with drought exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
619	IWMI	Paddy sector vulnerability with sea level rise exposure	Areas	Special Management Areas	Vulnerability to Natural Disasters	Yes	Text	IWMI		National	Recent	Medium
1065	AD	Pre History of Sri Lanka	Environment	Cultural Resources	Paleontological Sites		Text	Archaeology Department/ Excavation Records/ Surveys		National		Medium
1066	AD	Pre History Excavation Data of Sri Lanka	Environment	Cultural Resources	Paleontological Sites		Text	Archaeology Department/ Excavation Records/ Surveys		National		Medium
1062	AD	Marine Archaeology	Environment	Cultural Resources	Marine Archaeological Sites	Yes	Text	S		National		Medium
1064	AD	Irigational technology of Ancient Sri Lanka	Environment	Cultural Resources	Archaeological Sites		Text	Archaeology Department/ Excavation Records/ Surveys		National		Medium
480	DA	Spatial databases on land and water resources	Environmental	Land & Aquatic Use/Cover	Land & Water Resources		Text			National		Medium
1189	NBRO	Landslide Early warning	Environment	Air & Climate	Early Warning Towers		Text	DMC/MD/My of DM/CEA		National	since 2007	Medium
1118	DLTR	Land Plot Nos, Land Plot Area, Land PlotOwnership, Land Gazetted or Not, Plan No , Folio No	Areas	Cadastral	Plot Boundaries/ Block Boundaries		Text	DLTS	1:1,000	National	2016	Medium
1118	DLTR	Land Plot Nos, Land Plot Area, Land PlotOwnership, Land Gazetted or Not, Plan No , Folio No	Areas	Cadastral	Plot Boundaries/ Block Boundaries		Text	DLTS	1:1,000	National	2016	Medium
648	IWMI	Document Hub - Water Meters	Utilities	Potable water	Meters	Yes	Text			National		Medium
661	IWMI	IWMI Research Data- IWMI Data Guidelines	Areas	Statistical Areas	Document Guidelines		Text	Internal development, IWMI		National		Medium
662	IWMI	IWMI Research Data- IWMI Data Guidelines	Areas	Statistical Areas	Document Guidelines		Text	Internal development, IWMI		National		Medium
663	IWMI	IWMI Research Data- IWMI Data Guidelines	Areas	Statistical Areas	Document Guidelines		Text	Internal development, IWMI		National		Medium
664	IWMI	IWMI Research Data- IWMI Data Guidelines	Areas	Statistical Areas	Document Guidelines		Text	Internal development, IWMI		National		Medium
665	IWMI	IWMI Research Data- IWMI Data Guidelines	Areas	Statistical Areas	Document Guidelines		Text	Internal development, IWMI		National		Medium
666	IWMI	IWMI Research Data- IWMI Data Guidelines	Areas	Statistical Areas	Document Guidelines		Text	Internal development, IWMI		National		Medium
667	IWMI	IWMI Research Data- IWMI Data Guidelines	Areas	Statistical Areas	Document Guidelines		Text	Internal development, IWMI		National		Medium

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113	GSMB	Tsunami Warning Seismic Data	Environment	Seismology	Seismic Events		Text	The Seismic stations at Pallekele, Kandy (PALK)station has made valuable contributions in monitoring the global seismicity ever since it was established in 2000. Among the key equipment at this station are Teledyne Geotech KS 54000 broadband seismometer which is emplaced in a cased borehole drilled into the migmatitic rock at a depth of 100 meters and Guralp CMG-3T which is set in a shallow borehole drilled not far (0.5 meter) from the earlier		Regional		High
162	NARA	Sea level changes	Environment	Marine Abiotic	Tides, Current Strength and Direction	Yes	Text	Sea level changes		Regional		High
164	NARA	Nutients of Oceanic and Coastal waters	Environment	Marine Abiotic	Concentration of other dissolved solutes and nutrients, marine sedinment types and distribution		Text	Nutients of Oceanic and Coastal waters		Regional		High
167	NARA	Geomorphological charges	Environment	Geomorphology	Geomorphology	yes	Text	NARA		Regional		High
196	NARA	Seabed marine sediments of FMA 4 East Coast (Ampara & Batticaloa)	Environment	Biodiversity	Habitat of Species		Text	NARA		Regional	2010	High
197	NARA	Seabed marine sediments of FMA 4 South Coast	Environment	Biodiversity	Habitat of Species		Text	NARA		Regional	2010	High
198	NARA	Seabed marine sediments of FMA (North West Coast (Mannar to Puttalam)	Environment	Biodiversity	Habitat of Species		Text	NARA		Regional	2010	High
200	NARA	River discharge and rainfall in Region 3 East Coast (Ampara and Batticaloa districts)	Environment	Biodiversity	Habitat of Species		Text	NARA		Regional	2010	High
201	NARA	River discharge and rainfall in Region 2 South Coast	Environment	Biodiversity	Habitat of Species		Text	NARA		Regional	2010	High
202	NARA	River discharge and rainfall in Region 1 North West Coast (Mannar to Puttalam)	Environment	Biodiversity	Habitat of Species		Text	NARA		Regional	2010	High
441	DMC	Multi Hzard Early Warning Dissemination System	Environment	Air & Climate	Early Warning Towers		Text	Metereological, Satellite Remote Sensing Data		Regional	2010-2016	High
487	TRI	Innovative TRI Shear Harvester	Environment	Bio Diversity			Text	TRI		Regional		High
495	TRI	Initiation of grafting of tea cultivars for drought tolerance, pest and disease tolerance and quality improvements	Environmental	Air & Climate	Drought Tolerance		Text	TRI		Regional		High
496	TRI	Concept of Techno-farm at the Low country Regional Centre	Areas	Land & Abiotic Uze/Land Cover	Techno Farm		Text	TRI		Regional		High
497	TRI	EST-SSR based genetic framework map for tea	Environmental	Bio Diversity	Genetic Framework Mapping		Text	TRI		Regional		High
498	TRI	Classical biological control for Tea Tortrix management	Environmental	Bio Diversity	Biological Control		Text	TRI		Regional		High
499	TRI	Locally available bio-control agents, parasites and predators for effective management of mites and Nematodes	Environmental	Bio Diversity	Biological Control_Environmental Agents		Text	TRI		Regional		High
163	NARA	Waves and Storm Surge	Environment	Marine Abiotic	Waves and Storm Surge		Text	Waves and Storm Surge		Regional		High
291	CEA	Strategic Environmental Assessment (SEA)	Areas	Planning Areas			Text	CEA, DMC, UNDP		Regional		High
494	TRI	Formulation of Soil Quality Index (SQI)	Environment	Soils	Soil Quality		Text	TRI		Regional		High
400	TRI	Alternatives for POP chemicals in tea cultivation	Environmental	Bio Diversity	Chemicals in Tea Cultivation		Text	TRI		Regional		High
501	TRI	Nursery hygiene with sedimentation tanks to ensure soil-borne pathogen free planting material	Environmental	Bio Diversity	Nurssery Hygiene		Text	TRI		Regional		High

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502	TRI	World's first organic and biodynamic tea experimental trial plots	Environmental	Bio Diversity	Species Range data _Experimental Trial Plot		Text	TRI		Regional		High
503	TRI	Economically viable vegetative propagation method	Environmental	Bio Diversity			Text	TRI		Regional		High
506	TRI	Seminal series of TRI 2000, 3000 and 4000 cultivars aiming to increase productivity of tea plantations	Environmental	Bio Diversity			Text	TRI		Regional		High
505	TRI	Copper fungicide (Perenox) against control of blister blight causal agent	Environmental	Bio Diversity			Text	TRI		Regional		High
506	TRI	Control measures against 'Poria' disease tea plantations	Environmental	Bio Diversity			Text	TRI		Regional		High
507	TRI	Knapsack sprayer for the control of blister blight	Environmental	Bio Diversity			Text	TRI		Regional		High
508	TRI	Establishment of fertilizer input levels for tea from the world's first statistically designed tree crop	Environmental	Bio Diversity			Text	TRI		Regional		High
509	TRI	Fertilizer recommendation for nursery, immature and mature tea plants	Environmental	Soils	Soil Quality		Text	TRI		Regional		High
510	TRI	Dolomite recommendation for correction of soil pH	Environmental	Soils	Soil Quality		Text	TRI		Regional		High
511	TRI	Site-specific fertilizer recommendations	Environmental	Soils	Soil Quality		Text	TRI		Regional		High
512	TRI	Guidelines on Land Suitability Classification for Tea					Text	TRI		Regional		High
513	TRI	Field Categorization in Tea Lands	Environmental	Land & Abiotic Uze/Land Cover	Field Categorization of Tea Lands		Text	TRI		Regional		High
514	TRI	The Suitability of Tea Clones for the Different Regions	Environmental	Land & Abiotic Uze/Land Cover	Suitability of Clones		Text	TRI		Regional		High
515	TRI	Fertilizer Recommendations for Nursery Tea, immature tea, mature tea	Environmental	Soils	Soil Quality		Text	TRI		Regional		High
516	TRI	Fertilizer Recommendations for Clonal Mother Bushes, Tea seed Bearers, Rehabilitation grasses,	Environmental	Soils	Soil Quality		Text	TRI		Regional		High
517	TRI	Soil Analysis	Environmental	Soils	Soil Quality		Text	TRI		Regional		High
518	TRI	Drought Mitigation in Tea Plantations	Environmental	Air & Climate	Drought Mitigation in Tea Plantation		Text	TRI		Regional		High
519	TRI	Green Manure Crops in Tea	Environmental	Land & Abiotic Uze/Land Cover			Text	TRI		Regional		High
520	TRI	Shade in Tea	Areas	Special Management Areas	Shade in Tea		Text	TRI		Regional		High
521	TRI	Wind and Shelter Belts in Tea	Areas	Special Management Areas	Wind and Shelter Belt		Text	TRI		Regional		High
522	TRI	Cultivation of Tea Soils – Forking	Environmental	Soils	Forking		Text	TRI		Regional		High
523	TRI	Contamination of Nursery Plants with Nematodes through Irrigation Water	Utilities	Potable water Facilities	Irrigated Water		Text	TRI		Regional		High
1184	NBRO	General guidelines for developments within each landslide hazard zone in the landslide hazard zonation map	Areas	Statiscal Areas	Document Guidelines_Development		Text	DMC		Regional		High
1186	NBRO	Guidelines for construction and land Use planning in hilly areas	Areas	Statiscal Areas	Document Guidelines_Construction		Text	DMC/MD/My of DM/CEA		Regional		High
1187	NBRO	Guidelines for disaster risk reduction (DRR) for small residential buildings	Areas	Statiscal Areas	Document Guiidelines_Disaster Risk Reduction		Text	DMC/MD/My of DM/CEA		Regional		High
1188	NBRO	Integrated Landslide Mitigation Proposal (IL	Areas	Statiscal Areas	Document Guidelines_Lanslide Mitigation		Text	DMC/MD/My of DM/CEA		Regional		High
1183	NBRO	Areas of Landslide hazard Zonation Mappir	Areas	Special Management Areas	Landslides Hazard Zonation	Yes	Text	Survey collection using satellite/ GPS by NBRO	1:50,000; 1:1	Regional		High
402	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Western		Text	NPPD		Regional	2005-2008	Medium
406	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Eastern		Text	NPPD		Regional	2005-2008	Medium

Doc Id	Admin_L	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
407	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Southern		Text	NPPD		Regional	2005-2008	Medium
408	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Sabaragamuwa		Text	NPPD		Regional	2005-2008	Medium
411	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Uva		Text	NPPD		Regional	2005-2008	Medium
415	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Sabaragamuwa		Text	NPPD		Regional	2005-2008	Medium
416	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_North Central		Text	NPPD		Regional	2005-2008	Medium
417	NPPD	Regional Physical Plan	Areas	Planning Areas	Regional Structure Plan_Uva		Text	NPPD		Regional	2005-2008	Medium
491	TRI	Maximum Residue Limits for herbicides	Environment	Bio Diversity			Text	TRI		Regional		Medium
492	TRI	Intercropping systems of tea and rubber, as well as tea and coconut	Areas	Land & Abiotic Uze/Land Cover	Plantation Area Intercropping		Text	TRI		Regional		Medium
493	TRI	Revitalization of the practice of burying of prunings in tea fields	Environment	Bio Diversity			Text	TRI		Regional		Medium
1048	MyLG&PC	Income Tax Payment Property Details Regi	Areas	Statiscal Areas	Income Tax Payment Property Details Registry		Text			Regional		Medium
655	IWMI	Eco Hydrological Data	Environmental	Surficial hydrology	Eco Hydrologial Data		Text	IWMI		Regional		Medium
656	IWMI	Eco Hydrological Data	Environmental	Surficial hydrology	Eco Hydrologial Data		Text	IWMI		Regional		Medium
657	IWMI	Eco Hydrological Data	Environmental	Surficial hydrology	Eco Hydrologial Data		Text	IWMI		Regional		Medium
115	LUPPD	Land Use Intensity Map	Environment	Land & Aquatic Use/Cover		yes	Text	SD 1:10,000 maps used as base data and other related data collected by field survey	1:10,000	Regional		Medium
1175	NBRO	Building Foot Prints	Basemap	Structures	Building Type	Yes	Text	Survey collection using satellite/ GPS by NBRO	1:10,000; 1:5	District	Current	High
1176	NBRO	Grama Niladhari Divisions	Areas	Political / Administrative Areas	Grama Niladhari Divisions	Yes	Text	Survey collection using satellite/ GPS by NBRO	1:10,000; 1:5	District	Current	High
1177	NBRO	Human Settlement Data	Areas	Statiscal Areas	Housing and Population	Yes	Text	Survey collection using satellite/ GPS by NBRO	1:10,000; 1:5	District	Current	High
1178	NBRO	Metereological Data	Environment	Air & Climate	Metereological Data	Yes	Text	Survey collection using satellite/ GPS by NBRO	1:10,000; 1:5	District	Current	High
24	SD	Sporadic Survey Data	Areas	Cadastral	Block Boundaries		Text			District		High
261	CCD	Total Inundation Area in Each District including water bodies	Environment	Surficial Hydrology	Inundation Areas		Text	CCD		District		High
262	CCD	Inundated Area in each District excluding w	Environment	Surficial Hydrology	Inundation Areas		Text	CCD		District		High
269	CCD	Critical coastal stretches stabilized under CR	Environment	Geomorphology	Coastal Change		Text	CCD		District		High
271	CCD	Erosion Analytical Results by Driver Analyis & Indicators	Environment	Geomorphology	Coastal Change		Text	CCD		District		High
1179	NBRO	Land Use Land Cover	Environment	Land & Aquatic Use/ Cover	Land Use	Yes	Text	Survey collection using satellite/ GPS by NBRO	1:10,000; 1:5	District	Current	High
1180	NBRO	Ground Water	Environment	Subsurface Hydrology	Groundwater	Yes	Text	Survey collection using satellite/ GPS by NBRO	1:10,000; 1:5	District	Current	High
1181	NBRO	Soil samples, Geotechnical study locations & related Data	Environment	Soil	Geotechnical Study Location & Data	Yes	Text	Survey collection using satellite/ GPS by NBRO	1:10,000; 1:5	District	Current	High
1182	NBRO	Topographic Slope, Elevation Regimes, Landform, Hill shade	Basemap	Elevation	Topographic	Yes	Text	Survey collection using satellite/ GPS by NBRO	1:10,000; 1:5	District	Current	High
116	LUPPD	Divisional Land Use Plans	Environment	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Text	Divisional Land Use maps 1:10,000 prepared based on 1:10,000 scale print outs and field updation at DS D level,	1:10,000	District/Divisio	Recent	Hgh
117	LUPPD	Land Suitability Maps	Environment	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Text	Land use, land cover, vegetation, agricultural, forest	1:10,000	District/Divisio	Recent	Hgh
118	LUPPD	Village Level Land Use Plans	Environment	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Text	Land use, land cover, vegetation, agricultural, forest	1:10,000	District/Divisio	Recent	Hgh
119	LUPPD	National Land Ue Database	Environment	Land & Aquatic Use/Cover	Land use, land cover, vegetation, agricultural, forest	Yes	Text	Land use, land cover, vegetation, agricultural, forest	1:10,000	District/Divisio	Recent	Hgh
120	LUPPD	Land Use Issues	Environment	Land & Aquatic Use/Cover	Land use related Issues at DSD and District Level	Yes	Text	Land use related Issues at DSD and District Level	1:10,000	District/Divisio	Recent	Hgh
121	LUPPD	Ownership of Land	Environment	Land & Aquatic Use/Cover	Land Ownership	Yes	Text	Land Ownership	1:10,000	District/Divisio	Recent	Hgh
122	LUPPD	Land Use Conflict Data	Environment	Land & Aquatic Use/Cover	Land Use Conflict Mapping	Yes	Text	Land Use Conflict Mapping	1:10,000	District/Divisio	Recent	Hgh
311	CEA	District Profiles	Areas	Statistical Areas	District Environment Profiles		Text	Different Multiple Sources		District		Medium
1124	MyPA	Human Settlement Data	Areas	Statiscal Areas	Housing, Population and Labour Force		Text	District Secretariat		District	2018	Medium

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
418	NPPD	Town Development Plans	Areas	Planning Areas	Urban Development Plans		Text	NPPD		Urban	2007-2010	Medium
419	NPPD	Town Development Plans	Areas	Planning Areas	Urban Development Plans		Text	NPPD		Urban	2007-2010	Medium
420	NPPD	Town Development Plans	Areas	Planning Areas	Urban Development Plans		Text	NPPD		Urban	2007-2010	Medium
421	NPPD	Town Development Plans	Areas	Planning Areas	Urban Development Plans		Text	NPPD		Urban	2007-2010	Medium
422	NPPD	Sacread Area Development Plans	Areas	Planning Areas	Urban Development Plans		Text	NPPD		Urban	2007-2010	Medium
123	LUPPD	Land Use Conflict Recommendation Reports	Environment	Land & Aquatic Use/Cover	Recommendations for land Use Conflicts	Yes	Text	Recommendations for land Use Conflicts	1:10,000	Local	Recent	Hgh
1079	LHI	Siltation and Erosion Study	Environment	Marine abiotic	Coastal Erosion		Text			Local		High
1080	LHI	2D Physical Model Testing					Text			Local		High
1081	LHI	Near Shore Wave Climate	Environment	Marine abiotic	Near Shore Wave Climate		Text			Local		High
1082	LHI	Preventing Formation of Sand bar	Environment	Soils	Sand Bar Formation		Text			Local		High
1084	LHI	Wave Distribution and Ship Motion	Environment	Marine abiotic	Wave Distribution		Text			Local		High
1085	LHI	Wave Distribution and Ship Motion	Environment	Marine abiotic	Wave Distribution		Text			Local		High
1086	LHI	Wave Climate Modelling	Environment	Marine abiotic	Wave Climate		Text			Local		High
1087	LHI	Changes of Hydrodymamics	Environment	Surficial Hydrology	Hydro Dynamics		Text			Local		High
1088	LHI	Changes of Hydrodymamics	Environment	Surficial Hydrology	Hydro Dynamics		Text			Local		High
1089	LHI	Water Quality Analysis	Environment	Surficial Hydrology	Water Qulaity Analysis		Text			Local		High
1090	LHI	Sedimentation Modelling	Environment	Surficial Hydrology	Sedimenatation Study		Text			Local		High
1091	LHI	Current & Sediment Modelling	Environment	Marine abiotic	Current Study		Text			Local		High
1092	LHI	Wave Distribution and Ship Motion	Environment	Marine abiotic	Wave Study		Text			Local		High
1093	LHI	Dispersal of Dredged Sediment					Text			Local		High
1147	CMC	Assessement Registry	Areas	Statistical Areas	Assessment Registry		Text			Local	2016	High
1148	CMC	Trade License Registry	Areas	Statistical Areas	Trade License Registry		Text			Local	2016	High
1053	MyLG&P(	Assessment Registers	Basemap/ Area	Structures/ Statistical Areas	Building Type/ Assessed Properties	Yes	Text	Each Municipal Councils is responsible to maintain and update their assessed properties located within respective Municipal Council		Local		High
1054	MyLG&P(	Assessment Registers	Basemap/ Area	Structures/ Statistical Areas	Building Type/ Assessed Properties	Yes	Text	Each Urban Councils is responsible to maintain and update their assessed properties located within respective Urban Council		Local		High
1055	MyLG&P(	Assessment Registers	Basemap/ Area	Structures/ Statistical Areas	Building Type/ Assessed Properties	Yes	Text	Each Pradeshiya Sabha is responsible to maintain and update their assessed properties located within respective Pradeshiya Sabha		Local		High
1185	NBRO	Landslide hazard identification and assessment of landslide risk	Environment	Geomorphology	Landslides	Yes	Text	DMC	1:5,000	Local		High
1135	VD	Property Valuation details of Local Authorities	Areas	Statistical Areas	Real Estate		Text			Local		High
1136	VD	Reports on Valuation of Immovable and mov	Areas	Statistical Areas	Property Valuation		Text			Local		High
1137	VD	Assessement Registry	Areas	Statistical Areas	Assessment Registry		Text			Local		High
436	DMC	Retrospective Risk Assessment	Environment	Surficial Hydrolgy/Marine Abiotic	Natural Disasters		Text	Grama Niladharis and Divisional Secretararies		Local		High
437	DMC	Situation Report	Environment	Surficial Hydrolgy/Marine Abiotic	Natural Disasters		Text	Grama Niladharis and Divisional Secretararies		Local		High
1165	DWLC	Databases with respect to BBS Minneriya	Areas	Statistical Areas	Document_BBS_Minneriya		Text	DWLC		Local		High
1166	DWLC	Databases with respect to BBS Wasgamuwa	Areas	Statistical Areas	Document_BBS_Wasgamuwa		Text	DWLC		Local		High
1167	DWLC	Databases with respect to BBS Ritigala	Areas	Statistical Areas	Document_BBS_Ritigala		Text	DWLC		Local		High
1168	DWLC	Databases with respect to BBS Bundala	Areas	Statistical Areas	Document_BBS_Bundala		Text	DWLC		Local		High
1169	DWLC	Databases with respect to Horton Plains	Areas	Statistical Areas	Document_BBS_Horton Plains		Text	DWLC		Local		High
445	ID	Soil Investigation Details	Environmental	Soils	Properties		Text	Surveys and other sources of data base by Irrigation Department.		Local		High
446	ID	Field and laboratory test data	Environmental	Soils	Moisture content		Text	Surveys and other sources of data base by Irrigation Department.		Local		High
447	ID	Rock Drilling Data	Environmental	Geology	Drilling tube wells		Text	Surveys and other sources of data base by Irrigation Department.		Local		High

Doc Id	Admin_L	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
448	ID	Hydraulic Research Data	Environmental	Surficial Hydrology	Rivers & Steams		Text	Surveys and other sources of data base by Irrigation Department		Local		High
449	ID	Hourly Water Levels and 3 hrs Rainfall	Environmental	Surficial Hydrology	Rivers & Streama		Text	Surveys and other sources of data base by Irrigation Department		Local		High
450	ID	Hourly Water Levels and 3 hrs Rainfall	Environmental	Surficial Hydrology	Hydrodynamic Station		Text	Surveys and other sources of data base by Irrigation Department		Local		High
451	ID	Hourly Water Levels and 3 hrs Rainfall	Environmental	Surficial Hydrology	Rainfall station		Text	Surveys and other sources of data base by Irrigation Department		Local		High
452	ID	Hydro-meteorological Information System (HMIS)	Environmental	Surficial Hydrology	Hydrometereologicak data		Text	Surveys and other sources of data base by Irrigation Department		Local		High
453	ID	Land Productivity Data	Environmental	Land & Aquatic Use/Cover	Land Productivity		Text	Surveys and other sources of data base by Irrigation Department		Local		High
454	ID	Land Productivity Data	Environmental	Land & Aquatic Use/Cover	Land Productivity		Text	Surveys and other sources of data base by Irrigation Department		Local		High
455	ID	Land Use Mapping	Areas	Statistical Areas	Sustainability of Land		Text	Surveys and other sources of data base by Irrigation Department		Local		High
456	ID	Land Use Mapping	Environmental	Soils	Soil Survey		Text	Surveys and other sources of data base by Irrigation Department		Local		High
457	ID	Land Use Mapping	Areas	Statistical Areas	Laand Classification by Soil		Text	Surveys and other sources of data base by Irrigation Department		Local		High
458	ID	Land Use Mapping	Areas	Statistical Areas	Land Suitability		Text	Surveys and other sources of data base by Irrigation Department		Local		High
459	ID	Hazard of Salinity	Areas	Statistical Areas	Hazard Zones		Text	Surveys and other sources of data base by Irrigation Department		Local		High
460	ID	Existing Land Use	Environmental	Land and Aquatic Use/Cover	Agricultural Land Use		Text	Surveys and other sources of data base by Irrigation Department		Local		High
461	ID	Soils Samples	Environmental	Soils	Soil Samples		Text			Local		High
462	ID	Water Samples	Environmental	Surficial Hydrology	Water Samples		Text			Local		High
443	ID	Borrow Materials	Environment	Soils	Filling Materials	Yes	Text	Surveys and other sources of data base by Irrigation Department		Local		Medium
435	DMC	Temporal Behaviour	Environment	Surficial Hydrolgy/Marine Abiotic	Natural Disasters		Text	Grama Niladharis and Divisional Secretararies		Local		Medium
1049	MyLG&P(	Local Authority Roads	Transportation	Land Transportation	Local Authoity Roads	No	Text	Each Municipal Councils is responsible to managed and update the respective Municipal Council Roads	1:50,000 / 1:10,000	Local		Medium
1050	MyLG&P(	Local Authority Roads	Transportation	Land Transportation	Local Authoity Roads	No	Text	Each Urban Councils is responsible to managed and update the respective Urban Council Roads	1:50,000 / 1:10,000	Local		Medium
1051	MyLG&P(	Local Authority Roads	Transportation	Land Transportation	Local Authoity Roads	No	Text	Each Pradeshiya Sabhas isresponsible to managed and update the respective Pradeshiya Sabha Roads	1:50,000 / 1:10,000	Local		Medium
1052	MyLG&P(	Trade Licenses Registers	Utilities	Electric/ Water/Sewer/ Stormwater/ Waste Management	Distribution, provision and maintenance of Electric/ Water/Sewer/ Stormwater/ Waste Management facilities	No	Text	Distribution, provision and maintenance of Electric/ Water/Sewer/ Stormwater/ Waste Management facilities	1:50,000 / 1:10,000	Local		Medium
127	LUPPD	Historical Sites	Environment	Cultural Resources	Historical Sites		Text	LUPPD		Local	Recent	Medium
128	LUPPD	Archaeological Sites	Environment	Cultural Resources	Archaeological Sites		Text	LUPPD		Local	Recent	Medium
129	LUPPD	land Use Land Cover	Areas	Seismology	Document Guidelines_Land Use		Text	LUPPD		Local	Recent	Medium

The text data referred here contained all the digital documents and all the tabular data available in the organizations. The data given here only covers the information referred by the organizations. Accordingly, the text data contains information at the national, regional, district, urban and local level. The total number of records represents details of 348 topics but it may not represent exact details because many previous compilations may not be considered by the respondent, otherwise this amount may be in ten times more as many of these documents contain transferable data from tabular forms into digital spatial data. According to the present situation these 348 topics are divided among its geo coverage as follows:

LEVEL	Data Topics
National Level	199
Regional Level	64
District Level	22
Urban Level	05
Local Level	58
Total No of Databases	**348**

The most important text data available at local authority level is the Assessment Registry and Trade License Registry which records the most valuable data set on all the assessed properties and land plots as well as all the business premises registered with the particular local authority.

If the total number of local authorities is considered as 335, the amount of data topics by these 2 data sets per each is having 670 in total. In addition to that the records keeping on approval of building applications as well as land subdivision plans also has two separate registry providing further valuable information to develop a assessor's parcel level block maps at local authority level against the development taken place in particular local authority doubling the available text data at local authority level.

Table 4.15 provides the details on raster data available in referenced organizations. Although the details provided by the table indicate information on only two organizations, the responses made by many organizations indicated that they use satellite data but the type of satellites are not reflected. As in normal classification, raster data contains three types of data representing images, gridded thematic data and surfaces of the categories of :

- Thematic Data
- Spectral Data
- Picture Data

In relation to this study it covers Very High, Low and Medium resolution satellite images, digital photographs, LiDAR, Drone or any other form of such data. The data given in following table indicated that UDA has a vast data sets but it split into number of urban areas from the total coverage of vast area. Irrespective of data given here the following organizations have acquired large stocks of satellite images:

- Survey Department (Landsat, QuickBIRD, SPOT 3, IRS, ALOS, GeoEYE, LiDAR, Drone,etc)
- Urban Development Authority (IRS, IKONOS, QuickBIRD,GeoEYE, WorldVIEW, SPOT5, etc)
- Disaster Management Centre (RADARSAT-2, TerraSAR-X, TISAT-1, Sentinel-1, ALOS-PALSAR-2, INSAT-3D, LiDAR, Drone, etc)
- International Water Management Institute (RADARSAT-2, TerraSAR-X, TISAT-1, Sentinel-1, ALOS-PALSAR-2, INSAT-3D, Drone etc)
- Department of Agrarian Development (IKONOS)
- SLLRDC (LiDAR, Drone, GeoEYE etc)
- National Building Research Organization
- NARA, Meteorology Department (NOAA, INSAT-3D etc)
- Ministry of Megapolis & Western Development (LiDAR), Forest Department (Landsat).

Table 4. 15 NSDI Baseline Study _ Spatial Data Inventory _Raster Data

Doc Id	Admin_L2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
1174	NBRO	Orthophotography	Basemap	Imagery	Orthophotography		Raster	NBRO		District	Current	High
13	SD	LiDAR Surveys	Basemap	Imagery	LiDAR	yes	Raster	LiDAR images available in different areas of the country and their techncal details are vary		District/Local	since 2012	High
26	SD	Satellite images	Basemap	Imagery	VHR, MR and Low Resolution	yes	Raster			District		High
27	SD	Satellite images	Basemap	Remote Sensin	MSS, SAR, ALOS, SPOT etc	yes	Raster			District		High
33	SD	Georeferenced Satellite Images	Basemap	Imagery	Satellite Images		Raster			District		Medium
831	UDA	Ikonos_Colombo, Peliyagoda, Kotte & suburbs	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2009	High
832	UDA	Ikonos_Colombo North, Peliyagoda, Wattala	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
833	UDA	Ikonos_Colombo South, Kotte	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
834	UDA	Ikonos_Moratuwa, Ratmalana	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
835	UDA	Ikonos_Sapugaskanda, Biyagama, Biyanwila	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
836	UDA	Ikonos_Malabe, Kaduwela, Bomiriya, Nawagamuwa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
837	UDA	Ikonos_Pelawatte, Pannipitiya, Kesbewa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
838	UDA	Ikonos_Avissawella Town	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
839	UDA	Ikonos_Hanwella	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
840	UDA	Ikonos_Padukka	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
841	UDA	Ikonos_Kosgama, Pugoda	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
842	UDA	Ikonos_Salawa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
843	UDA	Ikonos_Labugama, Kalatuwawa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
844	UDA	Ikonos_Biyagama, Dompe	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
845	UDA	Ikonos_Panadura	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
846	UDA	Ikonos_Kochchikade-From Negombo Lagoon to Ma Oya	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
847	UDA	Ikonos_Mathugama-Matugama Town,Kabarala,Kalupahana	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
848	UDA	Ikonos_Kochchikade_Katana-From Kattuwa to Ma Oya	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
849	UDA	Ikonos_Kesbewa-Part of Bolgoda Lake	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
850	UDA	Ikonos_Katunayake-Katunayake Airport	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
851	UDA	Ikonos_Kadawatha-Peliyagoda/Kadawatha/Kelaniya/Sapugaskanda	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
852	UDA	Ikonos_Ja-Ela-Ja-Ela Town/Ragama Station/Theewatta Bacilica	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
853	UDA	Ikonos_Ittepana-Bentota Ganga	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
854	UDA	Ikonos_Hendala-Dandugama Bridge	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
855	UDA	Ikonos_Hendala Town	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
856	UDA	Ikonos_Gampaha town/Weliweriya/ Closer to Radawana	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
857	UDA	Ikonos_Colombo South	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
858	UDA	Ikonos_Biyagama/Kaduwela/Malabe/Kottawa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
859	UDA	Ikonos_Colombo North	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
860	UDA	Ikonos_Beruwala	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
861	UDA	Ikonos_Aluthgama	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
862	UDA	Ikonos_Veyangoda Town/Nittabuwa/Yakkala/Kalupahana	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
863	UDA	Ikonos_Kalutara South	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
864	UDA	Ikonos_Negombo Bay/Negombo Town/ Airport	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
865	UDA	Ikonos_Kotte /Parliament	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High

Doc Id	Admin_L2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
866	UDA	Ikonos_Seeduwa/Raddolugama/Katunayake/Minuwangoda Town /FTZ	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
867	UDA	Ikonos_Avissawella/Waga/Kaluaggala/Kahahena/Upper Part of Halpe Estate	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
868	UDA	Ikonos_Homagama/Kottawa/Panagoda/Athurugiriya/Katuwana Ind Estate/Ceylinco Housing	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
869	UDA	Ikonos_Diyagama/Mattegoda/Moragahahena/Kahathuduwa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
870	UDA	Ikonos_Bomiriya/Pahala Hanwella/Julthara/Dedigamuwa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
871	UDA	Ikonos_Milleniya/Pannipitiya/Delduwa/Kehelhenawa/Anguruwathota	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
872	UDA	Ikonos_Bandaragama Town/Horana/Ingiriya	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
973	UDA	Ikonos_Divulapitiya Town/Pannala Nestle Factory/ Giriulla Bus Depot/ Maha Oya	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
874	UDA	Ikonos_Kotadeniyawa/Badalgama/Maha Oya	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
875	UDA	Ikonos_Dekatana-Part of Biyagama Industrial Zone/Dompe/Henegama /Weliveriya	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
876	UDA	Ikonos_Giriulla Town/Mirigama Town/Mirigama Industrial Zone	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
877	UDA	Ikonos_Ambepussa / Ma Oya Railway Bridge	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
878	UDA	Ikonos_Welgama/Demodara	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
879	UDA	Ikonos_Batale/Bulthsinhala	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
880	UDA	Ikonos_Poruwedanda/Ingiriya/Kalupahana/Govinna	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
881	UDA	Ikonos_Pelawatta/Walallawa/Matugama	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
882	UDA	Ikonos_Pasyala/Attanagalla/Kandy Road/Urapola	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
883	UDA	Ikonos_Nathupana/Part of Kalu Ganga/Anguruwatota Bridge/ Neboda / Pimbura	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
884	UDA	Ikonos_Meegahatenna/Moragala/Ratmale	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
885	UDA	Ikonos_Madampe Lake	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
886	UDA	Ikonos_Labugama/Thunmodara	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
887	UDA	Ikonos_Keselhenawa/Upper part of Samanala Bridge/Natupana/Anguruwathota	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
888	UDA	Ikonos_Hapugastenna/Right hand side of attanagalla,Pasyala	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
889	UDA	Ikonos_Minuwangoda Town/ Dagonna	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
890	UDA	Ikonos_Avissawella/Seethawaka/Avissawella Industrial Zone	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
891	UDA	Ikonos_Padukka / Bope	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
892	UDA	Ikonos_Balapitiya / Madu Ganga/ Elpitiya	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
893	UDA	Ikonos_Avittawa/ Bentota Ganga/ Uragaha	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
894	UDA	Ikonos_Avissawella/Kosgama/Aluboddala/Kirindiwela/Salawa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
895	UDA	Ikonos_Agalawatta	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
896	UDA	Ikonos_Kalatuwawa North/Upper Boundary of Western	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
897	UDA	Ikonos_Elpitiya	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
898	UDA	Ikonos_Gampaha Town	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
899	UDA	Ikonos_eyangoda Town	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
900	UDA	Ikonos_Moratuwa / Mt.Lavinia / Dehiwala	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
901	UDA	Ikonos_Hikkaduwa/	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
902	UDA	Ikonos_Baddegama	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
903	UDA	Ikonos_Nittambuwa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
904	UDA	Ikonos_Godigamuwa / Madampella / Katana	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
905	UDA	Ikonos_Ahungalla/ Kosgoda /Induruwa / Nupe Bridge	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
906	UDA	Ikonos_Ambalangoda/Ramdombe Lake/Part of Madampe Lake	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
907	UDA	Ikonos_Kalutara North/Kalutara Bodhiya/Beach Area/	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
908	UDA	Ikonos_Ambegoda/Kalutara district/	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
909	UDA	Ikonos_Yatapatha	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
910	UDA	Ikonos_Kelinkanda	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
911	UDA	Ikonos_Panalikkada/Sinharaja Forest Reserve	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
912	UDA	Ikonos_Boralugoda	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
913	UDA	Ikonos_Negombo/Kandawala/Kurana/Airport/Kadirana	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
914	UDA	Ikonos_Galle Town/ Galle Harbour/ Fort / Unawatuna	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
915	UDA	Ikonos_Rathgama / Rathgama Lake	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
916	UDA	Ikonos_Koggala / Koggala Airport	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
917	UDA	Ikonos_Talpe	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
918	UDA	Ikonos_Galle / Ginganga /River Mouth	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
919	UDA	Ikonos_Panwila / Kokawila	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
920	UDA	Ikonos_Gampaha Town	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
921	UDA	Ikonos_Hapugoda / Sinharaja Forest	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
922	UDA	Ikonos_Alapaladeniy / Millawa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
923	UDA	Ikonos_Pitabeddara / Dehigaspe	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
924	UDA	Ikonos_Akuressa Town	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
925	UDA	Ikonos_Mawila / Panalinkada/ Sinharaja Forest	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
926	UDA	Ikonos_Neluwa / Batuwangala / Sinharaja Forest	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
927	UDA	Ikonos_Thalangalla / Hiniduma West	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
928	UDA	Ikonos_Udugama / Dolamawatta	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
929	UDA	Ikonos_Mayakkaduwa / Yatamalgala	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
930	UDA	Ikonos_Ahangama / Kapparatota	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
931	UDA	Ikonos_Radaniyara / Horewela	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
932	UDA	Ikonos_Denagama East / Yatigala	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
933	UDA	Ikonos_Walakanda / Koratota	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
934	UDA	Ikonos_Dickwella / Batigama	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
935	UDA	Ikonos_Medaviyangoda	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
936	UDA	Ikonos_Rotumba / Panakaduwa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
937	UDA	Ikonos_Deyayandara / Beragama West	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
938	UDA	Ikonos_Kamburupitiya / Narandeniya	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
939	UDA	Ikonos_Matara Thihagoda	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
940	UDA	Ikonos_Matara Town	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
941	UDA	Ikonos_Koppakanda / Siharaga Forest	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
942	UDA	Ikonos_Katuwana / Urubokka	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
943	UDA	Ikonos_Deniyaya / Sinharaja Forest	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
944	UDA	Ikonos_Weligama Bay	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
945	UDA	Ikonos_Henegama / Wellana	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High

Doc Id	Admin_L2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
946	UDA	Ikonos_Muttur	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
947	UDA	Ikonos_Echalanpaththu, Ukkuweli	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
948	UDA	Ikonos_Verugal Forest / Ullakkali	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
949	UDA	Ikonos_Trincomale Town - sea side	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
950	UDA	Ikonos_Koddiyar Bay	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
951	UDA	Ikonos_Seruwila	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
952	UDA	Ikonos_Mahaweligama / Kallar	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
953	UDA	Ikonos_Sirimangalapura / Kelegama	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
954	UDA	Ikonos_Kumburupitiya / Mahaweli River	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
955	UDA	Ikonos_Nilaweli / Kandalkaddu	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
956	UDA	Ikonos_Kinniya / Trinco Town	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
957	UDA	Ikonos_Kinniya	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
958	UDA	Ikonos_Upparu / Sinnakanniya West	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
959	UDA	Ikonos_Raja Ela / Somapura	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
960	UDA	Ikonos_Sirimangalapura / Kelegama	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
961	UDA	Ikonos_Kuchchuweli	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
962	UDA	Ikonos_Verancholai / Kuchchuweli	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
963	UDA	Ikonos_Morawewa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
964	UDA	Ikonos_Morawewa South / Kitulluttu	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
965	UDA	Ikonos_Galmetiyawa North	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
966	UDA	Ikonos_Galmetiyawa South / Thambalagamuwa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
967	UDA	Ikonos_Thambalagamuwa / Wan Ela	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
968	UDA	Ikonos_Raja Ela / Wan Ela	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
969	UDA	Ikonos_Seenipura / Waddukachchi wewa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
970	UDA	Ikonos_Polmuddai / Kokilai Lagoon	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
971	UDA	Ikonos_Mailawewa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
972	UDA	Ikonos_Kirimetiyawa / Kiulakade	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
973	UDA	Ikonos_Gomarankadawala	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
974	UDA	Ikonos_Morawewa / Mahadivulwewa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
975	UDA	Ikonos_Galmetiyawa North	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
976	UDA	Ikonos_Pahala Kurunduwewa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
977	UDA	Ikonos_Kantale	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
978	UDA	Ikonos_Agbopura / Sinhagama	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
979	UDA	Ikonos_Kokilai Lagoon	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
980	UDA	Ikonos_Parana Medawachchiya	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
981	UDA	Ikonos_Herath / Halmillawa /Galkada	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
982	UDA	Ikonos_Ebba Ela / Dikwewa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
983	UDA	Ikonos_Nikawewa / Rathmale	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
984	UDA	Ikonos_Meegaswewa / Galsiyamblanduwa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
985	UDA	Ikonos_Padawiya / Siripura	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
986	UDA	Ikonos_Parakramapura / Below Jayanthipura	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
987	UDA	Ikonos_Below Jayanthi wewa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
988	UDA	Ikonos_Kuchchuweli	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
989	UDA	Ikonos_Kokilai Pattu	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
990	UDA	Ikonos_Kuchchuweli Bottom	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
991	UDA	Ikonos_Trincomalee Town & Gravets	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
992	UDA	Ikonos_Kinniya / Thampalakamam	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
993	UDA	Ikonos_Kinniya / Muttur	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
994	UDA	Ikonos_Muttur Upper Part	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
995	UDA	Ikonos_Seruwila / Eachchilampattai	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
996	UDA	Ikonos_Eachchilampattai	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
997	UDA	Ikonos_Eachchilampattai Koralai	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
998	UDA	Ikonos_Koralai Pattu North Upper	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
999	UDA	Ikonos_Koralai Pattu North Boundary	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1000	UDA	Ikonos_Koralai Pattu North Lower	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1001	UDA	Ikonos_Koralai Pattu / Oddamanadi	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1002	UDA	Ikonos_Koralai Pattu / Valachchenai / Eravur	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1003	UDA	Ikonos_Eravur Town / Eravur Paththu	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1004	UDA	Ikonos_Manmunai North / Eravur Town	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1005	UDA	Ikonos_Manmunai North	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1006	UDA	Ikonos_Manmunai Araipaththu	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1007	UDA	Ikonos_Manmunai South Eruvilpaththu	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1008	UDA	Ikonos_Kalmunai / Eruvilpattu	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1009	UDA	Ikonos_Ninthvur / Kalmunai	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1010	UDA	Ikonos_Thirukkovil / Adalachchenai	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1011	UDA	Ikonos_Potuvil	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1012	UDA	Ikonos_Lahugala	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1013	UDA	Ikonos_Puttalam / Wanatha villuwa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005-April	High
1014	UDA	Ikonos_Nuwara _Eliya	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2008	High
1015	UDA	Ikonos_Hambantota to Batticaloa coastal Belt	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2006 -April	High
1016	UDA	Ikonos_Mannar to Hambantota coastal Belt	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2006 -April	High
1017	UDA	Ikonos_Aluthgama	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
1018	UDA	Ikonos_Kotmale	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
1019	UDA	Ikonos_Ampara	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1020	UDA	Ikonos_Kalutara to Galle	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1021	UDA	Ikonos_Galle	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
1022	UDA	Ikonos_Greater Galle	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1023	UDA	Ikonos_Kalutara to Galle	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1024	UDA	Ikonos_Jaffna	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1025	UDA	Ikonos_Batticaloa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1026	UDA	Ikonos_Colombo to Ja-Ela	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1027	UDA	Ikonos_Colombo to Ratmalana	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1028	UDA	Ikonos_Kalutara to Beruwala	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1029	UDA	Ikonos_Moratuwa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1030	UDA	Ikonos_Ratmalana / Kotte / Kaduwela	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1031	UDA	Ikonos_Badulla	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1032	UDA	Ikonos_Batticaloa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1033	UDA	Ikonos_Gampaha	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1034	UDA	Ikonos_Trincomalee	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High

Doc Id	Admin_L 2	Doc_Set_Name	Class	Theme	Topic	Metadata	Format	Source	Scale	Coverage	Currency	Accuracy
1035	UDA	Ikonos_Trincomalee	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
1036	UDA	Ikonos_Mullaitivu	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1037	UDA	Ikonos_Tissamaharama	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1038	UDA	Ikonos_Gampola	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1039	UDA	Ikonos_Hambantota	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1040	UDA	Ikonos_Katunayake - Seeduwa	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
1041	UDA	Ikonos_Panadura	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2004	High
1042	UDA	Ikonos_Point Pedro	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2001	High
1043	UDA	Ikonos_85 Images covered coastal belt-Before Tsunami	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2004	High
1044	UDA	Ikonos_85 Images covered coastal belt-After Tsunami	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	1 m Resolutio	Urban	2005	High
1045	UDA	QuickBird_Eastern & Southern Provinces	Basemap	Imagery	VHR_Pan Sharpened Images		Raster	Purchased from Commercial Suppliers	0.45 m Reso	Urban	2007	High
10	SD	Aerborne photography by UAV	Basemap	Remote Sensin	Aerial Photography	yes	Raster	UAV acquisition		local		Hgh

Table 4. 16 Summarized Table of Available Data Types and its Geo Coverage

Data Type	Geo Coverage						Total Number
	National	Regional	District	Urban	Local	Unclassified	
Fundamental Vector	35	22	05	55	24	07	148
Thematic Vector	195	123	24	117	22	25	506
Databases	28	07	0	09	02	0	46
Hard Copy	303	101	18	03	22	03	456
Image	103	33	08	0	18	0	162
Text	199	64	22	05	58	0	348
Total	863	350	77	189	146	35	1,666

4.3 High Level Thematic Areas

Table 4.17 provides the information on data requirements for the concerned organization in order to address their different business functions of the organizations under different thematic areas. The summarized information in relation to use cases and the meeting of the requirements by the producers are given in Table 4.18.

	Total Use Cases	Provision of Spatial Data
Political/Admin Boundary	338	5
GIS Data	326	6
Land Use & Land Cover	304	4
Surface Hydro	227	14
Climate	225	7
Remote Sensing Data	224	2
Imagery	221	3
Statistical Area	213	42
Elevation	206	15
Biodiversity	194	12
Road Network	2+3	6
Special Management Area	189	61
Soils	188	11
Structures	187	17
Planning Area	182	52
Service Area	182	53
Places	191	15
Sub-Surface Hydro	169	3
Geology	165	5
Cadastral	146	7
Marine Hydro	144	6
Telecommunication	114	1
Storm Water	112	1
Waste management	107	7
Waste	102	2
Planimetric Features	99	15
Activity Area	99	48
Sanitary Water	98	1
Geomorphology	95	7
Portable Water	95	4
Cultural & Historical	94	3
Water transport	94	1
Electrical	89	4
Commerce & Industry	89	1
Government	82	1
Marine Abiotic	77	3
Grid & Indexes	74	6
Health & Education	73	1
Tourism & Recreation	73	1

Table 4. 17 Data Requirements for Key Stakeholders for Sri Lanka NSDI

		BASEMAP									AREAS							ENVIRONMENT														UTILITIES						TRANSPORTATION				COMMUNITY FACILITIES				
ADMIN_L2	ADMIN_L3	Geodesy	Places	Elevation	Imagery	Remote Sensing Data	Structures	Planimetric Features	Grids and Indexes	Geographic Reference Syster	Cadastral	Activity Areas	Planning Areas	Pol/Admin Boundaries	Service Areas	Special Mgmt Areas	Statistical Areas	Climate	Waste	Cultural & Historical	Land Use & Land Cover	Biodiversity	Surface Hydro	Sub-Surface Hydro	Marine Hydro	Soils	Geology	Geomorphology	Marine Abiotic	Seismology	Electical	Potable Water	Sanitary Sewer	Storm Water	Waste Management	Telecommunications	Road Network	Water Transport	Transit	Air Transport	Government	Tourism and Recreation	Health and Education	Cultural and Religious	Commerce and Industry
My of Land	Land Division		u	u	u		u	u	u	u	u			u	u						u	u	u	u		u				u	u	u	u	u	u	u		u			u	u	u	u	u
My of Land	Bim Saviya Division	u	u	u	u	u	u	u	u	u	p	u		u							u		u							u	u	u	u		u	u		u			u	u	u	u	u
SD	Air Survey Branch	p	p	p	u		u	p	p	p		p	u	u	u	u	u	u					p		u					u					u	u								
SD	Remote Sensing Branch	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u		u	u	p	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u		u	u	u	u	u	u
SD	GIS Branch	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u				u	p	u		u		u	u	u	u	u	u	u	u	u	u	u		u	u	u	u	u	u
SD	Mapping Branch	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	p	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
SD	LIS Branch	u	u	u			u	u	u	u	p	u	u	u							u		u		u						u	u				u	u								
SD	Document Management Branch								u	u				u																															
SD	Geodetic Branch	p	p	p			p		p	p				u																						u									
SD	Geodetic Branch	p	p	p			p	p	p	p	p	u	u	u	u	u	u				u	u	u	u	u				u		u	u	u	u	u	u	u	u						
SD	Geodetic Branch		u	p			p		p	p				u																														
SD	Geonames Branch		p											u			u																												
NPPD	Research Division		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
NPPD	Regional Planning Division		u	u	u	u	u	u	u	u	u	u	u	u	u	u	1	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
NPPD	Local Planning Division		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
NPPD	Architecture Division			u			u				u	u	u	u																														
NPPD	Engineering Division			u	u		u						u	u				u			u		u	u	u	u	u	u	u	u					u									
NPPD	Development & Planning Division		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
NPPD	Development & Planning Division		u	u		u	u			u	u	u		u				u	u	u	u	u	u		u						u		u	u	u	u	u	u	u	u	u	u	u	u
NPPD	Development & Planning Division		u	u		u				u			u	u	u		u	u			u	u	u								u				u					u	u				u
NPPD	Development & Planning Division		u	u		u				u	u		u	u				u			u	u	u	u	u	u	u	u	u														
NPPD	Development & Planning Division			u						u			u	u				u			u	u	u	u		u	u	u																
NPPD	Development & Planning Division			u						u		u		u				u	u		u	u	u	u		u						u				u									
NPPD	IT/ GIS Division		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
Bim Saviya		u	u	u	u	u	u	u	u	u	p			u									u		u											u									
My MD & E	Bio Diversity Division			u	u	u	u			u	u		u	u					u	u	u	u	p	u	u	u	u	u	u	u	u	u				u					u				
My MD & E	Environment Pollution & Chemical Management Division			u	u	u	u			u		u	u	u				p																											
My MD & E	Natural Resources Management Division		u	u			u			u			u	u				u	u	u	u	u	u	u	u	u	u	u	u	u	u					u					u				
My MD & E	Policies Planning & Monitoring Division									u			u	u				u	u	u	u	u	u	u	u																				
My MD & E	Sustainable Development Division						u			u				u				u	u	u	u	u		u	u																				
My MD & E	Sustainable Environment Division			u		u	u			u		u	u	u		u		u	u	u	u	u	u	u	u	u	u	u	u			u	u	u	u	u	u		u		u	u	u	
My MD & E	Climate Change Secretariat				u	u				u			u	u				p	u	u	u	p	u	u	u				p															
DWLC	Natural Resource Management Division				u	u				u			u	u	u	u		u	u	u	u	u	u	u					u															
DWLC	Elephant Conservation Division				u	u				u			p	u								u														u									
DWLC	Eco Tourism Division				u					u				u				u	u	u	u	u	u													u									
DWLC	Planning and ICT Division			u	u	u	u			u			u	u	p			u	u	u	u	u	u													u									

ADMIN_L2	ADMIN_L3	BASEMAP									AREAS							ENVIRONMENT														UTILITIES						TRANSPORTATION				COMMUNITY FACILITIES				
		Geodesy	Places	Elevation	Imagery	Remote Sensing Data	Structures	Planimetric Features	Grids and Indexes	Geographic Reference Syste	Cadastral	Activity Areas	Planning Areas	Pol/Admin Boundaries	Service Areas	Special Mgmt Areas	Statistical Areas	Climate	Waste	Cultural & Historical	Land Use & Land Cover	Biodiversity	Surface Hydro	Sub-Surface Hydro	Marine Hydro	Soils	Geology	Geomorphology	Marine Abiotic	Seismology	Electical	Potable Water	Sanitary Sewer	Storm Water	Waste Management	Telecommunications	Road Network	Water Transport	Transit	Air Transport	Government	Tourism and Recreation	Health and Education	Cultural and Religious	Commerce and Industry
FD	Silviculture and Forest Management Division		u	u	u	u				u				u				u	u	u	u	p	u			u										u								
FD	Silviculture and Forest Management Division		u	u		u			u	u	u	u		u	u	u	u					u														u								
FD	Environmental Conservation and Management Division			u	u	u				u			u	u		u		u	u	u	u	u	u	u	u											u								
FD	Social Forestry and Forestry Extension Division			u	u	u	u			u			u	u		u				u	u	u														u								
FD	Forest Protection and Law Enforcement Division		u		u	u				u			u	u		u																				u								
FD	Research and Education Division			u	u	u	u	u	u	u			u	u	u	u		u	u		u	u	u			u	u	u								u								
FD	Forest Inventory & Geographical Information Systems Division		u	u	u	u		u	u	u			u	u	u	u		u	u		u	u	u														u								
SLLRDC	Research & Design Division						u			u	u		u	u							u					u	u	u		u															
SLLRDC	Lands & Marketing Division									u	u		u	u							u	u	u														u								
SLLRDC	Special Projects Division			u	u	u	u			u		u	u	u	u			u			u	u	u	u		u	u	u	u															
SLLRDC	Wetland Management Division		u	u	u	u	u			u			u	u		u	u				u	u	u	u	u	u	u	u		u						u	u							
SLLRDC	Consultancy Services Division			u	u		u			u	u		u	u		u	u				u	u	u	u		u	u									u								
SLLRDC	Construction Division			u			u	u		u	u		u	u	u	u				u	u	u	u	u	u	u	u							u	u	u	u							
SLLRDC	Testing & Engineering Materials Division			u	u			u		u	u		u	u	u	u								u			u																	
CCD	Coastal Research & Design Division	u		u	u		u			u			u	u				u			u				u		u	u	u	u															
CCD	Coastal Works Division	u		u	u	u	u	u		u			u	u	u	u	u	u	u	u	u	u	u	u	u		u	u	u	u	u	u	u				u	u							
CCD	Planning Division			u		u				u				u		u	u	u	u	u	u	u	u	u	u	u			u	u			u	u		u	u							
CCD	Planning Division		u	u	u	u	u	u	u	u			u	u	u			u	u	u		u	u	u	u	u	u	u																
CCD	Planning Division		u	u	u	u				u			u	u							u	u	u	u	u		u	u	u	u		u	u											
CCD	Planning Division		u	u		u	u			u	u	u		u			u	u			u	u	u	u	u	u										u								
CCD	Planning Division		u	u	u		u			u	u	u		u			u	u		u	u	u	u	u	u	u										u								
CCD	Planning Division		u	u		u	u			u	u	u						u	u		u	u	u	u	u	u	u	u	u															
CCD	Planning Division		u	u	u	u	u			u				u	u			u			u		u	u	u	u	u	u	u															
CCD	Planning Division		u	u		u	u	u		u			u	u				u			u	u			u	u	u	u																
CCD	Coastal Research & Design Division																																												
NARA	National Institute of Oceanography and Marine Science	u	u	u	u	u	u	u		u			u	u		u	u	u	u						u	u	u	u																	
NARA	National Institute of Oceanography and Marine Science																																												
NARA	Inland Aquatic Resources and Aquaculture Division		p			u				u			p	u		p		u				p			p				p															
NARA	Marine Biological Resources Division		u			u				u			u			u						u			u		u		u															
NARA	Environmental Studies Division			u	u	u	u	u		u			u	u		u	u	u	u	u	u	u	u	u	u	u	u		u			u	u	u		u	u							
NARA	Socio Economic and Marketing Research Division					u				u			u	u	u		u			u	u																u				u				u
NARA	Hydrographic Office	p	p	p	u	u	u	p	u	p			u	u	p	p	u					p	p	u	p	u	u	u	p	p							u							
NARA	Monitoring and Evaluation Division	u	u	u	u		u	u	u	u			u	u	p	p						p			u																			

ADMIN_L2	ADMIN_L3	BASEMAP									AREAS							ENVIRONMENT													UTILITIES						TRANSPORTATION				COMMUNITY FACILITIES				
		Geodesy	Places	Elevation	Imagery	Remote Sensing Data	Structures	Planimetric Features	Grids and Indexes	Geographic Reference System	Cadastral	Activity Areas	Planning Areas	Pol/Admin Boundaries	Service Areas	Special Mgmt Areas	Statistical Areas	Climate	Waste	Cultural & Historical	Land Use & Land Cover	Biodiversity	Surface Hydro	Sub-Surface Hydro	Marine Hydro	Soils	Geology	Geomorphology	Marine Abiotic	Seismology	Electical	Potable Water	Sanitary Sewer	Storm Water	Waste Management	Telecommunications	Road Network	Water Transport	Transit	Air Transport	Government	Tourism and Recreation	Health and Education	Cultural and Religious	Commerce and Industry
CEA	Environmental Pollution Control Division- Environmental Pollution Control Unit				u	u				u				u	u	u		u	u		u		u		u																				
CEA	Environmental Pollution Control Division- Waste Management Unit					u				u				u				u	u	u	u		u		u									u	u		u								
CEA	Environmental Management & Assessment Division				u	u				u			p	u		p	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
CEA	Environmental Impact Assessment Unit		u	u	u	u	u			u			u	u	u	u	u	u	u		u	u	u	u	u	u	u	u	u	u			u	u	u		u								
CEA	Research & Development Division			u	u		u			u			p	u	p	p	u				u	u	u	u	u	u	u		u				u	u	u	u	u	u				u			
CEA	Environmental Economic Affairs Unit					u		u		u			u	u	u	u	u	u	u		u	u	u	u	u																	u			
CEA	National Environmental Information Center (NEIC)				u		u			u			u	u	u	u	u	p	u	u	u	p	u	u	p	u	u	u	p	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
My of A	Planning, Monitoring and Evaluation Division									u				u		u	u				u															u	u								
My of A	Agriculture Technology Division			u		u	u			u		u	u	u	u	u	u	u			u		u			u	u																		
My of A	Projects Division																																												
My of A	Agriculture Development Division					u				u				u	u	p	u	u	u		u		u			u	u										u								
My of A	Statistics Division				u			u	u	u			u	u	u	u	u	u	u		u		u			u											u								
My of A	Socio Economics and Planning Centre(SEPC)				u			u		u			u	u	u	u	u				u		u			u																			
My of A	Progress Monitoring & Evaluation Unit				u			u		u			u	u	u	u	u	u	u		u	u	u			u	u					u	u	u	u	u	u	u	u						u
DAD	Engineering Division						u	u		u			u	u		u	u	u								u	u																		
DAD	Development and Progress Control Division.		u		u	u	u			u			u	u	u	u	u	u			u		u			u	u										u	u							
DAD	Institutional Development Division			u		u	u			u				u	u	u	u	u			u	u	u			u	u										u								u
DAD	Productivity Development and Sales Division			u	u		u			u			u	u	u	u	u	u			u	u	u			u	u					u					u								
DAD	Agrarian Bank				u				u				u	u			u				u		u														u								
UDA	Development Planning Division		u	u	u	u	u	u		u	u	u	u	u	u	u		u	u	u	u	u	u	u		u					u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
UDA	Project Management Division			u	u		u			u	u		u	u							u	u	u								u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
UDA	Land and Land Management Division									u	u			u		u					u	u	u																						
UDA	Enforcement Division			u	u		u			u	u			u		u	u				u	u	u																						
UDA	GIS Division	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
UDA	Environment & Landscape Division			u	u	u	u			u	u	u	u	u	u	u	u	u	u	u	u	u	u			u	u				u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
UDA	Engineering Division			u	u		u			u	u			u			u				u		u			u	u																		
UDA	Urban Regeneration Project Division			u	u		u			u	u			u	u						u	u	u			u					u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
DMC	Mitigation, Research and Development Division		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u		u	u	u	u	u	u						u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
DMC	Mitigation, Research and Development Division		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u		u	u	u	u	u	u						u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
DMC	Mitigation, Research and Development Division		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
DMC	Mitigation, Research and Development Division		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
DMC	Mitigation, Research and Development Division		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
DMC	Mitigation, Research and Development Division		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
DMC	Mitigation, Research and Development Division		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u

		BASEMAP									AREAS							ENVIRONMENT													UTILITIES						TRANSPORTATION				COMMUNITY FACILITIES				
ADMIN_L2	ADMIN_L3	Geodesy	Places	Elevation	Imagery	Remote Sensing Data	Structures	Planimetric Features	Grids and Indexes	Geographic Reference System	Cadastral	Activity Areas	Planning Areas	Pol/Admin Boundaries	Service Areas	Special Mgmt Areas	Statistical Areas	Climate	Waste	Cultural & Historical	Land Use & Land Cover	Biodiversity	Surface Hydro	Sub-Surface Hydro	Marine Hydro	Soils	Geology	Geomorphology	Marine Abiotic	Seismology	Electical	Potable Water	Sanitary Sewer	Storm Water	Waste Management	Telecommunications	Road Network	Water Transport	Transit	Air Transport	Government	Tourism and Recreation	Health and Education	Cultural and Religious	Commerce and Industry
DMC	Mitigation, Research and Development Division		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
DMC	Prepared Planning Division		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
DMC	Prepared Planning Division		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
DMC	Prepared Planning Division		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
DMC	Emergency Operation Centre		u	u		u	u			u	u	u	u	u	u	u	u	u			u		u								u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
DMC	Multi Hazard Early Warning Dissemination Division									u	u	u	u	u	u	u	u	u																											
NWS&DB	Information Technology Division				u					u	u	u	u	u			u																				u								
NWS&DB	Corporate Planning Division		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u	u		u	u	u	u	u	u	u				u	p	u	u	u	u	u	u		u	u	u	u	u	u
NWS&DB	Corporate Planning Division		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u	u		u	u	u	u	u	u	u				u	p	u	u	u	u	u	u		u	u	u	u	u	u
NWS&DB	Mechanical & Electrical Engineering Division		u		u					u	u	u	u	u	u	u	u				u		u	u		u							u	u	u	u	u	u							
NWS&DB	Research & Development Division			u	u		u	u		u	u		u	u	u	u	u				u		u	u		u							u	u	u	u	u	u							
NWS&DB	Policy & Startegy Division									u		u	u	u	u	u	u																												
NWS&DB	GIS & Mapping Section	u	u	u	u	u	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u		u	u					u	u	u		u	u								
DCS	Population Census and Demographic Division				u		u			u	u	u		u			p				u										u					u	u	u		u	u	u	u	u	u
DCS	Industries, Construction, Trade and Services Division				u	u				u				u	u	u	p	u			u	u	u			u					u	u	u	u	u	u	u	u			u	u	u		u
DCS	Agriculture and Environment Division				u	u				u			u	u	u	u	p	u			u	u	u			u											u								
DCS	National Accounts Division									u			u	u	u	u	p				u																								
DCS	Sample Surveys Division				u					u			u	u	u	u	p				u																								
DCS	Research & Special Studies Division				u					u			u	u	u	u	p				u															u	u	u	u	u	u	u	u	u	u
DCS	Prices and Wages Division				u					u			u	u	u	u	p				u																								u
DCS	Cartography Division		u	u	u	u	u		u	u	u	u	u	u	u	u	p				u	u	u													u	u	u	u	u	u	u	u	u	u
DCS	Branch offices of the departments				u	u	u		u	u	u	u	u	u	u	u	p				u	u	u													u	u	u	u	u	u	u	u	u	u
STB	Head Office		u	u	u					u			u	u	u	u	u	u			u	u				u										u	u								
STB	Tea Promotion Division									u				u			u																								u	u			u
STB	Tea Commissioner’s Division													u		u	u				u																				u	u			u
STB	Hydrogeology Division	u	u	u	u	u			u	u				u	u	u	u	u			u	u	u			u	u				u		u	u	u	u	u			u	u	u			
STB	Laboratory			u	u	u				u			u	u	u	u	u	u			u		u	u		u																			
STB	GIS Unit		u	u	u	u	u			u			u	u	u		u	u			u	u	u	u		u	u																		
STB	Operation Division																															u					u								
STB	Driling Section			u						u			u	u	u		u	u			u			u		u	u	u																	
RDA	Planning Division		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u			u	u	u	u	u	u	u				u	u	u	u	u	u	p	u	u	u	u	u	u	u	u
RDA	Planning Division		u	u		u	u			u	u	p	p	u	p	p	p	u			u		u	u	u	u	u					u	u	u	u	u	u	u			u	u	u	u	u
RDA	GIS Unit		u	u	u	u	u	u			u	p	p	u	p	p	p				u		u	u		u					u	u	u	u	u	u	p	u		u	u	u	u	u	u
RDA	Data Collection and Evaluation Unit																																												
RDA	Engineering Services Division		p	u	u	u	u	u		u	p	p	p	u	p	p	p				u		u	u	u	u					u	u	u	u	u	u	p	u							
RDA	Highway Designs Division		p	p		p	u	u		u	u	pp	p	u	p	p	p				u																p								
RDA	Research & Development Division		u	u		u	u			u	u	p	p	u	p	p	p	u			u		u	u	u	u	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
RDA	Land Acquisition and Resettlement Division		p	u		u	u			u	u	p	p	u	p	p	p				u										u	u	u	u	u	u	u					u	u	u	u

GREENTECH CONSULTANTS

ADMIN_L2	ADMIN_L3	BASEMAP									AREAS							ENVIRONMENT														UTILITIES						TRANSPORTATION				COMMUNITY FACILITIES				
		Geodesy	Places	Elevation	Imagery	Remote Sensing Data	Structures	Planimetric Features	Grids and Indexes	Geographic Reference System	Cadastral	Activity Areas	Planning Areas	Pol/Admin Boundaries	Service Areas	Special Mgmt Areas	Statistical Areas	Climate	Waste	Cultural & Historical	Land Use & Land Cover	Biodiversity	Surface Hydro	Sub-Surface Hydro	Marine Hydro	Soils	Geology	Geomorphology	Marine Abiotic	Seismology	Electical	Potable Water	Sanitary Sewer	Storm Water	Waste Management	Telecommunications	Road Network	Water Transport	Transit	Air Transport	Government	Tourism and Recreation	Health and Education	Cultural and Religious	Commerce and Industry
RDA	Environment & Social Development Division			u		u				u	u	p	p	u		p		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
RDA	Maintenance Management and Construction Division		p	p		p	p			u	u			u							u															u								
RDA	Road Safety and Traffic Management Unit		p	p		u	u			u	u			u							u															u								
RDA	Construction Division		p	p		u	u			u	u	p	p	u	p	p	p	u			u	u	u	u	u	u			u		u	u	u	u	u	u	u	u	u	u	u	u	u	u
RDA	.Rural Bridge Construction Unit		p	p		u					u	p	p	u	p	p	p	u			u															u								
RDA	Management Information Systems Unit		u	u		u					u	u		u		u					u															u								
RDA	Property Management & Revenue Division		u	u		u	u			u	u	p		p		p					u	u	u	u		u										u								
RDA	Mechanical Division		u	u		u	u			u	u	p		p		p					u	u	u	u		u										u								
RDA	Expressway Operation, Maintenance & Management Division		u	u		u	u			u	u	p		p		p					u	u	u	u		u										u								
SLILG	Research Division				u	u	u			u	u	u	u	u	u	u	u				u									u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
SLILG	Engineering Division				u					u				u			u				u									1		1	1		1	1			1	1	1	1	1	1
SLILG	Physical Planning Division				u					u				u	u	u	u				u									u	u	u	u	u	u	u					u	u	u	u
SLILG	General Management Division													u			u				u																							
SLILG	Academic & Training Division													u			u	u	u		u		u							u	u	u	u	u	u	u				u	u	u	u	u
LHI	Engineering Design & Consultancy Services			u	u	u	u			u				u	u	u	u	u	u		u	u	u	u		u																	
LHI	Engineering Design & Consultancy Servic	u	u	p	p	u	u	p		p			p	u	p	p	u	u			u	p	p	p	p	u	u	p	u	u														
LHI	Engineering Design & Consultancy Services																																												
LHI	Engineering Design & Consultancy Servic	u	u	u	u	u	u			u		u	u	u	u	u	u	u			u	u	u	u	u	u	u	u																
LHI	Engineering Design & Consultancy Servic	u	p	p	u	u	p	p		u		u	u	u	u	u	u						p	p	p	u	u	p	u															
ID	Hydrology Division		u	p	p		p	p		u			u	u	u	u	u	u					u	u	u		u	u																
ID	Engineering Geology Division	u	u	u	u	u	u			u				u	u	u	u						u	u	u	u	u	u																
ID	Hydraulic Research laboratory	u	u	u	u	u	u			u				u	u	u	u				u		u	u		u	u	u																
ID	Engineering Material Division	u	u	u	u	u	u			u				u	u	u	u				u		u	u	u	u	u	u																
ID	Environmental Branch			u	u	u	u	u		u				u	u	u	u	u	u	u	u	u	u	u	u	u	u	u					u	u	u								
ID	Research Support & Process Improvement Unit		u	u	u	u	u	u		u				u	u	u	u	u			u	u	u	u	u	u	u	u																
ID	Zones (North, Central, Southern, Uva & South East, North East Zone)	u	u	u	u		u	u		u				u	u	u	u	u			u		u	u	u	u	u	u																
ID	ICT Branch	u	u	u	u	u	u	u		u	u			u	u	u	u	u			u	u	u	u	u	u	u	u		u	u	u	u	u	u	u	u	u						
ID	Mechanical Division						u			u				u	u	u	u	u			u	u	u	u		u	u																	
ID	Land Use Division	u	u	u	u	u				u				u	u	u	u				u	u	u	u		u	u	u																
ID	Hydraulic Research Laboratory	u		u	u	u	u			u				u	u	u	u				u	u	u	u		u	u	u																
ID	Planning and Design Unit			u	u	u	u	u		u				u	u	u	u						u	u	u	u	u	u																
ID	Water Resources Plannning Unit	u	u	u	u	u	u	u	u	u			u	u	u	u	u	u			u	u	u	u	u	u	u	u	u								u								
ID	Asset Management & Dam Safety Unit	u	u	u	u	u	u	u		u				u	u	u	u	u			u		u	u		u	u	u																
ID	Drainage and Flood Systems Unit		u	u	u	u				u				u	u	u	u	u			u						u	u	u																
ID	Disaster Management Unit	u	u	u	u	u	u	u	u	u				u	u	u	u	u			u	u	u	u	u	u	u	u																

ADMIN_L2	ADMIN_L3	BASEMAP									AREAS							ENVIRONMENT													UTILITIES						TRANSPORTATION				COMMUNITY FACILITIES				
		Geodesy	Places	Elevation	Imagery	Remote Sensing Data	Structures	Planimetric Features	Grids and Indexes	Geographic Reference System	Cadastral	Activity Areas	Planning Areas	Pol/Admin Boundaries	Service Areas	Special Mgmt Areas	Statistical Areas	Climate	Waste	Cultural & Historical	Land Use & Land Cover	Biodiversity	Surface Hydro	Sub-Surface Hydro	Marine Hydro	Soils	Geology	Geomorphology	Marine Abiotic	Seismology	Electical	Potable Water	Sanitary Sewer	Storm Water	Waste Management	Telecommunications	Road Network	Water Transport	Transit	Air Transport	Government	Tourism and Recreation	Health and Education	Cultural and Religious	Commerce and Industry
ID	Irrigation & Productivity Enhancement Unit				u					u				u	u	u	u	u			u		u	u																					
ID	Rehabilitation & Modernization Unit				u	u	u			u				u	u	u	u	u			u	u	u	u	u	u	u	u																	
ID	Water Management Unit		u		u					u				u	u	u	u	u			u		u																						
ID	Dam Safety and Water Resources Planning Project (DSWRD)		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u		u	u	u	u	u	u	u	u										u								
ID	Dam Safety and Water Resources Planning Project (DSWRD)		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u		u	u	u	u	u	u	u	u										u								
ID	Dam Safety and Water Resources Planning Project (DSWRD)		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u		u	u	u	u	u	u	u	u										u				u				
ID	Dam Safety and Water Resources Planning Project (DSWRD)		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u		u	u	u	u	u	u	u	u										u								
ID	Dam Safety and Water Resources Planning Project (DSWRD)		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u		u	u	u	u	u	u	u	u										u				u				
ID	Dam Safety and Water Resources Planning Project (DSWRD)		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u		u	u	u	u	u	u	u	u										u				u				
ID	Dam Safety and Water Resources Planning Project (DSWRD)		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u		u	u	u	u	u	u	u	u										u				u				
ID	Dam Safety and Water Resources Planning Project (DSWRD)		u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	u		u	u	u	u	u	u	u	u										u								
BDS	In situ conservation Unit								u				u	u	u	u	u			u		u	u														u								
BDS	Bio Design and Modeling Unit		u	u	u					u				u			u	u			u	u	u														u								
BDS	Traditional Knowledge Unit								u					u			u				u	u				u	u																		
BDS	Biodiversity Assessment and Monitoring Unit			u	u	u		u		u				u	u	u	u	u			u	u	u	u					u																
BDS	Biodiversity Awareness, Education, Publication and Training Unit				u					u				u	u	u	u	u			u	u	u	u																					
BDS	Bio Policy, Planning & Sustainable Use Unit			u	u	u				u			u	u	u	u	u	u			u	u	u	u	u	u	u		u																
BDS	Bio Treaty Coordination Unit									u							u	u			u	u																							
BDS	Biosafety Unit				u					u				u	u	u	u				u	u																							
BDS	Bio Prospecting Unit				u	u				u				u	u	u	u	u			u	u	u			u	u	u	u																
BDS	Bio Legal and Regulatory Unit									u					u	u	u	u			u	p	u																						
BDS	Bio data Processing Unit		u	u	u	u				u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u						u		u	u			u	u	u		u
CEB	Generation Division											u	u	u			u														u					u	u				u	u			u
CEB	Transmission Division																																												
CEB	Distribution Division		u	u	u		u	u		u	u	u	u	u	u	u	u				u		u								p					u	u	u		u	u	u	u	u	u
CEB	Projects Division		u	u	u					u	u	u	u	u	u	u	u	u			u	u	u			u	u				u					u	u	u							
CEB	Asset Management Division		u		u		u	u		u				u	u	u	u				u		u								u					u	u	u							
CEB	Corporate Strategy Division		u		u		u			u				u	u	u	u				u																								
CRI	Agronomy Division			u	u					u			u	u		u	u	u			u	u	u			u	u																		
CRI	Crop Protection Division		u		u					u			u	u	u	u	u				u		u																						
CRI	Agricultural Economics & Agribusiness Managment Division		u	u	u					u			u	u			u	u			u	u	u													u	u				u		u	u	u

ADMIN_L2	ADMIN_L3	BASEMAP									AREAS							ENVIRONMENT												UTILITIES						TRANSPORTATION				COMMUNITY FACILITIES				
		Geodesy	Places	Elevation	Imagery	Remote Sensing Data	Structures	Planimetric Features	Grids and Indexes	Geographic Reference System	Cadastral	Activity Areas	Planning Areas	Pol/Admin Boundaries	Service Areas	Special Mgmt Areas	Statistical Areas	Climate	Waste	Cultural & Historical	Land Use & Land Cover	Biodiversity	Surface Hydro	Sub-Surface Hydro	Marine Hydro	Soils	Geology	Geomorphology	Marine Abiotic	Seismology	Electical	Potable Water	Sanitary Sewer	Storm Water	Waste Management	Telecommunications	Road Network	Water Transport	Transit	Air Transport	Government	Tourism and Recreation	Health and Education	Cultural and Religious	Commerce and Industry
CRI	Plant Physiology Division		u	u		u				u				u	u	u	u	u			u	u				u	u																	
CRI	Coconut Processing Research Division				u					u				u	u	u	u	u			u																							
CRI	Soils and Plant Nutrition Division			u	u					u				u	u	u	u	u			u	u	u			u	u	u																
CRI	Tissue Culture Division									u				u	u	u	u					u				u																		
CRI	Technology Transfer Division			u			u	u		u				u	u	u	u	u			u	u				u	u																	
ISM		u	u	u	u	u	u	u	u	u	u	u	u	u						u	u	u	u	u	u	u	u	u															
IWMI	GIS, RS and data Management Unit		u	u		u	u	u		u			u	u	u	u	u	u			u	u	u	u	u	u	u	u															
MEPA					u	u			u	u					u	u	u		u		u	u			u				u														
MD			u			u				u							u	u							u																			
MD	Centre for Climate Change Studies	u	u	u	u	u	u			u				u	u	u	u	u			u	u	u	u	u	u	u		u														
NRMC			u	u	u	u				u				u	u	u	u	u	u		u	u	u	u	u		u	u	u														
NRMC	Soil Surveying and Land Evaluation:																																											
NRMC	Environmental health / protection:									u			u	u	u	u	u	u			u																					u		
NRMC	Soil Conservation (Technical)	u		u	u	u				u				u	u	u	u	u			u	u	u			u	u																
NRMC	Water Resources Management	u	u	u		u	u			u				u	u	u	u	u			u		u	u		u	u																
NRMC	Agro-Climatology		u	u	u	u				u			u	u	u	u	u	u			u	u	u																				
NRMC	GIS and Remote Sensing			u		u				u	u	u	u	u		u	u	u		u	u	u	u	u		u							u	u		u				u			u
My H			u	u						u	u	u				u	u	u			u		u	u									u	u		u				u	u	u	u	u
NBRO	Building Materials Research & Testing Division (BMRTD)									u																u	u																
NBRO	Environmental Studies & Services Division		u	u		u				u				u	u	u	u	u			u	u	u		u				u														
NBRO	Geotechnical Engineering & Testing Division (GETD)	u	u	u	u	u	u	u		u				u	u	u	u									u	u	u		u														
NBRO	Human Settlement Division				u					u			u	u	u	u	u	u			u		u	u		u	u																
NBRO	Landslide Research & Risk Management Division (LRRMD)	u	u	u	u	u	u	u		u		u	u	u	u	u	u	u			u		u	u		u	u	u		u													
NBRO	Issuing Landslide Clearance for Construction in Landslide Prone Areas		u	u	u		u	u		u		u	u	u	u		u	u			u		u	u		u	u	u			u	u	u	u	u	u						
NBRO	Housing Development Division				u		u			u		u	u	u			u				u									u	u	u	u	u	u	u	u			u		u	u	u
NHDA	Engineering Services & Construction Division					u	u			u		u	u	u	u	u	u	u	u	u	u	u	u			u	u			u	u	u	u	u	u	u	u			u	u	u	u	u
DLD			u	u	u	u	u	u	u	u	u	u	u	u	u	u	u				u	u	u													u							
AIB										u			u	u	u	u	u	u			u		u																				
HKARTI	Agricultural Policy and project evaluation (APPE) Division			u	u					u			u	u	u	u	u	u			u	u	u			u	u																
HKARTI	Agricultural Resource Management [ARM]				u								u	u	u	u	u				u		u																				
HKARTI	The Environmental and Water Resource Management Division		u	u	u	u	u			u			u	u	u	u	u	u			u	u	u	u	u	u	u	u															
HKARTI	Agricultural Marketing Information system (AMIS)													u	u		u																				u							u
HKARTI	Human Resources and institutional Development Division (HRID)													u	u	u	u				u																u							

ADMIN_L2	ADMIN_L3	BASEMAP									AREAS							ENVIRONMENT													UTILITIES						TRANSPORTATION				COMMUNITY FACILITIES				
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BOI	Investment Promotion Division				u		u			u			u	u	u	u	u	u			u	u	u	u		u	u				u	u	u	u	u	u	u	u	u	u	u	u	u	u
BOI	Project Appraisal Division											u	u	u	u	u	u	u		u	u	u	u																							
BOI	Project Implementation Division				u		u			u		u	u	u	u	u	u				u										u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
BOI	Project Monitoring Division												u	u	u	u	u																				u								u
CFHC	Harbour Operation Division	u	u	u	u	u	u	u		u	u	u	u	u	u	u	u				u	u	u	u	u	u	u	u	u															
CFHC	Mechanical Engineering Division													u	u	u					u																								
CFHC	Civil Engineering Division	u	u	u	u	u	u	u		u	u	u	u	u	u	u	u				u		u	u	u	u	u	u																
My T&CA			u	u	u									u	u	u	u				u																u	u	u	u	u	u	u	u	u
DA	Rice Research and Development Institute			u	u	u				u	u		u	u			u	u	u		u	u	u	u		p	u										u							u
DA	Fruit Crops Research and Development Institute			u	u	u				u	u		u	u			u	u	u		u	u	u	u		p	u										u							u
DA	Horticultural Crops Research and Development Institute			u	u	u				u	u		u	u			u	u	u		u	u	u	u		p	u										u							u
DA	Field Crops Research and Development Institute			u	u	u				u	u		u	u			u	u	u		u	u	u	u		p	u										u							u
DA	Seed Certification and Plant Protection Centre			u	u	u				u	u		u	u			u	u	u		u	u	u	u		p	u										u							u
DA	Seed and Planting Material Development Center			u	u	u				u	u		u	u			u	u	u		u	u	u	u		p	u										u							u
DA	Socio Economics and Planning Center		u			u				u	u	u	u	u		u		u		u	u	u	u	u	u	u											u							
DA	Engineering Division		u	u						u				u							u		u	u	u	u					u		u				u							
DA	NRMC	u	u	p	u	u	u	u	u	u	u	p	p	u	p	p	p	p	u	u	p	p	u	u	u	u	u	u		u			u			u				u				u
DA	Natural Resource Management Center	u	u	u	u	u	u	u	u	u	u	p	p	u	p	p	p	p	p	u	u/p	u/p	u/p	u	u	u	u	u	u					u	u		u				u				
DA	Integrated Natural Resource Management Information System		u		u					u	u	p	p	u	p	p	u														u	u	u	u	u	u	u	u			u	u	u	u	u
DA	Social Network Amongst Agriculture Users		u	u	u	u			u	u		p	u	p	p	p	u	u	u		u	u	u/p	u/p	u	u	u							u	u	u	u								
DA	Smart water management		u							u	u	p	p	u	p	p																		u			u								
DA	e_Market place for agriculture		u		u				u			p	p	u	p	p	p				u															u	u			u		u	u	u
DA	Logistics (storage and transport) information linking agriculture service providers and markets		u							u		p	p	u																						u								
DA	Online Agriculture Workforce information and services		u	u		u				u		p	p	u	p	p	u	p																											
DA	Agromet Data and services		u			u				u		p		u	u			p																											
DA	Agriculure Early Warning System		u							u				u																					u	u								
DA	Information on Climate Smart Technologies and Climate Resilient Crops and Breads		u	u	u	u				u		p	p	u	p	p	u				u	u	u	u											u	u	u								
DA	GIS Wild Life Movement , Area mapping of wild life crop damage/prone, wildlife cyber tracking and alert		u	u		u				u		p	p	u	p	p	u				u	u	u													u								

ADMIN_L2	ADMIN_L3	BASEMAP									AREAS							ENVIRONMENT														UTILITIES						TRANSPORTATION				COMMUNITY FACILITIES				
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DA	Online compensation for affected crops and livestock		u	u	u	u				u		u	u	u	u	u	u	u			u	u	u	u												u								
DA	Electronic Pest Surveillance System									u		u	u	u	u	u	u				u	u	u													u								
DA	Online food quality and safety verification and bio-safety monitoring		u			u				u			u	u				u			u																							
DA	Online information on offseason crop production technology package		u							u			u	u				u			u	u																						
DA	Accessible information resources on government policies and guidelines		u							u			u	u			u				u															u								
DA	Farm mechanization information and service		u							u			u	u							u															u					u			u
DA	Information on enabling environment and agri-business opportunities		u							u			u	u			u	u			u															u					u	u		u
DA	Linking research institutes with industry, extensions, producers and other stakeholders		u	u		u				u			u	u				u			u															u								
DA	Policy guidelines and support to agri insurance providing companies		u							u				u				u																										
DA	Monitoring of groups / cooperatives through online systems		u							u				u			u	u			u																							
DA	E-agriculture extension monitoring		u	u		u	u			u				u				u			u		u			u																		
DA	Information on fertilizer history by land area		u			u				u				u		u					u																							
DA	Interoperable and secure e/m-agriculture applications platform with content		u							u				u				u			u																							
DA	Integrate e-agriculture services with G2C									u			u	u	u	u	u				u																							
DA	ICT policy on data sharing, data classification, data formats, secure e-documents		u							u				u							u															u					u			
DA	E/M App for certification standard, compliance and traceability		u							u				u							u															u					u			
DA	Monitoring of compliance to government policies, guidelines		u	u						u			u	u	u						u																							
DA	Database of approved chemicals, fertilizers		u							u				u				u			u		u																					
DA	Traceability of agro-chemical movement through value chain		u							u				u							u																							
DA	Climate change modeling																																												
DA	Climate Change Secretariat																																											
DA	Climate Change Secretariat		u							u				u				u			u					u																		
DA	Climate Change Secretariat		u							u			u	u	u		u	u			u					u																		
DA	Climate Change Secretariat		u							u				u				u			u	u	u																					
DA	Climate Change Secretariat		u							u				u	u	u	u	u			u																							
DA	Climate Change Secretariat		u							u				u				u			u																							

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NSF	Research Division		u	u	u	u	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u		u	u	u	u	u	u	u							
NSF	Climate Change Concerns into National Planning and Development Processes			u	u	u	u			u	u	u	u	u	u	u	u	u			u	u	u	u	u	u										u	u							
NSF	Climate change resilience on Settlements, Human Health and infrastructure			u		u	u			u	u	u	u	u	u	u	u	u			u	u	u	u	u	u																		
NSF	Minimize Climate Change Impacts on Food Security		u	u	u	u	u	u		u	u	u	u	u	u	u	u	u		u	u	u	u	u		u	u							u	u		u							
NSF	Safeguard Natural Resources and Biodiversity from Climate Change Impacts		u	u	u	u	u	u		u	u	u	u	u	u	u	u	u		u	u	u	u	u		u	u							u	u	u	u							
NSF	Future Climate, Natural Disasters and Risk Reduction			u	u				u	u			u	u	u	u	u	u		u	u	u	u	u	u	u	u							u	u	u	u							
NSF	Mitigation and Environmental sustainability			u	u	u				u		u	u	u	u	u	u	u	u		u	u	u	u	u	u	u				u	u	u	u	u	u	u	u	u	u	u	u	u	u
NSF	Data Management					u	u			u		u	u	u	u	u	u	u			u																								
NSF	Climate resilient and healthy human settlements			u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
NSF	Climate impacts on water availability and develop scalable adaptation models:			u	u	u				u			u	u	u	u	u	u			u	u	u	u	u				u	u	u	u	u	u	u	u							
NSF	Health impacts of climate change			u	u	u				u				u	u	u	u	u					u	u	u						u	u	u	u	u		u	u						
NSF	Improve coordination /dissemination through existing institutional mechanisms			u	u	u			u	u	u			u	u	u	u															u	u	u										
NSF	Climate change impacts/adaptive measures for agriculture, livestock and fisheries sectors:		u	u	u	u				u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u								u	u	u								
NSF	Climate change impacts on long term food security and on the potential adaptive measures:					u				u				u																														
NSF	Pilot test and scale up community level agriculture/livestock/fisheries adaptation models:					u				u				u		u	u	u	u	u	u	u	u	u	u		u	u	u	u	u	u	u	u	u	u		u						
NSF	Climate impacts and adaptive measures in plantation sub-sectors:		u	u	u	u	u			u	u	u	u	u	u	u	u	u			u	u	u	u	u	u	u					u		u	u	u	u	u						
NSF	Pilot test and scale up sub-sector specific adaptation measures:		u	u	u	u	u			u	u	u	u	u	u	u	u	u			u	u	u	u	u	u	u					u		u	u	u	u	u						
NSF	Climate impacts and adaptive measures in plantation sub-sectors:		u	u	u	u	u			u	u	u	u	u	u	u	u	u			u	u	u	u	u	u	u					u		u	u	u	u	u						
NSF	Pilot test and scale up sub-sector specific adaptation measures		u	u	u	u	u			u	u	u	u	u	u	u	u	u			u	u	u	u	u	u	u					u		u	u	u	u	u						
NSF	Potential climate change impacts/adaptive measures for key industries:		u	u	u	u	u			u	u	u	u	u	u	u	u	u			u	u	u	u	u	u	u					u		u	u	u	u	u						

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NSF	Research and monitoring programs to strengthen knowledge base on climate change and terrestrial biodiversity:		u	u	u	u	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u				u		u	u	u	u	u							
NSF	Research and monitoring programs to strengthen knowledge base on climate change and aquatic biodiversity:		u	u	u	u	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u																	
NSF	Minimize entry, establishment and spread of IAS:			u	u	u	u	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u																	
NSF	Promote research partnerships on good practices for varied water uses:			u	u	u	u	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u																	
NSF	Valuation and socio-economic assessment of climate change impacts in key sectors (agriculture, water, health, energy, transport)		u	u	u	u	u			u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u											
NSF	Vulnerability and risk assessment of key economic sectors including scenario analysis on Floods			u	u	u	u	u			u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u										
NSF	Vulnerability and risk assessment of key economic sectors including scenario analysis on Drougts																																											
NSF	Controlling vector borne diseases in urban, suburban and rural habitats			u	u	u	u	u			u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u										
NSF	Assessment of climate change impacts on plantation and Export Agriculture Sectors in Sri Lanka and development of adaptation strategies			u	u	u	u	u			u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u										
NSF	Assessment of food security in Sri Lanka under a changing climate: An approach using bio-physical, socio-economic and GCM models			u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u			u	u	u	u		u	u	u	u	u	u	u							
NSF	Enabling community level seed banks programs in building climate resilience			u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u			u	u	u	u		u	u	u	u	u	u	u							
NSF	Safeguard biodiversity from the impacts of climate change and natural disasters through increasing the resilience of coastal biodiversity.		u	u	u	u	u	u	u	u	u	u				u	u	u	u			u	u	u			u	u	u	u	u	u	u	u	u	u	u	u	u		u	u		
NSF	Promoting home gardens as a means to improve climate resilient communities and biodiversity		u	u	u	u	u	u	u	u	u	u				u	u	u	u			u	u	u			u	u	u	u	u	u	u	u	u	u	u	u	u		u	u		

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NSF	Improve climate resilience in Industry Sector (Manufacturing, Transport and Energy)		u	u	u	u	u	u	u	u		u	u				u	u	u	u			u	u	u			u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	
NSF	Future climate scenarios and seasonal climate forecasting			u	u	u	u	u	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u			u	u	u	u	u	u	u	u	u	u								
NSF	Hazard, vulnerability and risk assessment		u	u		u	u			u		u	u	u	u	u	u	u	u	u	u	u	u	u		u				u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
NSF	Assessing Socio economic benefits of investments on projects for mitigating Disaster Impacts			u	u	u	u	u	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u			u	u	u	u		u	u	u	u	u	u	u						
NSF	Collection of data available in all sectors and gap identification; Standardizing, processing to a useable format and archiving		u	u	u	u	u	u	u	u		u	u	u	u	u	u	u	u	u	u	u	u			u		u	u	u	u	u	u	u	u	u	u	u							
SLTDA	Planning Division		u	u		u	u			u		u	u	u	u	u	u	u	u	u	u	u	u	u		u				u		u	u	u	u	u	u	u	u	u	u	u	u	u	u
SLTDA	Planning Division		u	u	u	u	u	u	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u			u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
SLTDA	Planning Division		u	u		u	u			u		u	u	u	u	u	u	u	u		u	u	u							u					u	u	u	u	u	u	u	u	u	u	u	u
SLTDA	Planning Division		u	u		u	u			u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u			u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
SLTDA	Planning Division		u	u		u				u		u	u	u	u	u	u	u	u		u	u	u	u	u	u				u						u				u	u	u	u	u	u
SLTDA	Planning Division		u	u		u	u			u			u	u	u	u	u	u	u		u	u	u	u	u	u	u			u						u				u	u	u	u	u	u
GSMB	Geology Division	u	u		u	u	u			u				p	u	p	p	u				u					p	p	p		p														
GSMB	Geology Division & Mining Division	u	u	u	u	u				u				p	u	p	p	u				u					p	p	p		p						u								
GSMB	Geologt Division				u	u				u				p	u	p	p	u				u					p	p	p		p						u								
GSMB	Geology Division & Mining Division					u				u					u		u	u				u					p	p	p		p						u								
GSMB	Geology Division & Mining Division					u				u					u			u									p	p	p		p						u								
AD	Exploraration Division			u		u				u					u			u			p	u			u	u	u									u								
AD	Exploraration Division			u		u	u			u					u			u			p	u			u	u	u									u								
AD	Exploraration Division			u		u	u			u					u			u			p	u				u	u									u								
AD	Exploraration Division		u	u		u	u			u					u			u			u	u				u	u									u								
AD	Exploraration Division	u	u	u	u	u	u		u	u			p	p	u	p	p		u		u	u	u	u	u	u	u	u	u					u	u								
AD	Exploraration Division		u			u				u			p	p	u	p	p	u	u	u	u	u	u	u	u	u	u	u	u					u	u	u							
AD	Exploraration Division		u							u					u																					u								
AD	Exploraration Division	u	u	u	u	u	u		u	u			p	p	u	p	p		u		u	u	u	u	u	u	u	u	u					u	u								
AD	Exploraration Division		u		u	u				u	u	u	u	u	u	u	u					u													u									
AD	Exploraration Division		u	u	u	u				u	u				u		p	p	u			u	u			u	u																		
AD	Exploraration Division		u	u	u	u				u	u				u		p	p	u			u				u	u																		
AD	Exploraration Division		u	u	u	u				u	u				u		p	p	u			u				u	u						s\				u								
AD	Exploraration Division		u	u	u	u				u	u	u	u	u	u		u	u	u	u	u	u		u	u	u	u	u									u						u		
AD	Exploraration Division		u			u				u	u	u	u	u	u			u	u	u							u										u								

ADMIN_L2	ADMIN_L3	BASEMAP									AREAS							ENVIRONMENT														UTILITIES						TRANSPORTATION				COMMUNITY FACILITIES				
		Geodesy	Places	Elevation	Imagery	Remote Sensing Data	Structures	Planimetric Features	Grids and Indexes	Geographic Reference System	Cadastral	Activity Areas	Planning Areas	Pol/Admin Boundaries	Service Areas	Special Mgmt Areas	Statistical Areas	Climate	Waste	Cultural & Historical	Land Use & Land Cover	Biodiversity	Surface Hydro	Sub-Surface Hydro	Marine Hydro	Soils	Geology	Geomorphology	Marine Abiotic	Seismology	Electical	Potable Water	Sanitary Sewer	Storm Water	Waste Management	Telecommunications	Road Network	Water Transport	Transit	Air Transport	Government	Tourism and Recreation	Health and Education	Cultural and Religious	Commerce and Industry
TRCSL			u	u	u	u				u	u	u	u	u		u																												
SLPA	Navigation			p	u	u	u			u				p	p	p		u							p																			
SLPA	Logistics		u		u					u				u				u							u																			
SLPA	Planning & Development			u		u	p			u	u		p	u		p		u			u	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	
SLPA	Operation Division			u		u	p			u	u		p	u		p		u			u	u	u		u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	
SLPA	Survey	u	p	p			p		p	u	p		p	u		p		u													u	u	u	u	u	u	u	u	u	u	u	u	u	
SLPA	Premises						p				p			u							u										u	u	u	u	u	u	u				u				
DLTR	Planning Division		u	u	u		u			u	u		u	u	u			u	u	u	u										u	u	u	u	u	u	u	u		u				
DLTR	Investigation Division		u	u	u		u			u	u		u	u	u			u	u	u	u										u	u	u	u	u	u	u	u		u				
DLTR	Land Branch		u	u	u		u			u	u		u	u	u			u	u	u	u										u	u	u	u	u	u	u	u		u				
DLTR	Regional Offices - 47 Nos		u	u	u		u			u	u		u	u	u			u	u	u	u										u	u	u	u	u	u	u	u		u				
DLTR	Computer Division		u	u	u		u			u	u		u	u	u			u	u	u	u										u	u	u	u	u	u	u	u		u				
DLTR	Publication Division		u	u	u		u			u	u		u	u	u			u	u	u	u										u	u	u	u	u	u	u	u		u				

Table 4. 18 Summarized Data Requirements for Organizations and Meeting the Spatial data Needs

ADMIN_L3	BASEMAP									AREAS							ENVIRONMENT													UTILITIES						TRANSPORTATION				COMMUNITY FACILITIES				
	Geodesy	Places	Elevation	Imagery	Remote Sensing Data	Structures	Planimetric Features	Grids and Indexes	Geographic Reference System	Cadastral	Activity Areas	Planning Areas	Pol/Admin Boundaries	Service Areas	Special Mgmt Areas	Statistical Areas	Climate	Waste	Cultural & Historical	Land Use & Land Cover	Biodiversity	Surface Hydro	Sub-Surface Hydro	Marine Hydro	Soils	Geology	Geomorphology	Marine Abiotic	Seismology	Electical	Potable Water	Sanitary Sewer	Storm Water	Waste Management	Telecommunications	Road Network	Water Transport	Transit	Air Transport	Government	Tourism and Recreation	Health and Education	Cultural and Religious	Commerce and Industry
Total Use Cases	39	191	206	221	224	187	99	74	326	146	99	182	338	182	189	213	225	102	94	304	194	227	169	144	188	165	95	77	54	89	95	98	112	107	116	192	94	56	63	82	73	73	54	89
Provision of Required Spatial data	4	15	15	3	2	17	5	6	6	7	48	52	5	53	61	42	7	2	2	4	12	14	3	6	11	5	7	3	1	2	4	1	1	1	1	6	1	0	0	1	1	1	1	1

	Total Use Cases	Provision of Spatial Data
Air Transport	63	0
Transit	56	0
Seismology	54	1
Cultural & Religious	53	1
Geodesy	39	4

According to core business functions of 403 functional divisions of the 105 organizations the most required high end thematic data are requested in the areas and the number of providers in each area is as follows:

	Total Use Cases	Provision of Spatial Data
Political/Admin Boundary	338	5
GIS Data	326	6
Land Use & Land Cover	304	4
Surface Hydro	227	14
Climate	225	7
Remote Sensing Data	224	2
Imagery	221	3
Statistical Area	213	42
Elevation	206	15

Second highest demanded categories and the number involved in provision of such data include:

	Total Use Cases	Provision of Spatial Data
Biodiversity	194	23
Road Network	192	6
Special Management Area	189	61
Soils	188	11
Structures	187	17
Planning Area	182	52
Service Area	182	53
Places	191	15
Sub-Surface Hydro	169	3
Geology	165	5
Cadastral	146	7

The lowest demanded categories and the number involved in provision are as follows:

	Total Use Cases	Provision of Spatial Data
Marine Hydro	114	6
Telecommunication	116	1
Storm Water	112	1
Waste management	107	7
Waste	102	2
Planimetric Features	99	15
Activity Area	99	48
Sanitary Water	98	1
Geomorphology	95	7
Portable Water	95	4
Cultural & Historical	94	3
Water transport	94	1
Electrical	89	4
Commerce & Industry	89	1
Government	82	1
Marine Abiotic	77	3
Grid & Indexes	74	6
Health & Education	73	1
Tourism & Recreation	73	1
Air Transport	63	0
Transit	56	0
Seismology	54	1
Cultural & Religious	53	1
Geodesy	39	4

4.4 Current Practice in Meeting the Needs

The Government organizations always looked into the national mapping agency for their information, as many of them examine the availability of digital spatial data and maps of their area of interest. In the absence of that, the organizations request to provide the required data at a cost produced as separate special project activity during a specific time.

When all the parameters do not adequately match each other, the users may seek alternative avenues to obtain their needs. Outsourcing is one option and that does not work, freely available Google images may be a possibility depending on the requirement. The other alternatives available are in obtaining the most recent images using UAVs or Drone for quick and updated results.

Therefore the availability of fundamental data sets are most important for the users who are working on thematic areas in order to produce compatible layers which could be shareable and compatible with other producers data.

That is why so many thematic data layers and fundamental data layers are produced by the most dynamic organizations in meeting their business needs against their mandatory tasks and overriding the authority. Therefore the main focus of this NSDI initiative is to update and ensure and accurate fundamental and most important key thematic layers are developed.

4.5 Main Issues and Challenges

The following main issues and challenges were identified while conducting the ICTA NSDI Baseline Study:

I. Although the representatives provided the completed questionnaire forms, many of these forms were not well completed in each section chiefly due to the second questionnaire to organizations that directly deal with spatial data production. Therefore many of the questions included in a number of specialized areas were not applicable to those organizations, and were not well understood due to its highly technical nature and complexity; as such organizations do not require such information. The analysis could not be done on time as many of the organizations did not participate at relevant workshops organized by ICTA in spite of numerous correspondence made.

II. The reasons backed behind minimal participation was that the lack of time available to fill the forms, heavy engagements with meetings and discussions held at various levels, lack of competency or organizational ability with internal staff of different divisions to collect required data such as information relevant to human resources, ICT, Legal background, or the GIS itself. It was noted that several institutions had difficulties obtaining information within their own internal divisions due to the high amount of bureaucracy. Some organizations that displayed interest despite a lack of understanding or irrelevance (as they do not either generate of use spatial data) with the understanding that it could be helpful in their future works made attempts to convene internal discussions with the ICTA and Consultant staff to broadly understand and clarify technical details involved in each questions to provide data on relevant areas. In this regard Ministry of Agriculture invited all its relevant organizations and departments for a presentation and discussion; Central Bank of Sri Lanka, Department of Agrarian Development, Archaeology Department, Mahaweli Authority of Sri Lanka and Dam Safety Project etc. made an attempt to explain their situations.

III. Some institutions were reluctant to inform that the organization is not ready to participate and provide spatial data. There were instances where the officers who have received the questionnaire might not have authority to supply the data, share the questionnaire among relevant divisions and send back the completed questionnaire in the time available. Therefore, clear cut understanding is required in the future with high level participation and leadership with an awareness of the overall framework of the NSDI and the participation of each organization in the framework in a mutually benefitting manner.

IV. The analysis showed that the five types of data produced or used by the organizations are not well detailed out to identify the available data in that organization so it became difficult to catalog the type of data. For the purpose of this study and statistical computation, a relevant name was given to identify the data topic.

V. The most important analyses have to be made on the data fitness by considering at least four main areas of data namely currency, accuracy, completeness, and coverage as spatial data produced by these organizations vary from organizations to organizations

especially when the data is developed using nonstandard fundamental data sets, satellite images, or georeferencing using different methods such as different kinds of GPS equipment, vector bases, identified coordinates etc. This analysis becomes further complicated when the relevant information is not provided. The parameters used for defining the accuracies were not available so that a relative term could be produced by considering different factors based on the supplied data. The results may range as high, medium and low quality. Therefore it is required to assess these factors individually by identifying the type of fundamental and thematic data sets selected for preliminary sharing purposes through the portal.

VI. Numerous organizations mentioned that the organization used satellite images for extracting data or used for different project works but many of them have not clearly indicated the type and coverage of satellite images used. This is because some of these purchases are for large spatial coverage and they have to clip it for local and urban levels internally. These small sections do not show the ability for regional applications. Therefore it is worthwhile to indicate the spatial coverage as a contiguous block in its availability.

VII. The text data contains all document and tabular data which has fundamental drawbacks in the way of submitting these. The relevant referenced data was produced in tabular form either by word documents or by spreadsheets in relation to certain vector data. By examining the provided text data, it shows that the organizational text data of which majority contain valuable data sets which could be transformed into digital vector base is not fully covered. The documented text data is recommended to be explored separately from each organization, referring their key functional division tasks and the products available in the form of text data.

VIII. The study revealed that the time devoted for the collection of baseline data as indicated in Terms of Reference was not adequate enough as the other terms as this study covered the data requirements of a number of other consultants tasks in addition to find the existing situation of the GIS and spatial data production, usage and sharing by over 100 of organizations. The time and effort made to contact the relevant NSD officers and the higher management including the lack of responses hindered the time allocated for the data collection phase.

The lessons that Sri Lanka could learn from the international best practice shows that this endeavor would be more successful if it became a mandatory part of a government program and the Heads of organizations should ideally take more responsibility to undertake these tasks to ensure the handover the required spatial data information to the coordinating committee.

CHAPTER 5- ANALYSIS OF KEY COMPONENTS OF THE NSDI BASELINE STUDY

5.1 Organizational Status in NSDI

ICTA NSDI Baseline Survey identified 99 institutions altogether that are either fully or partly engaged with spatial data collecting, storing, producing using and sharing of spatial data or are interested in using such data in their future work. However, only 44 institutions participated in the survey that was carried out of which 4 institutions have not provided data (as they are not involved in spatial data production or usage). The balance 45 institutions that have not participated in the survey are assumed to be not involved in spatial data production or usage.

Table5.1 Status of participating organizations for NSDI Baseline Study

Type of organization	Total number of institutions	No. of institutions with data	No. institutions without data	Total participated	% participated
Ministries	14	5	1	6	43%
Departments	25	16	0	16	64%
Statutory Bodies	30	11	2	13	43%
Universities	14	3	0	3	21%
Research Institutes	9	3	1	4	44%
Government Project	1	1	0	1	100%
Local Authorities	6	1	0	1	17%
Total	99	40	4	44	44%

5.2 Analysis of the Baseline Survey

5.2.1 Organizational Profile

Nearly about 100 organizations were identified in involving the spatial data generation, usage and in sharing which had about 403 core business functional divisions in the following main categories:

- Planning, Design and Evaluation
- Development, Engineering, Project Implementation and Regularization
- GIS/ICT/ Information Management/ Data Centres
- Research
- Lands, Land Use, Land Development & Land Management
- Surveying, Censuses, Sample Surveys and Mapping
- Environmental, Natural Resources Management & Conservation

- Disaster Management, Climate Change & Disaster Risk Reduction

The details on distribution pattern of different core functional divisions in each organization related to the above mentioned thematic areas are given in Chapter Four. The distribution pattern shows that a fair amount of core functional divisions are falling under the category of Development, Engineering, Project Implementation and Regularizations.

In summary the distribution pattern of functional divisions under each broad theme could be stated as follows:

Table 5. 2 Distribution Pattern of Functional Divisions

Core Functional Divisions	No of Divisions	Percentage
Planning, Design and Evaluation	60	15%
Development, Engineering, Project Implementation and Regularization	125	31%
GIS/ICT/ Information Management/ Data Centres	23	6%
Research	81	20%
Lands, Land Use, Land Development & Land Management	33	8%
Surveying, Censuses, Sample Surveys and Mapping	18	4%
Environmental, Natural Resources Management & Conservation	39	10%
Disaster Management, Climate Change & Disaster Risk Reduction	24	6%
Total	**403**	**100%**

5.2.2 Identification of Spatial Data

The following major spatial data are generated by the respective organizations which could be broadly categorized under six major types of data namely Digital Vector _ Fundamental, Digital Vector – Thematic, Digital Raster, Hard Copy, Images including videos and photographs and Text (document and tabular).

As per the above classification and the six broad categories of data types, except digital databases are collected by the Baseline Study 1,887 data topics were identified of which its sub categories are as follows;

Table 5. 3 Distribution Pattern of Number of Topics by Data Type

Sub Category of Data Type	No of Topics identified
Digital Vector _ Fundamental	148
Digital Vector – Thematic	506
Digital Databases	46
Digital Raster	221
Hard Copy including aerial photographs and Maps	456
Images including videos, Point Cloud Data and photographs	162
Text (document and tabular)	348
Total	**1,887**

In general, the total number indicated above is far below the exact amount of spatial data available in Sri Lanka. The drawback of this is that the definition adopted in identification of spatial data, interpretation of definition by respondents in reporting the number of data topics, classification system each individual user adopted in categorization of data, time devoted and time allocated to collect the available data, level of responses of the respondents to provide wide coverage of spatial data are the main limiting factors of the number represented in this analysis.

Two clear examples of identification and classification of number of data sets are;

1. IWMI which indicates that the organization has more than 12,000 spatial data sets whereas it was possible to identify only 96 datasets by this study
2. UDA listed the number of data available in the category of satellite images as 214 sets as they have split the single strip of acquired data into number of smaller segments so as actual representation becomes much less when compared the images represented.

5.2.3 Data Quality Information

Factors affecting the quality of spatial data are currency, completeness, consistency, accessibility, accuracy and precision, sources of errors in data and sources of errors in derived data. The Baseline Study employs a different methodology in understanding the availability and listing of all the spatial data sets available with the responder organizations. Responses of each individual organization are relatively marginal in assessing the quality of spatial data (at least for the vector data).

The relative levels of each factor for the vector data are provided in Chapter Four and in relation to combined impact, much of spatial data are in the range of medium to low quality, except for data produced at large scales using different technologies.

5.2.4 Spatial Reference Information

Responder organizations use different spatial reference systems but users who have shared data from Survey Department, Urban Development Authority, IWMI, NBRO etc have adopted the same reference information as the derived data.

5.2.5 Entity & Attribute Information

Entity and attribute information vary from application to application and the thematic areas considered by generated data. The collected information is not categorically structured enabling the users to clearly identify the content of the attribute data.

5.2.6 Distribution of Information (Storing & Sharing)

Many government departments and ministries have entered into a Memorandum of Understanding with the Survey Department and have agreed to avoid redistribution of data to another party. The responses of users indicated that this process is a bit complicated in order to get the approval, and further complexities are involved in updating of such data with additional costs.

5.2.7 Metadata Reference Information

Compilation of metadata is regularly attended by very few organizations but it is also incomplete in the overall context. However the compilation of metadata was introduced by some organizations in a standard structural format with different content, naming, and completeness according to the way that these organizations are developed their metadata forms, which has been adopted by the Survey Department, IWMI, and UDA.

5.2.8 Policies, Guidelines and Standards

NSDI Baseline Study significantly emphasized the importance to respond fully to this subject. The overall NSDI programme is expecting to develop national policies, guidelines and standards in all components related to spatial data. In case, such type of developed documents were available with key organizations, it would have been able to be used by the Consultants in order to understand the existing levels and identify the gaps and any areas need further improvements or the necessity of introducing in total by using these documents as guiding documents. However responses received were very low and the results are given below:

Organizations not having any Policies/Standards/ Guidelines
The following organizations participated in the Questionnaire Survey informed that they do not have any policies, Standards or Guidelines related to spatial data.

- Sri Lanka Ports Authority
- Central Environmental Authority
- Ministry of Megapolis and Western Development
- National Housing Development Authority
- Rubber Research Institute
- Road Development Authority
- Natural Resources Management Centre
- National Water Supply & Drainage Board
- National Transport Commission
- Irrigation Department
- Sri Lanka Tea Board
- Sir John Kotalawala Defence University
- Ministry of Public Administration & Management
- Ministry of Home Affairs
- Ministry of Agriculture
- Telecommunication Regulatory Commission
- Rubber Development Department

However some of these organizations like CEA, RDA, NRMC, and NWS&DB etc. are in the process of working out the initial frameworks to develop institutional guidelines for GIS/ Spatial data. Well Documented Policy Guidelines are available with the International Water Management Institute but it was not accessible to the team for reference:

- IWMI Research Data Management Policy
- IWMI Open Access Policy

However the IWMI's CGIAR Open Access and Data Management Policy could be downloaded for reference on the use of open data.

The Dissemination Policy on Microdata of the Department of Census and Statistics (DCS), Sri Lanka is available for reference.

The available guidelines of the key organizations are indicated in the following table.

Table 5. 4 Status of Availability of Policies, Standards and Guidelines related to NSDI

	Factors Considered	Survey Department	National Livestock Development Board	Land Use Policy planning Department	Forest Department	Department of Wild Life Conservation	National hysical Planning Policy	Urban Development Authority	University Township Development Project-SJP	Archaeology Department	Meteorology Department	Land Title Settlement Department	Coast Conservation Department	District Secretariat-Trincomalee	National Aquatic Resources Research & Development Agency	State Fisheries Harbour Corporation	Water Resources Board	Post Graduate Institute of Archaeology	Department of Census & Statistics
1	Allowing data from multi sector sources to add other geo-spatial data	x					x		x							x			
2	Restrictions of Sharing : Physical	x	x		x		x				x	x		x	x	x			x
	: Legal	x																	
3	Policies of Data Ownership / Custodianship	x	x		x	x					x	x		x		x			
4	Licensing & Copyright Policy & Regulations	x	x									x		x		x			
5	Rights for Data Modification	x	x						x		x	x	x	x		x			
6	Rights for Reproduction of Data by Users	x	x						x		x	x	x			x			
7	Compliance to Government Systems Interoperability Guidelines		x		x								x	x			x		
8	Protecting Proprietary interest related to licensed information and data	x						x											
9	Policies on Use of Open Data (Data produced by non authenticated source- use the data for training, display etc)	x									x					x			
10	Data Classification Standards	x	x	x				x			x						x	x	
11	Institutional Pricing Policy	x			x			x		x	x						x	x	
12	Cryptography & Communication Security													x			x		
13	Access Control	x					x	x			x		x	x		x	x		
14	Information Security Policies					x								x		x	x		
15	Meta Data Development Policy																		
16	Is it possible to use the Available or Proposed Policy, Standards and Guidelines as part of National Policy, Standard and Guidelines	x	x					x	x								x		
17	IPR, Data Disclaimer	x	x						x							x			
18	Rights for Redistribution	x	x			x				x	x					x			
19	Spatial Data Management	x	x			x		x											
20	Physical and Environmental Security		x			x		x		x							x		
21	Operations Security		x			x		x		x						x	x		
22	System Acquisition, development and maintenance		x					x	x	x							x		
23	Information Security Incidence Management		x					x		x				x		x	x		
24	Meta Data Handling Policy													x					
25	Data Dictionary	x						x			x								

The Government organizations are requested by ICTA to compliance with the Government System Interoperability Guidelines so as the organizations responded to this sub heading indicated that they have compliance to the Government request in delivering data.

5.2.9 Human Resources & Knowledge

One of the major factors in the field of spatial data development and sharing for NSDI is the availability of professional and technical staff related to the major disciplines of jobs in connection with GIS/RS/IT/Network/Communication etc. The other factor is the lack of a separate division or unit to handle IT, GIS and related activities in many of the organizations. The available staff of these organizations lacks the technical capacity or understanding of the technology. The level of expertise knowledge of many of the staff is restricted due to fewer opportunities available to interact and confront with complex environments under different disciplines as their involvement in the field is limited to routine work undertaken.

5.2.10 Organizational Issues & constraints

NSDI Baseline Study provided an opportunity to explore the insight of the organizations in relation to spatial data generation and sharing. It shows that these organizations produce certain types of spatial data amidst of many issues, difficulties and various other constraints. This covers many areas such as:

- Level of established centres with full functional facilities to a just having a old PC with pirate copies of GIS software with a table and chair
- Strong leadership with ample opportunities to confront with any complex environment with highly skilled staff to a individual approach in meeting the basic needs of spatial data to a division or a unit that it occupies
- Foreign Funded Project facilitated centres to a no funding personal computer occupied place
- More competitive and interactive centres to a ignored place for simple usage

Therefore, the 100 organizations examined in this study has its own position within the overall NSDI programme which has to be addressed in relation to the important role played by the unit against the overall significance of the product that the unit has generated. Therefore it is necessary to have a follow up close evaluation of each and every participating agency in GIS, for the purpose of integrating into the NSDI framework.

5.3 Categorization of Spatial Data Availability

The study attempted to compile the list of organizations that are producing spatial data in considerable extent enabling the other users to make use of such spatial data to apply them for their different business purposes or else to make use of these data as base data layer to compile their own dataset. Table 5.3 presents the dominant producers and related datasets.

Table 5. 5 Organizations Producing Spatial Data Themes and Geo-Coverage of Thematic Vector Data

Organization	Geo_Coverage							Spatial Data Theme																	
	National	Regional	District	Urban	Local	Unspecified	Total	Special Management Area	Service Area	Planning Area	Statistical Area	Boundaries	Land & Abiotic Use	Surficial Hydrology	Air & Climate	Subsurface Hydrology	Soil	Biodiversity	Marine Abiotic	Cultural Resources	Land & Aquatic Resources	Utilities_Waste Management	Geomorphological	Geology	Unspecified	Total
1.UDA	1	12	0	116	0	0	129	0	0	0	0	1	1	4	0	0	0	0	0	0	123	0	0	0	0	**129**
2.NARA	1	69	0	0	0	0	70	0	0	0	0	0	0	0	1	0	0	68	1	0	0	0	0	0	0	**70**
3.NBRO	11	5	7	0	1	0	24	3	0	9	1	1	0	1	2	1	0	0	0	0	0	1	1	0	4	**24**
4.SD	6	0	0	0	0	0	6	0	0	0	0	0	1	0	0	0	0	0	0	0	5	0	0	0	0	**6**
5.CCD	12	0	0	0	0	1	13	1	0	0	0	0	1	2	0	0	1	1	6	0	0	0	1	0	0	**13**
6.My MD&E	0	1	0	1	0	0	2	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	**2**
7.CMC	0	0	0	0	8	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	**8**
8.GSMB	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**1**
9.FD	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**1**
10.LHI	0	0	0	0	7	0	7	0	0	0	0	0	0	5	0	0	0	0	2	0	0	0	0	0	0	**7**
11.UTDP,SJP	0	0	0	0	6	0	6	1	3	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**6**
12.ID	0	0	0	0	0	18	18	0	0	1	4	0	0	5	0	0	4	0	0	0	2	1	0	1	0	**18**
13.CEA	8	16	0	0	0	2	26	12	0	0	3	0	0	5	0	0	2	1	0	2	1	0	0	0	0	**26**
14.NRMC	2	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	**2**
15.IWMI	75	4	0	0	0	0	79	29	0	0	0	0	4	37	4	4	0	1	0	0	0	0	0	0	0	**79**
16.DAP&H	9	0	0	0	0	0	9	0	0	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**9**
17.MD	20	0	0	0	0	0	20	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	**20**
18.MASL	0	0	0	0	0	3	3	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	**3**
19.WRB	0	0	7	0	0	0	7	0	0	1	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	**7**
20.MyAD&AS	8	0	3	0	0	0	11	1	0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	**11**
21.TRI	0	3	0	0	0	0	3	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	**3**
22.DMC	1	4	0	0	0	0	5	0	0	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	**5**
23.LUPPD	1	3	7	0	0	1	12	0	0	2	1	0	0	0	0	0	0	0	0	0	9	0	0	0	0	**12**
24.DWLC	12	0	0	0	0	0	12	1	0	0	0	0	1	0	0	0	0	10	0	0	0	0	0	0	0	**12**
25.CRI	0	4	0	0	0	0	4	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	**4**
26.AD	6	0	0	0	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	**6**
27.DA	4	2	0	0	0	0	6	2	0	0	0	0	1	0	1	0	1	0	0	0	1	0	0	0	0	**6**
28.MyF&ARD	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
29.NLDB	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
30.NPPD	8	0	0	0	0	0	8	1	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	**8**
31.DAD	6	0	0	0	0	0	6	5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**6**
Total	**195**	**123**	**24**	**117**	**22**	**25**	**506**	**60**	**4**	**19**	**16**	**2**	**16**	**69**	**38**	**6**	**10**	**83**	**9**	**6**	**159**	**2**	**2**	**1**	**4**	**506**

The surficial hydrology theme covers the topics of rivers, streams, water bodies, water sheds, flood zones, coastal storm surge, hydro dynamics, catchments, aquifers, inundation areas etc whereas subsurface hydrology themes covers the topics of ground water monitoring locations, ground water basins, groundwater model outputs, depth to ground water, salinity, pH, others, water quality etc.

5.3.1 By Different Themes

Table 5. 6 Organizations Producing Spatial Data Themes and Geo-Coverage of Fundamental Vector Data

Organization	Geo_Coverage						Spatial Data Theme												
	National	Regional	District	Urban	Local	Unspecified	Administrative & Political Boundary	Structures	Cadastral	Road Transport	Plot Bounary	Places	Elevation	Utilities_Water	Survey Control	Town maps	Thematic Images	Utilities_Electricty	Scanned Basemaps	DEM/DTM	Total
1. UDA	13	18	1	31	0	0	14	34	1	6	0	1	2	2	0	0	0	3	0	0	**63**
2. NARA	2	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	**3**
3. NBRO	1	0	3	0	0	0	1	1	0	0	0	0	2	0	0	0	0	0	0	0	**4**
4. SD	2	0	0	24	4	1	0	0	0	0	1	0	3	0	0	25	1	0	1	0	**31**
5. CCD	6	0	0	0	0	1	0	0	0	0	0	0	4	0	3	0	0	0	0	0	**7**
6. My PC&LG	0	3	0	0	3	3	0	3	0	2	4	0	0	0	0	0	0	0	0	0	**9**
7. STB	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
8. CFHC	1	0	0	0	3	0	0	2	1	0	0	0	1	0	0	0	0	0	0	0	**4**
9. My PA	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
10.LHI	0	0	0	0	4	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	**4**
11.UTDP,SJP	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
12.ID	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
13.CEA	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
14.RDA	7	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	**7**
15. IWMI	0	0	0	0	6	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	**6**
16.NWS&DB	0	0	1	0	3	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	**4**
Total	**35**	**22**	**5**	**55**	**24**	**7**	**16**	**46**	**2**	**15**	**5**	**1**	**17**	**12**	**3**	**25**	**1**	**3**	**1**	**1**	**148**

Source: Data Inventory, NSDI Baseline Study, 2016

5.3.2 By Accuracy and Scales

On the basis of the information collected by this study, the team intended to check the quality of spatial data by giving emphasis to the factors affecting the quality which consists of currency, completeness, consistency, accuracy & precision, sources of errors in data, and sources of errors in derived data. Fundamental vector and thematic vector data are considered under this analysis of which 159 and 525 datasets were identified respectively during the baseline study. According to the collected data related to these two areas, the most difficult part was the combined analysis of these factors as the provided data or collected data does not provide all the requested data, resulting in difficulties in the evaluation of all these affecting factors in detail. The attributes related to each data topic was not completely answered so the analysis of the accuracy and scale of available datasets in a simple manner was done by considering the map scale and the source data use to compile the dataset. About 107 data sets in fundamental vector and 208 data sets of thematic vector data could be recognized as applicable to both factors, of which the scale ranged from 1:1,000 to 1:100,000.

The data produced by using VHR satellite images, GPS, Ground verification and recent production is considered as 'high accuracy' which included about 27 fundamental vector data. The produced by using 1:50,000 scale topographic data, or satellite data without field verification and less attention on the other standards was considered as 'medium accuracy' had 80 data sets, therefore a large number of data sets available under all these scales indicated that majority of data are in medium scale accuracies.

In relation to accuracy, quality and validation proves of spatial data it was suggested the following accuracy levels when using different source data:

a) Overall positional accuracy (Planimetric) in 1:10,000 scale maps to be less than 4.0 meters when using LiDAR data it should be within + or – 2.0meters.
b) For DEM in height accuracy when using different scales of data should be:
   - 10m accuracy when using SRTM/ 1:50,000 data and is good for high relief areas
   - 5m accuracy when using 1;10,000 data which is better than SRTM in high relief areas
   - Less than 1 m when using LiDAR, which is better than 1:10,000 DEM
c) Completeness of final layer to be verified with:
   - Assurance of completeness with each layer to be visually checked with source data
   - Each layer to be checked in the field for completeness and consistency and 90% of the checked entities should be complied with the request.

5.3.3 By Purpose

The purpose of generation of spatial data is not specifically indicated, but some organizations generate data under their legal mandate and for some others for specific project works.

5.4 Qualitative Assessment of Baseline Conditions in NSDI

5.4.1 Outcome of the Focus Group Discussions

The baseline Study conducted following Focus Group Discussions (FGDs) among the participants invited under following broad thematic groups:

- Planning Development and Infrastructure
- Natural Disaster, Climate Change, Disaster responsiveness & Defense
- Land and Environment
- Policy and Administration
- Education and Research

The outcome of the FGDs was formalized on the following broad focus areas:

- Availability of spatial data
- Policies in spatial data development
- Spatial Data structure
- Budgetary Provisions
- NSDI Development
- Perceptions on Available Infrastructure Facilities
- Status of Operational Staff

The following sections outlined the results of the discussions of these FGDs:

5.4.1.1 Availability of spatial data

Most of the participants informed that although there are spatial data, it is not updated regularly and that it does not provide the full coverage the user needs. Many cited that the organizations producing spatial data are not able to share among other users who would have the need for the produced data.

Agro Department of the Rubber Research Institute uses spatial data; in an alternative case, the Ministry of Disaster Management doesn't use spatial data as much but its Disaster Management Center has a separate division for GIS and produces spatial data.

The common thought of all participants is that most institutions are not sharing data and that this reduces the value of data as it gets archived status. But even the archived data can be used for evaluation of historical perspectives of the themes.

On the enquiries of the present condition of sharing and using of spatial data and their standards, the participants informed that there are some organizations that face this critical situation with data collected. In some instances, the organizations are not authorized to distribute or share their data to other parties. It was also pointed out that the people who work in the organizations are not conscious about spatial data so this might produce a bottleneck where the data is not shared due to lack of knowledge about its presence.

In the current situation, spatial data is available in many scales like 1:5,000. 1:10,000, and 1:50,000 as standard scales at Survey Department. Using these data, many other organizations develop their own spatial data and these developed data are not overlapping in many

instances and creates errors due to compatibility issues of different layers. It is in this context that participants informed that NSDI will be a major solution for addressing this issue and producing different standards scales for fundamental base data for organizations to compile their own databases.

On the opinion about compatibility of vector data availability in other organizations with the database of the concerned organization, the participants informed the requirements that are particular to their organization which are as indicated below:

- According to the Sri Lanka Railway department, contour data is very important but the Survey Department data is not available for their requirement. Survey department has LiDAR Data and it can provide precise information on terrain in detail. These data sets could be used to plan for railway networks in high terrain and to identify the suitable traces. Sri Lanka Railway Department spatial coverage is available for only railway stations.
- Some institution can make data compatible while other institutions borrow vector data.
- Some of the organizations has spatial data and are vending the data as compilation process is costly and expensive.
- GN wise data is available in Department of Animal Husbandry. They are producing data while validating and updating the data sets. They are also issuing data for relevant persons or organizations which request and obtain permission.
- Ministry of Agriculture is also collecting the data but they only have raw data.
- Land Title Settlement Department also generates data but currently they only have text data so that LTSD is buying the necessary data from the Survey Department. LTSD informed that they have extensive historical data that dates back to Sri Lanka's ancient kingdoms and colonial periods.
- CEA has an industrial database DS wise with coordinates.
- RDA normally obtains data from Survey Department and collects data for new projects. RDA also developed systems to capture data for new projects.
- SLT and RDA have spatial coverage for the entire country.

Most of the participants indicated that island wide hierarchical level of spatial data coverage is very weak and needs special attention in compilation as a part of the NSDI program.

5.4.1.2 Policies in spatial data development

Particular attention was drawn from the participants regarding policies related to spatial data development, and responses of the participants were weak as many of the organizations do not have such policies although they engage in the industry in developing spatial data.

- SLT collects data at random and verifies it via a sample survey. SLT does not have policies or guidelines except street view. They check accuracy levels by using street view and presently it is practicing, not based on the policy.
- Ministry of Defense doesn't have polices, standards, guidelines or rules to share spatial data within three armed forces (Army, Air Force, Navy). They develop and use spatial data only for their individual purposes. They haven't had any problems regarding sharing thus far.

- Sri Lanka Transport Board also does not have polices, standards, guidelines and rules of spatial data development as they do not use spatial data.
- Central Environment Authority has a policy on spatial data sharing.

5.4.1.3 Spatial Data structure

Many participants have a basic understanding on spatial data structures. Sri Lanka Transport Board has no spatial data but they have an IT division and they have improved their applications during the last two-three years. Currently they have introduced ticket machines, monitoring systems for island wide and etc. However they lack knowledge on spatial data.

The Ministry of Defense improved their applications on spatial data in the recent past for improving their functions.

Five years back there was no position to plot Sri Lanka Telecom network in Google map. Presently SLT has started this process and are continuing the work. Many challenges are faced in collection of data, as a person needs to go to the location and get data in exact position for which 1 meter accuracy is relevant. The regional staffs are currently engaged in this process. The SLT has developed a mobile application to suit this data gathering purpose. SLT has a system for identifying the updating and data changing in their database as manual data entering is difficult.

5.4.1.4 Budgetary Provisions

Many of the organizations do not have specific budgets for IT and GIS usage except it covers the expenses in different payment headings. This situation badly affected in operation and maintenance of costly infrastructure and software configuration.

Some views of participants are:

- SLT uses own funds, but there is no special budget.
- Sri Lanka Railway Department uses government funds, and there is no special budget for IT.
- MOD uses funds of the annual budget, but there is no special budget.
- The RRI has a center for Research and Development so they use scheme funds.
- The Sri Lanka Transport Board uses government fund, there is no special budget for the IT.

5.4.1.5 NSDI Development

Many of the participants and organizations are not fully aware of NSDI concepts and developments. Therefore implementation of NSDI among these organizations will be a critical issue in future as many of the leading persons and senior management are not professional s and they are become the politicians with no in depth knowledge on the subjects like NSDI unless they are practically capable in spatial oriented decision making.

The Ministry of Defense has knowledge about CCTV systems and they had tried to develop a CCTV system in Mirihana as a main station with the Police Department.

5.4.1.6 Perceptions on Available Infrastructure Facilities

The organizations who have established large scale GIS Centres are aware on the replacement and acquisition of necessary new infrastructure to operate bigger business environment for which large amount of investments are required. Many of the organizations do not have external funding sources for improvements of systems and are currently engaged in keeping the system functional levels in a feasible manner.

However, many of the participants are interested in improving existing facilities of the work place view that it is a partial requirement to interact with proposed NSDI programme.

- SLT use network infrastructure and virtual servers.
- RDA has not special infrastructure facilities.

5.4.1.7 Status of Operational Staff

The perceptions and attitudes of staff engaged in GIS/ Spatial data in organizations indicated that:

- In SLT, it is part of the job of IT staff and Regional and planning staff. These staff members do not have proper knowledge about GIS, but they can handle tasks by practicing.
- In RDA, there are two GIS specialist in the staff but this number is not adequate for the work load in connection with proposed programs.
- NHDA and SL Railway Department do not have dedicated staff, but use spatial data.
- MOD has enough staff to handle GIS and spatial data of the Ministry and some of them are have the necessary academic qualifications at post graduate level. Most of these staff members work with experience rather than qualifications.
- In SLTB, there is no cadre related to GIS or spatial data in the organization

Main Issues

Most of the organizations are not using spatial data in full extent and there is insufficient knowledge about how to achieve the goals by using spatial data.

5.4.2 Outcome of the Key Informant Interviews

NSDI Baseline Study proposed to have Key Informant Interviews with following major spatial data generators:

- Survey Department
- Urban Development Authority
- International Water Management Institute
- Meteorology Department
- National Building Research Organization
- Archaeology Department
- Irrigation Department
- Ministry of Defence
- Forest Department

- Disaster Management Centre

The outcome of the interviews is summarized under:

- Current status in generating/ using/ sharing spatial data
- Potential of NSDI
- Assessment of Infrastructure Facilities
- Assessment of Human Capacities and Attitudes
- Assessment of Financial Capabilities

5.4.2.1 Current status in generating /using/sharing spatial data

Baseline Study has reviewed major functions of each organization and levels of generation/ usage/ sharing of spatial information among different functional divisions as well as among other organizations. In the meantime, the study examined types of outputs that are generated by these generated and used or shared and how important this information is to be shared with other organizations.

Survey Department indicated that all base data that are required for NSDI process is part and of the mandate of Survey Department. As a result of not being fully aware about the NSDI program, the SD doesn't have a clear idea on what information is required at the initial stage. At present SD generate 1:50,000 and 1:10,000 scale spatial data with national coverage and even produces spatial data in the scale of 1:5,000 and 1:1,000 in special areas. These data has topographic features and cadastral features. The positional accuracy of each data is average to the scale of the mapping is undertaken. The other types of spatial data generated by the department are cadastral data, parcel fabric data, geodetic data, scanned aerial photographs, rapid orthophotography (LiDAR), UAV data etc.

The International Water Management Institute (IWMI) is one of the larger scale spatial data producer engaged in the business over the last thirty years, and has generated more than 12,000 spatial data sets in relation to many aspects of water sector. All related data are generated by different Consultants and Specialists involved in many areas of research, for which available spatial data in other organizations are also used as source data. All source data required for generating specific data sets are obtained from different ways as IWMI is an international organization with established regional centers located in many parts of the world.

Forest Department in its Division of Forest Inventory & Geographical Information Systems is mainly involved with producing and using spatial data within their department. This division is mainly responsible for inventorying the forest resources and mapping the island wide forest cover. The functions of the division will be expanded to cover the assessment and monitoring of biomass and carbon stocks in forests, home gardens and other tree resources in the country. The island wide forest cover maps are outputs of that spatial data. Forest Department identified that forest cover areas based on the specific categories introduced by the department and believes that any other organizations do not require such a deep categorization of forest cover maps. Therefore those dataset is less important to share with other organizations, but there is a possibility in sharing such data for special requirements.

The National Physical Planning Department (NPPD) involves in the following major planning initiatives:

- Preparation National Physical Planning Policies.
- Preparing Regional Physical Planning Policies.
- Preparing Local Physical Planning Policies.
- Update & Revise Plans & Policies.
- Output : National, Regional and Local Physical plans
- Importance of sharing: As Legal Documents and Published/Distributed to relevant institutions(specially to development agencies

The department shares available data generated by other organizations and makes use of these data for various analytical purposes. However, the department generates some of the data which are essential to carrying out planning functions, which are possible to be shared with other organizations. One of the examples of national level spatial data generation was the generation of national forest cover map using LANDSAT ETM data within a unsupervised classification.

The Urban Development Authority (UDA) engages in the process of formulating integrated comprehensive urban development planning and preparation of development Project proposals and implementation. The GIS applications are directly involved in the preparation of various maps required for the planning purposes and indications for development proposals. The data is generated to direct the development pathways as well as making necessary Investment directions made in terms of spatial distribution.

Meteorology Department is engaged in collection of meteorological data over a longer period in relation to:

- Observing weather elements (parameters) such as Rainfall, Humidity, Wind Direction, Pressure etc.
- Create Three dimensional views to observe temperature, humidity, wind direction and cloud cover formation using geostationary satellite images (ex: Comp and NOMAD)
- Numerical methods are applied to get regional climate model to get the information on the above
- Sharing collected information with general public as well as data sharing with NBRO, DMC, all defence forces, Media and Irrigation department.
- Seasonal forecasting with irrigation & agriculture sectors (Depts) Importance:
- High rainfall data share with NBRO to take action for preventing disaster.
- High temperature information share with CEB to control power consumption and in other decision making processes.
- For research purposes output data provided on Rainfall map, Temperature map, Wind magnitude (on request), Reports on weather and sea condition.

The Disaster management Centre (DMC) involves in:

- Disaster Mitigation, Disaster prevention planning, Training & awareness programs and Emergency response and generating spatial data on:
- Disaster Inventory (with locations indicating where and amount of damages occurred etc..)
- Preparation of Hazard and Risk maps.

- Mapping of Disaster effected Areas by hazards such as flood inundation and landslides for which satellite image data including RADAR images and ground data are being used and produced disaster affected area maps.

The importance of these data to other Government Organizations in planning, programming and implementation of related projects and programmes are very high and the available data could be accessed through:

- Web base Inventory search freely open to the public
- Processed satellite data uploaded to the web and possible to be used for other applications
- Providing data through dynamic web service in future

Data Sharing is present with all three armed forces, Ministry of Defence, Media and upon request made by the user.

The most important sensitive data related to the archaeological remains, reserves, historical buildings and related data are produced by the Archaeology Department. These data are provided by the Exploration and Documentation Division of the Department and are mainly involved in generation of spatial information:

- Geographical information with regard to archaeological sites and monuments and preparation of relevant maps indicating such important places.
- The Archaeological Monuments and Site Maps are the outputs of that spatial data. The Archaeological Monuments and Site Maps data is important for several organizations. As an example; these spatial data are important to Urban Development Authority (UDA), National Physical Planning Department (NPPD) and Road Development Authority (RDA), when these organizations propose major development plans for an area where the archeological monuments and sites are present; in many instances incorporating such areas are a part of the total development of the particular location. Therefore these data is important to be shared with such organizations.

Other important sensitive data related to water sector is made by the Irrigation Department:

- Preparation of Master plans for development of different river basins for optimum utilization of land and water resources.
- Project formulation and detail designs of irrigation, hydro-power, flood control and reclamation projects.
- Construction of irrigation and settlement projects for conservation, diversion and distribution of water under gravity and drift irrigation to new and existing lands for cultivation.
- Construction of drainage, flood protection and salt water exclusion projects for protection of cultivable land to enable cultivation of such lands with rainfall for food crop production with minimized risk.
- Operation, maintenance, improvements, rehabilitation and water management for medium and major gravity, drainage and drift irrigation projects.

- Research in Hydraulics, Hydrology, Soil Mechanics, Engineering Geology, Geographic information System (GIS), Engineering Materials and Land Use as applied to water Resources Development Projects.

The department has following areas of spatial data and more than 10 organizations are directly using these data for development and project formulation purposes:

- Number of major reservoirs
- Number of irrigation schemes
- Storage capacity
- Irrigated land extent
- Technical advisory strength/capacity
- No of farmers benefited
- Storage capacity allocated for drinking water and
- Hydro power generation capacity

One of the most important organizations involved in developing geo spatial data on natural disasters is National Building Research Organization (NBRO) whose major functions are:

- Geo technical and foundation engineering and soil investigation and testing
- Landslide related studies, mitigation and slope stability measures, early warning and real time forecasting
- Human Settlement Planning and design of cost effective housing and training
- Testing and quality control of construction materials, guidance and training to the industry
- Environmental quality monitoring and advisories, Environmental Impact Assessments, Strategic Environmental Assessments, Watershed Health Risk Assessments and Management, Monitoring air, water, waste water, soil. noise and vibration monitoring for environmental compliances
- Total Consultancy Services on Architectural, Structural, Engineering, and preparation of tender documents and tender evaluation reports for building projects. Investigation of structural safety of buildings and associated structures.
- Research and development in the field of housing construction technology
- Research and development on disaster mitigation
- Research on, and Provision of limited early warning services for, landslide hazard

Information and the spatial data which are available at NBRO are considered important to share with other organizations as potential risk factor of the area for natural disasters is a critical requirement for development projects. Therefore accurate data sets available at NBRO are potential data sources for other organizations as well.

5.4.3 Production of Spatial Data

The NSDI Baseline Study has given significant attention to organizations in generating spatial data by themselves and the main reasons governing to generate this data. In addition to that further examinations were carried out to understand the intention of these organizations in

further development of spatial data/ information base to accommodate requirements of each and every organization and its interaction with other organizations.

Survey Department has all types of spatial data such as digital vector, raster, thematic, hard copy and images, whereas IWMI also has produced all the formats of geo spatial data related to water sector and is available through the web. Annually about 7,000 people access WaterdataPortal in search of various data requirements and IWMI has provided the service over the last 30 years to national and international organizations and public at large.

The Geographic Information Unit of the Forest Department started in 1990 and was mostly active during 1990-1995 periods. The department started with forest cover mapping using satellite images in 1992 and again engaged in updating of the same in 1999. At present the Division is involved in updating the forest cover map compiled in 2006. The Forest Department has initiated using GPS for forest resources mapping in 2000-2005 period.

The Division of Forest Inventory & Geographical Information Systems started forest cover mapping due to the follow reasons;

- To identify the changes of forest cover
- To protect the forest cover boundary
- To update the forest cover database
- To sustainable forest management
- To provide a better graphical information for field officers

The division intends to further develop the spatial data information base to accommodate the requirements of the Forest Department.

NPPD was established in 2002 with the introduction of Town & Country Planning Ordinance Amendments No:49/2000 for the purpose of having spatial planning at all the four levels of planning, covering entire Sri Lanka. It is empowered to build a national spatial database to facilitate major functions of the department. However, the department is completely dependent on inputs provided by other Government Institutions. But the department does have databases for enhancing functions with additional new data sources, enabling planning and implementation through the different agencies.

UDA has been involved in the geo-spatial data generation since 1984 with the use of aerial photography; UDA later transferred to high resolution satellite images and GPS technology. The main reason for involvement in extracting spatial data was that the UDA faced a critical position in 1980s upon finding out that urban maps as per the Town Survey Sheets provided by the survey Department were outdated and available data did not have adequate details required for urban planning and decision making. UDA approached spatial data production in many disciplines.

The recorded history of spatial data collection by Meteorology Department goes back to 1867. The main reasons for this was the interest of colonial administration in obtaining information on rainfall pattern in plantation sector as well as designing of irrigated water and planning on water management and to monitor the condition of the reservoirs. The department is looking forward to increasing the number of rainfall stations especially in Eastern, South Eastern and Northern Provinces to fulfill the wide geographic coverage of rainfall stations for more precise data in sensitive areas. Other provinces in southern and western have adequately located stations which are fairly distributed to provide high resolution data.

Since its inception in 2005, the DMC has been involved in collection of spatial data to monitor and manage the hazards throughout the country as emergency cases. The most frequently updated information on any disaster is provided through Situation Reports and spatial maps indicating the areas affected by disasters. DesInventar database provides historical data related to each disaster at Grama Niladhari Division levels. For this purpose the establishment of data sharing platform was justified and DMC is presently making action to develop a system and free access will be made in near future to general public.

In 2007 the Archaeology Department started to generate spatial data as GIS Maps for presentation purposes. They intended to develop the spatial data information base to accommodate the requirements of the Archaeology Department based on the technology, equipment, software and knowledge of the technicians available in house.

More than hundred years ago the irrigation department has started data generating. They currently have a large data collection in hard copy format and have recently started to generate spatial data (in 2012). Main reason for the generating data is sustainable irrigation development of Sri Lanka.

NBRO started the spatial data generating in 1993. The main reason for the generating of this spatial data is the lack of necessary data in any other organization in an accurate scale. The NBRO is presently conducting very sensitive hazard maps for landslide prone areas and has extended the coverage for 10 districts. These hazard maps include seven layers:

- Land Use and Management
- Land Form
- Hydrology
- Land slide & over burden
- Geology
- Bedrock geology

The reasons behind the generation of spatial data are that the above mentioned data cannot be found from anywhere. NBRO intends to further develop spatial data for many applications of the organization.

As a part of the NSDI Baseline Study, the consultants examined the opinions of each organizations on the present initiatives of National Spatial Data Infrastructure (NSDI) or Geo Spatial Data Infrastructure and its usefulness of using or sharing spatial data pertaining to day to day work in the organizations, as well as difficulties encountered in obtaining spatial data produced by other organizations. Particular attention was made on any difficulties faced by each organization in sharing data produced with other external organizations.

CHAPTER 6 – ISSUES RELATED TO FUTURE OF SRI LANKA NSDI

6.1 Introduction

Chapter six broadly summarizes issues that the Consultants faced during compilation of NSDI Baseline Study Report which comprises of a collection of ideas, expectations, programs and plans of individual organizations in general and corporate responsibilities of each responsible division in carrying out actions in establishing the NSDI concept with proposed Map or Web Geo Portal. The concept with the selected portal will facilitate the individual organization's spatial data requirements to re-engineering of core business functions to smoothen delivery of outputs for the benefit of general public and economic development of the country. The future of Sri Lanka's NSDI is not entirely dependent on the system in place but in the dedicated partnership of key stakeholders in building up of each component of the overall system. The close liaising and collaborations of the stakeholders are vital for the development and sustainable implementation and also for identifying risks of the program, such as system collapse due to lack of spatial data or any decisions made by management of organizations to develop spatial data with low standards as a result of lack of funds, lack of equipment, lack of competent staff in analyzing the levels of quality and precision, and a lack of strong leadership to the division headed for spatial data development activities.

The need to have a common platform for sharing spatial data was initially viewed in 1980s due to unbearable cost incurred by the Government through its infrastructure development agencies made frequent damages of road networks due to uncoordinated actions of different utility agencies, rehabilitation of facilities and attending troubleshooting of underground utility cable or pipe networks. These frequent and continuous actions that were carried out subsequently by different utility agencies caused inconvenience to general public, and resulted in heavy traffic congestions, untidy and unclean environments, waste of scarce natural resources, waste of financial resources and et cetera. The primary idea of conducting this NSDI Baseline Study was to identify fundamental data themes that support multiple purposes of majority of organizations that participated in the program, and to start in defining data custodians and ensure management of such data with integrity of the system. The quality to be maintained with data standards required at different levels of applications as well as increasing availability of fundamental data sets with proper data classification according to hierarchical structure of data defined by custodians' would make future NSDI, a success.

6.2 Database Development

The current spatial data compilation bases of the Survey Department rests on four levels such as:

- National Level- 1:50,000 scale
- Regional Level- 1:10,000 scale
- Urban Level- 1:5,000 scale
- Project level- 1:1,000 scale

Other data sets extracted from above scales by respective thematic organizations attempts to define their own data types as it is difficult to engage in generation of large scale data.

The current land use of the country as a whole is not available from the organizations that are responsible for land use planning as the subject is split among many organizations such as LUPPD, NRMC, ID, Mahaweli Development Authority, NPPD, UDA, and many more. Specialized agencies like FD, DWLC, CCD, CEA, etc. also have separate databases of land use and data collected through individual surveying and partial requirements of implemented or on-going projects. In some instances, same datasets were updated by different organizations duplicating by spending numerous resources which could be used for any other new data development purposes. One of the examples in this regard is the updating of paddy cultivation areas by Department of Agrarian Development; the department collects data in defining of boundaries of plots, extent verifications, compromise and agreements between two parties, defining ownerships and justification of current status of the land use leading to forecasting and implementation of subsidy schemes, designing of peripheral facilities connected with two seasonal yields. This same data is collected by few other organizations like NRMC, DA, IWMI for different other requirements but if the data sharing was possible in a common platform then different department does not need to undertake gathering of same datasets.

In the case of road network data, it is not easy to obtain according to road class type as available maps shows only general classifications. Detailed classified data is not available for the public and is also not available in Provincial RDA/RDDs which would allow them to understand C and D class existing road routes with more clarity. Some PRDAs produce data on their purview areas but it is not available in the formats compatible with RDA database (especially for areas where regional/ provincial roads connect with national highways).

Currently the data that is lacking is the large scale updated administrative boundary maps. The last compilation of data was in the year 2001 on 1:50,000 scale maps but the proposed updating process requires large scale surveying to demarcate specific locations of buildings clearly.

The delays in producing cadastral data are currently a major drawback in the process of moving ahead for spatially enabling community and SMRT Cities for which some areas taking action to develop assessor's parcel level data or digitizing plot boundaries indicated in Survey Plans.

6.3 Maintaining Standards

Different standards and guidelines are developed and made use by different organization as per preferences of organizations concerned and also with the levels of application. The development is basically limited to internal uses but sometimes data is shared among different departments as per the requests and requirements. The general standards of many of these data are not documented properly and are not made available for reference of other users.

Survey Department has departmental level standards defined for various spatial data generation tasks. Similarly other organizations also have their own standards which lead to different organizational standards in the country instead of set of national standards. One of the important task of NSDI is to define national standards in developing various levels of spatial data such as small scaled 1:50,000, medium scaled 1:10,000 and large scaled 1:1,000 using

different sources of data such as aerial photography, VHR satellite images, LiDAR, Drones, GPS, EDM etc.

The analysis of the provided dataset by participated agencies were analyzed and indicated the different levels and different formats as indicated in Table 6.1 and is justified the defined scales and formats that the proposed NSDI to be adopted.

Table 6. 1 Appropriate Scales in Different Levels and Different Formats

Level	National	Regional	Urban	Project Site
a. Digital /Hard Copy				
Units Represented	Country Region Province District	Region Province District Divisional Secretariat Division	Divisional Secretariat Division Local Authority (MCs, UCs & PSs) Administrative Ward Grama Niladhari Division	Administrative Ward Grama Niladhari Division Parcel -Assessor's Parcel) Parcel - Cadastral Premises
Available Scales	1:500,000 1:250,000 1:100,000 1:63,360 1:50,000	1:100,000 1:63,360 1:50,000 1:20,000 1:10,000	1:10,000 1:5,000 1:2,000 1:1,000	1:1,000 1:100
Defined Scale	1:50,000	1:10,000	1:1,000	1:100
Defined Formats	-Low Resolution satellite Images -Aerial Photographs - 1:40,000 -Geodatabase -Shape Files	-Low Resolution satellite Images -Aerial Photographs - 1:20,000 -Geodatabase -Shape Files	High Resolution Satellite images Aerial Photographs -1:5,000 LiDAR -TIN -LiDAR -Terrain/DEM -ASCII -CAD	LiDAR UAV Drone -TIN -LiDAR -Terrain/DEM -AsCII -CAD

6.4 Road Map to ICT and Spatial Data Sharing

ICT could play a significant role among organizations to link them into the system, and also to release spatial data or tag onto a metadata portal providing guidance in accessing real data sets depending on user requirements.

The application development is basically an ICT approach looking into an organization's core business functions. Values could be generated from application development and to be financially and socially valued in terms of monetary value. Benefits accumulate on organizational levels and the return on investments can be utilized for future developments to be made for organizational road maps to encourage key staff to involve themselves in this national task. Enhancing knowledge by training and providing education should be an achievable target for staff as they need to have opportunities to promote their career through academics (as Government focus is on a knowledge economy).

6.5 Policies, Guidelines and Standards

The policy on NSDI in Sri Lanka was first drafted in 2007 by the Ministry of Lands and Land Development with participation of a large number of stakeholder organizations. The draft policy contained the following key features:

"Sri Lanka is fast progressing into information & communication technology and the use of reliable geospatial information has become an integral part in socio-economic activities, disaster management, physical planning and in any type of development planning. However to date there

is no effective mechanism for coordinating efforts and for sharing information among agencies using spatial data effectively. This has resulted in duplication of data at various institutions and also not been able to share information, which is available. By this policy it is envisaged that all spatial data users will be able to identify the availability of spatial data and their sources. The concept of a National Spatial Data Infrastructure (NSDI) has been implemented in several countries to overcome such inefficiencies.

To achieve the National Spatial Data Infrastructure the National Policy of the Use of Spatial Data will address this issue and try to lay down some fundamental guidelines which will help the users of spatial data to locate, share and to avoid costly duplication of data. This policy also aims at building relationships among spatial data producers and users so that optimum use of the available spatial data could be made for the benefit of the country.

Goals and Objectives

1 To build up a National Spatial Data Infrastructure
2 To avoid the duplication of production of spatial data by different organizations
3 To provide framework for integration and to collate standardized information from many identified and selected sources to build up inter-agency co-operation to share spatial data to teach schoolchildren about the use of spatial data
5 To locate the source and the availability of spatial data in the country
6 To know the reliability of the available spatial data
7 To understand the copyright restrictions of the available data
8 To know the map scale of the available data
9 To be aware of the prices of the data which are available
10 To know the procedure how to get the data with the contact details
11 To encourage the use of spatial data in planning and the e-Srilanka initiative
12 To develop common solutions for discovery, access and use of spatial data in response to the needs of diverse user groups
13 To provide a "single window" for spatial data information through the web based information system

Policy Statements

1. Data Standards

1.1 Compilation and publication of the base map data standards through the web based information system.
1.2 All spatial data producers should be encouraged to adhere to the base map standards of the Survey Department so that it would be easier for data sharing.
1.3 Other data standards that are used should also be published through the web based information system.

2. Copyright

2.1 All spatial data Producers should publish their own Copyright Policy on their data.
2.2 The copyright policy of each producer should be made available to the public through the web based information system.

3. Pricing of Spatial Data

3.1 Spatial data should be priced as low as possible in order to encourage the use of data.

3.2 Data producers should publish their prices on the web based information system for the benefit of all users.

3.3 Data producers are encouraged to have levels of pricing:

1. For commercial purposes and consultancy assignments undertaken by Consultants
2. Use by Government Agencies
3. Use for teaching purposes
4. Use for research only
5. For school Children

3.4 Institutions are encouraged to develop procedures for sharing spatial data with other institutions through agreements or memoranda of understanding to share data.

4. Security of Spatial Data

4.1 The Ministry of Defense shall be the sole authority to classify which spatial data should be considered as sensitive for national security. The storage, use and dissemination of classified spatial data can be prohibited by the Ministry of Defense.

4.2 All Spatial Data producers must adhere to the restrictions laid down by the Ministry of Defense.

5. Promotion of the use of Spatial Data in Development Planning

5.1 Government Agencies are encouraged to coordinate their planning activities with other users of spatial data.

5.2 Training and Capacity building for the use of spatial data in development planning is to be enhanced to facilitate better decision making.

6. Promotion of the use of Spatial Data in the education

6.1 Awareness Programmes on the use of spatial data should be facilitated at all levels of education.

6.2 Universities should include training programmes on the use of Geographic Information Systems (GIS) in their curricula in all appropriate disciplines.

7. Data integration

7.1 The integration of different spatial datasets should be encouraged to improve decisions making in development planning.

<u>Establishment of a National Information Centre for Spatial Data</u>

It was proposed to establish a National Information Centre for Spatial Data at the Survey Department for a web based information system dealing with the available spatial data in the country. This web information system will inform users of spatial data about (a) the available spatial data, (b) the scale and accuracy of the data, (c) the price of the data, (d) how to obtain the data, (e) copyright restrictions attached to the data, and (f) the meta data on the data.

All Government Institutions, Statutory Boards and Universities are mandated by this policy to send the required information to the National Information Centre for Spatial Data at the Survey Department within three months of the Policy being approved by the Government. Non-Governmental Agencies, Donor Agencies and the Private Sector are encouraged to send in information to the Survey Department on the available spatial data they possess. The agencies are required to update the information at least every six months.

Appointment of a National Steering Committee to oversee the implementation of the Policy

A National Steering Committee will be appointed by the Secretary of the Ministry in charge of Land to oversee the implementation of this policy. The Secretary in charge of the Ministry of Land will circulate the policy paper to all Ministries and will publish a newspaper advertisement informing all stakeholders on this aspect along with a specific format in which the information should be sent.

The Secretary of the Ministry in charge of Land will establish a separate funding mechanism for the implementation of the policy and for the establishment of the National Spatial Data Infrastructure that will be published within two years of the approval of the Policy on the Use of Spatial Data by the Government" (National Policy on the Use of Spatial Data,2007).

Although many stakeholders would have been expected this policy to be implemented during this period but it was not materialized and the required processes are still in the draft form. Thereafter interventions were not made by any organization until the ICTA NSDI program appointed a Consultant to study the required policy for NSDI. The document submitted by Dr. L. Arnold to the Disaster Management Centre has developed guiding principles of each component that has to be covered by the NSDI Policy Document in 2014 which could be used as a reference document to further improvement of its content into a full policy document.

The requirement of today is vastly different from the time the policy was drafted, so many areas to be covered in this policy as related activities in spatial data handling has improved and are widely used. The new drafted policy is yet to be submitted and discussed with stakeholders, but the main workshop program was held to elaborate the areas and the outline policies to be discussed.

The guidelines for spatial data collection, storing, sharing and updating are furnished by several organizations of which the IWMI has been practicing due to its international collaboration and develop spatial data to acceptable international standards for carrying out various research studies. The widely elaborated international standards and guidelines are in practice at IWMI and these documents are also could be as reference standards.

Survey Department, LUPPD, Department of Agrarian Development, NBRO, Irrigation Department and NRMC have their own organizational level guidelines for spatial data collection but these guidelines are not commonly agreed to by Government level organizations. The recent initiatives regarding the content of guidelines were postponed until the review of available guidelines was completed. However, participating organizations were unable to provide available guideline documents to ICTA for reference purposes.

UDA drafted digital cartographic standards in 1998 and these same standards were reviewed during SIIRM project in 2007 including available standards at Survey department. The potential limitations in the standards were compared with international standards and adjusted for mapping under SIIRM project, for extracting vector data using VHR satellite images. There is no nationally accepted standards covering geographic data collection, processing, storing, sharing and updating as of yet. In addition, data transferring standards and other related compliances are yet to be discussed and finalized according to processes involved in NSDI program.

Only document containing comprehensive analysis on policies, standards and guidelines was the National Geo Spatial Data Infrastructure framework – Government of Sri Lanka of the document of the Geo Spatial Framework formulated by Dr Leslie Arnold, World Bank Consultant to Disaster management Centre in June 2014. In order to review the areas concerned, the following section was included into the baseline study report.

Policies, Guidelines and Standards – 'Geo Spatial Framework' formulated by Dr Leslie Arnold

The policies, guidelines and standards indicated in this report mentioned that Sri Lanka does not poses any developed geo spatial data policy and he indicated that it should be organized spatial data infrastructure policies according to the spatial data supply chain. This makes it easier for government employees to find and understand the contents of various policy documents as it reflects a well-recognized and understood workflow management.

The central Government in Sri Lanka is largely responsible for policy development. Policy development is continually evolving, particularly in the areas of Information Technology. However, with the exception of a policy on Information Technology, there are no policies that relate to the field of spatial information management, use and access.

Dr Arnold indicated that lack of policy has negative implications for the development of the NSDI and therefore one of the first priorities for government is to foster policy development in order to support best practice in the development of the NSDI as the policy/organization environment varies from country to country and will need to be worked out with the NSDI stakeholder community. Best practice infrastructure implementations have only been achieved when they include broad stakeholder participation.

Some of the issues that need to be considered in the development of a supportive policy/organizational environment for the NSDI are outlined by his report as:

- Allow for multiple levels of buy-in to the data access infrastructure and provide a low barrier to entry (low cost option with limited benefits), such as basic advertising of products and services, to higher cost options that offer increased benefits, such as distributed search connections to the supplier's inventory. This allows suppliers to choose a level of participation that best meets their business and operational objectives. This is especially important in the early operation of the access component, as many suppliers will want to "try" it out and hence may not be prepared to expend much effort until they see how it works.

- Ensure key government, commercial, and value-added data/related service providers are represented as key stakeholder in the development and implementation of a national spatial data infrastructure.

- Collaboration of government data suppliers on coordinated, supportive policies that relate to spatial data access and distribution including: availability of free data, pricing, copyright, and use/integration of electronic commerce

- An access infrastructure and policy that is non-threatening to stakeholder mandates. Commercial and government stakeholders need to feel comfortable as active participants in the infrastructure. They should not feel threatened by infrastructure business models or policies.

- The access component of an infrastructure must provide an environment that supports a variety of supplier business models. The development of a sustainable business model for the operation of the access component is critical to the long term success of the entire infrastructure.

- Early and clear indication of the role of the private sector is warranted. Early marketing and promotion of the entire Spatial Data Infrastructure program is required to build up the level of awareness and participation as quickly as possible. This can be achieved through policy development. It is important to get a critical mass of suppliers so potential participants will see the benefits of joining the infrastructure.

Dr Arnold pointed out the context and rationale of policies as useful mechanism to promote best practice in spatial data infrastructure development, particularly in the areas of accessibility to, and usability of spatial information. In addition, when developed in conjunction with all government organizations and the private sector, he said that it could be used to overcome many barriers to information access, such as organizational boundaries; lack of consistent information standards; and use of incompatible or inappropriate technologies. By removing these barriers, the spatial information industry can improve the confidence of users, as they will have an understanding that the information they are using is suitable for their needs.

As currently there is no Policy or Legal Act for the management and sharing of spatial information in Sri Lanka so as single policy, decree or Act cannot be implemented in isolation. The Legal and Policy Framework needs to be aligned to SLSDI Strategy so that stakeholders are able to visualize the bigger picture. There is also a requirement to have the Spatial Data Infrastructure in place for organizations to comply with the essential components of the policies.

The policy development process requires effective stakeholder engagement to be successful. Currently organizations have questions relating to how the new spatial data sharing policies will supersede current inter-organizational agreements, memoranda of understanding, data licenses and procedures. They also need a clearer understanding of how new policies will impact on existing data standards, systems, data maintenance, ownership and use; and on the relationships they have with other organizations.

Taking into consideration of the above factors the Policy Framework proposed here attempted to addresses the concerns of government agencies through an integrated policy approach that:

- Explains the organizations role within the broader context of the SDSDI by designating roles and responsibilities for data custodians.
- Includes guiding principles for data collection that can be readily adopted to ensure data collection is not duplicated.
- Identifies how data should be managed by an organization in terms of their existing operations. The principles are broad enough to allow organization flexibility balanced with the need to harmonize practices in the interests of the SLSDI. The intent is to enable organizations to progressively move towards the adoption of standards, formats, metadata collection, and storage and archiving of data without having to reinvent workflows or build databases from scratch.

- Addresses the concerns of data security and sensitivity by providing guiding principles that can be adopted by organizations in the course of their normal operations.
- Specifies the requirements for data access and allows organizations to set their own pricing conditions.
- Importantly, it leaves the control of spatial data in the hands of the data producing organization. This alleviates concerns associated with change, as change can be managed within the control of each participating organization.

The Legal and Policy Framework consists of four key components – the actual Legal and Policy documents, the Policy Tools that support the implementation of the Legal and Policy documents, the implementation plan for policy development and approval, and the compliance strategy that defines how policy is to be adopted (Figure 6.1)

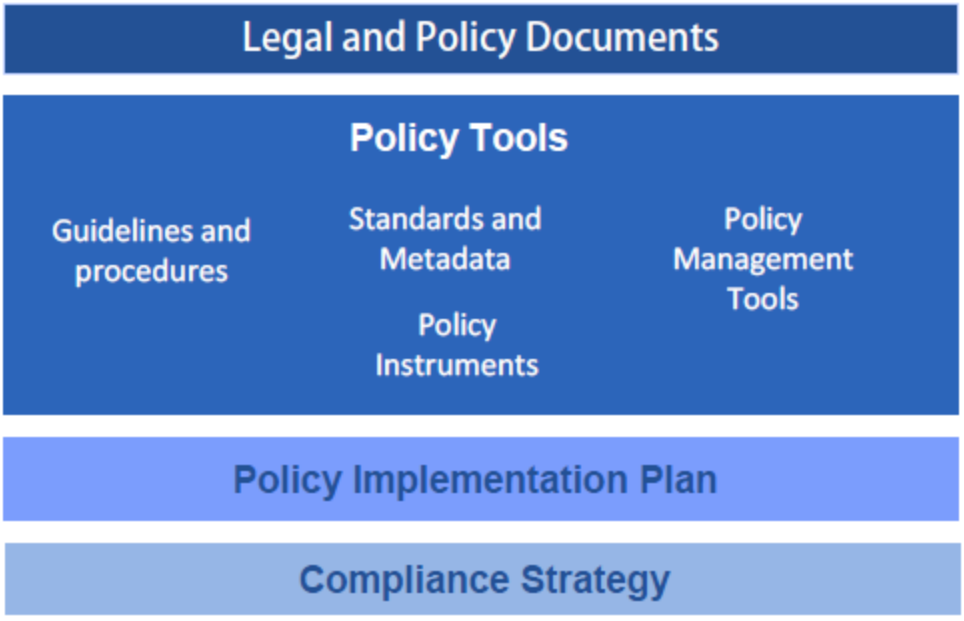


Figure 6. 1 Legal and Policy Framework Components (Source: Dr Arnold)

Dr. Arnold has brought the essential guiding principles in framing out the Spatial Data Infrastructure Legal and Policy Framework that is intended to guide spatial data management activities and programs and improve accessibility of information and the interoperability of systems.

In particular, the Legal and Policy Framework is proposed to promote the responsible management of spatial data as a critical resource for the benefit of the government organizations and the broader community a whole. The following principles apply:

- **Custodianship:** Data custodians manage spatial data as trustees for the community and enable its integration with other information.
- **Data Acquisition:** The planning, recording and acquisition of spatial data achieves the most strategic use of resources and avoids duplication of effort.
- **Spatial Data Management:** Spatial data management is conducted in a way that maximizes its value and optimizes resources.
- **Data Access:** Easy, efficient and equitable access to spatial data where technology, data formats, organizational arrangements, location, costs and conditions do not inhibit its use.

- **Maximize Benefits:** Data access and pricing regimes maximize net benefits to the community.
- **Respected Rights:** Confidentiality, privacy, security and intellectual property rights of data custodians and all sectors of the community, are preserved.
- **Industry Engagement:** Public/private partnerships are promoted to foster the development of an innovative and competitive value-adding industry.
- **Common Interests:** Spatial data are compatible and consistent with, internationally recognized standards and guidelines.
- **Data Security:** Data are maintained in a secure environment and transmitted through secure methods.
- **Storage and disposal:** Data are held with adequate provision for long-term care including disaster recovery and backup procedures, and are disposed or archived in accordance with ICT regulations.

Policies should be based on international best practice and be relevant to conditions found by practitioners and users of spatial information in Sri Lanka. There are a range of inter-related policies and guidelines that can be adopted to assist central government to achieve 'best practice' in spatial data management, including guidelines for custodianship, spatial data management, metadata protocols and standards, data access and pricing, privacy guidelines and access to sensitive data. *Sri Lanka Spatial Data Infrastructure*

Each main principle has been elaborated with guiding principles below.

CUSTODIANSHIP

The principle of custodianship is that the government assigns, to an agency, certain rights and responsibilities for the collection and management of spatial information on behalf of the community. The rights and responsibilities include the right to set marketing conditions for the information and responsibilities regarding the maintenance and quality of the information. It also ensures accessibility of the information and provides a recognized contact point for the distribution, transfer and sharing of the information.

The overriding philosophy associated with custodianship is that **custodians manage spatial information as trustees for the community to enable its integration with other spatial data.**

Guiding Principles for Custodianship

- **Trusteeship:** Custodians do not 'own' data but hold it in trusteeship on behalf of the community.
- **Standard Setting:** Custodians, in consultation with Stakeholder community and users, are responsible for defining appropriate standards and proposing them for ratification.
- **Maintenance of Information:** Data custodians must maintain plans for information collection, conversion and maintenance in consultation with other government institutions and the user community.
- **Authoritative Source:** The custodian is the authoritative source for the spatial dataset in its care and is recognized as the preferred supplier of this information.
- **Accountability:** The custodian is accountable for the integrity of the data in its care.
- **Maintain Access:** The custodian must maintain access to the spatial datasets in its care at the highest level for all users.
- **Safeguard Rights:** Externally provided spatial information, intellectual property rights and copyright associated with data must be safeguarded
- **Obligations:** Spatial data are compliant with statutory and non-statutory obligations relevant to its business.

- **Data Ownership:** Clear identification of data ownership (metadata) and use of memorandum of understanding or licence agreement are used to effectively manage the legal rights over data exploitation, distribution, use and destruction.

DATA ACQUISITION

Data acquisition refers to the planning, recording and acquiring spatial information in a way that ensures the most strategic use of resources. The intention is to eliminate duplicate collection of the same data and providing provisions for reuse.

Guiding Principles for Data Acquisition

- **Avoid Duplication:** All projects and activities that give rise to substantial datasets will establish at the outset whether suitable data already exist in a potentially usable form, or whether new data need to be acquired.
- **Assign Custodianship:** Prior to approval of new data collection activities, organizations will establish how the acquired data will be exploited for maximum benefit, identify who will be responsible for full exploitation of the data, and how the benefits will be shared.
- **Plan Ahead:** Data handling and storage needs are planned in order to manage and maintain databases in a way that maximizes data investments and benefits and meets business priorities.
- **Consult:** Consultation is carried out with relevant authorities to determine the correct protocols, methodologies and classification procedures to use for newly acquired data.
- **Determine Point of Truth:** Work with relevant agencies to determine the authoritative 'point-of-truth' dataset to ensure clarity of custodianship and ownership.
- **Compliance:** Provide external contractors with compliance standards for the acquisition of data including, but not limited to, procedural guidelines, data standards and metadata standards.
- **Records Lodgement:** All spatial data collected by external providers on behalf of government organizations to be lodged within an agreed timeframe and specified quality as per contractual arrangements.
- **Assess Fit for Purpose:** All new datasets are assessed for their appropriateness against specified criteria including, scale, resolution, accuracy, reliability, classification and integrity.
- **Acquisition justification:** All new data acquired is justified for an organizations business.

SPATIAL DATA MANAGEMENT

The Spatial Data Management Policy is a set of principles for the responsible management of spatial data as a critical national resource. This policy is required to gain commitment from all institutions to cooperate in the implementation of the SLSDI. The policy includes agreed principles on access, data conformity and quality, content, industry engagement, avoidance of data duplication and data sensitivity. The overriding philosophy is that **Spatial Data Management is conducted in a way that maximizes its value and optimizes resources.**

Guiding Principles for Spatial Data Management

- **Quality Management:** Best practice guidelines and standards are used to manage the currency, completeness, accuracy and consistency of data for a specified purpose.
- **Maximize Integration:** Appropriate standards for the collection, maintenance and transfer of data are adopted to enhance integration of individual and disparate data sets.
- **Recognition of Value:** The performance and impact of spatial data is measured and communicated as contributions to economic prosperity, environmental quality and social well-being.

- **Data Sharing:** Data is shared across enterprise functions and with external agencies so that users have access to the data necessary to perform their duties.
- **Cooperation:** Data duplication is avoided and spatial data investments maximized by identifying and exploiting opportunities for cooperation and sharing of spatial data.
- **Identification:** A common vocabulary and data dictionary is applied to the identification of data to enhance accessibility, manage effective use of data, and avoid duplicated collection or purchase.
- **Metadata:** Appropriate metadata is used to accurately define and describe spatial data including content, geographic extent, purpose, characteristics, currency and accessibility, together with contact details for further information.
- **Standards Compliance:** National and International spatial data standards are applied appropriately.

Maintenance and Revision: Data are revised and maintained according to a program of work that meets agency business priorities and broader government commitments.

- **Data Transfer:** Use standard spatial data formats for publishing data including formats required by the National Map Portal.
- **Value Adding:** Data is in a form suitable for further value-adding by internal and external users.
- **Legal Compliance:** Data is compliant with law and regulations and is managed in accordance within approved guidelines.
- **Quality Assurance:** Appropriate audit processes are applied to each dataset to produce data that are fit for purpose before release.
- **Data Security:** Data are maintained in a secure environment and transmitted through secure methods.
- **Storage:** Data are held with adequate provision for long-term care including disaster recovery and backup procedures.
- **Disposal:** Data that are not required are disposed or archived in accordance with state record keeping legislation.

DATA ACCESS AND PRICING

The Data Access and Pricing Policy advocates easy, efficient and equitable access to fundamental spatial data. The overarching philosophy is to **provide equitable access to spatial data where technology, data formats, institutional arrangements, location, costs and conditions do not inhibit its use.** Access arrangements should be geared to maximize the use of spatial data resources in both public and private sectors and to encourage the development of an innovative and competitive value-adding industry. In addition, access arrangements should recognize confidentiality, privacy, security and intellectual property rights.

Guiding Principles for Data Access and Pricing

- **Public Access:** Spatial data required by all sectors of the community are made available to support economic, environmental and social needs.
- **Equitable Access:** Spatial data is available online through the National Map Portal in order to meet community needs for equity of access.
- **Foster Innovation:** Access arrangements are geared to maximise the use of spatial data resources in both public and private sectors and to encourage the development of an innovative and competitive value-adding industry.
- **Access Rights:** Access arrangements recognise confidentiality, privacy, security and intellectual properties, and are managed according to a recognised procedure that

stipulates a hierarchy of access levels for specific business areas, external government users and the general public.

- **Standards Compliance:** Spatial data are accessible in industry standard formats, and accompanied with explanatory information that promote its reuse.
- **Licensing:** Spatial data is available under flexible licences as far as practicable.
- **Pricing:** Pricing is aligned with the commitment to increase access to the broadest range of quality, fit-for-purpose government spatial data.
- **Third Party Usage:** The right to use or provide access to data may be passed to a third party, subject to agreed pricing and dissemination policies.

PRIVACY POLICY

Advancements in information technology often fuel community concern about the impact on privacy and therefore the government needs to strive to ensure that the benefits from easier access to, and better utilization of, spatial information are realized without adding to public concern. However, specific legislation that protects individual privacy or collection of personal information has not been introduced. The only legislation that refers to this area is the Telecommunication Act No. 27 of 1996 which refers to the interception of communications.

The overarching philosophy of the Privacy Policy is to **protect an individual's information held by government.** The policy aims to: (a) collect only what is necessary; (b) collect fairly and lawfully; (c) collect directly from the person; (c) inform the person about the collection; (e) use and disclose for authorised purposes; (f) manage trans-border data flows; (g) ensure data quality; (h) keep personal information secure; (i) retain only as long as required; (j) be open about practices; (k) provide a right of access and correction; and (l) promote responsible use of spatial information.

Guiding Principles for Privacy Policy

- **Lawful Collection:** Information is collected for a lawful purpose that is directly related and necessary to a function or activity of the collector.
- **Unlawful Collection:** Personal information must not be collected by means that are unlawful or unfair or that intrude to an unreasonable extent upon the personal affairs of an individual.
- **Exemptions:** Exemptions apply when personal information is contained in a public register; or when the personal information is published in a magazine, book, newspaper or other generally available publication (in paper or electronic form); or when the collection is authorized by law.
- **Observation of Rights:** When personal information is collected reasonable steps are taken to inform the person about the collection of information and its purpose.
- **Open Practices:** Any person can ascertain whether personal information is held about them, the nature of the information, purposes for which it is used, how to gain access and make correction to the information.
- **Complaints:** An internal complaints handling structure is available to individuals to resolve concerns about the management of personal information within organizations.
- **Use and Disclosure for Authorized Purposes:** Personal information, obtained for a particular purpose, is not used or disclosed for any other purpose or in a way that intrudes to an unreasonable extent upon the personal affairs of an individual. Exemptions apply when authorised under law or for health and safety reasons and emergency management.
- **Management of Public Registers:** Reasonable steps are taken to protect personal information contained in public registers against misuse, loss, and from unauthorized access, modification or disclosure.

- **Management of Trans-border Data Flows:** Where practicable agencies will provide evidence of consent from individuals for the transfer of personal information. This includes transfers outside Australia, between jurisdictions or between a jurisdiction and a private sector organization.
- **Data Quality:** When collecting personal information, and also before using it, reasonable steps are taken to manage data accurately, maintain currency and completeness.
- **Information Security:** Reasonable steps are taken to protect personal information against loss, misuse, unauthorized access or disclosure.
- **Disposal:** Personal information must be destroyed securely or permanently de-identified if it is no longer needed for an authorized purpose.
- **Licensing:** A condition of all licenses to use spatial data that contains personal information is that the license holder is accountable under privacy legislation.

ACCESS TO SENSITIVE DATA

There are times when certain classes of spatial data need to be withheld from public access and usage for example, culturally sensitive sites, and the location of endangered tree species, gem deposits, and defence installations. However, there are also times when withholding data can degrade decision-making processes, including areas such as emergency planning and response, and environmental management, especially in time-critical situations.

This policy creates **an environment for encouraging open access to data and, at the same time, gives consideration to issues of privacy, national security and commercial sensitivity.**

Guiding Principles for Access to Sensitive Data

- **Open Access:** Open access to spatial data takes precedence over restricted access unless there are specific, compelling reasons to restrict access.
- **Restricted Access:** Decisions on restricting access are based on privacy, commercial sensitivity, national security, environmental sensitivity or legislative requirements.
- **Discretionary Access:** Sensitive data may be generalized to meet user needs while not compromising any sensitive issues.
- **Controlled Access:** Controlled access guidelines are used in cases where sensitive information is in the public interest, such as for emergency management and national security.
- **Public Scrutiny:** Data restrictions are explicitly defined in a policy, legislation or regulations that are open to public scrutiny and not left to individual employees to decide on a case by case basis.
- **Metadata Management:** Data custodians will advise of any access restrictions through accessible metadata records.

INTELLECTUAL PROPERTY MANAGEMENT

There is a high degree of inconsistency in intellectual property management across government institutions and various licensing agreements in place. This policy is designed to create a higher level of uniformity. **The overarching philosophy of the Intellectual Property Management Policy is to maximize the value of spatial information through protected rights.**

The intent is to grant rights to its intellectual property, as a public asset, in a manner that maximizes its impact, value, accessibility and benefit consistent with the public interest; and

acquires or uses third party intellectual property in a transparent and efficient way, while upholding the law and managing risk appropriately.

Guiding Principles for Intellectual Property Management

- **Public Interest:** Government grants rights to its intellectual property, as a public asset, in a manner that maximizes its impact, value, accessibility and benefit consistent with public interest.
- **Uphold Law:** Third party intellectual property is acquired and used in a transparent and efficient way, while upholding the law and managing risk appropriately.
- **IP Management:** Intellectual Property is managed using appropriate systems and processes that identify record and safeguard Intellectual Property rights in an effective, efficient and ethical manner.
- **Risk Mitigation:** Procedures are applied to reduce the risk of infringement of the Intellectual Property rights of others.
- **Review:** The overall effectiveness of policies and practices for the management and use of Intellectual Property is periodically assessed.
- **Training:** Intellectual Property management is supported by appropriate training and resources, including access to expert advice.
- **Innovation:** Intellectual Property management recognizes innovation and creativity in a manner consistent with agency objectives and Sri Lankan government Intellectual Property Act.
- **Contracts:** Contracts and other agreements must address Intellectual Property issues where relevant.
- **Creative Commons:** Consistent with the need for free and open reuse and adaptation, public sector information is licensed under the Creative Commons BY standard as the default (Optional).
- **Commercialization:** Commercialization or disposal of Intellectual Property is managed consistent with Sri Lanka's Intellectual Property Act, No. 36 of 2003.

6.6 Budgetary Plan for Strengthening Functions, Capacity Building and Infrastructure

Government organizations of Sri Lanka are subjected to receive budgetary provisions from Treasury on an annual basis. Each organization receives required provisions for various activities related to each functional division with the intentions of delivering intended services to the general public. However majority of allocated funds are reserved for personnel emoluments including matters related to human resource enhancement by way of training, scholarship programs etc. The processes of annual budget estimates are derived from each divisional level to organizational budget, then from organizational level budget to Ministry budget, and finally from all Ministries level budget to country budget.

In order to make organizational level functions deliver in an efficient and effective manner, its cadre strengths are expected to be dynamic with required knowledge, skills and experience. Required infrastructures are also made available including information and communication infrastructure through national procurement guidelines.

Different organizations have a multitude of ways of infrastructure development and some organizations have already developed annual ICT implementation plans and training and human resource development programmes. However, these situations arises on the basis of

strengths that exists within different organizations which leads to a coordinated investment program in strengthening functions with enhanced business processes integrated with ICT usage, capacity building, and infrastructure development.

6.7 The Politics of Future Operations

ICTA NSDI Baseline Study revealed that convincing capabilities, understanding technology applications in expanding/ system changes and institutionalizing spatial database applications relating to core business functions are always hampered with the political decisions as many of them desire to admire the processes developed in previous terms. The inventing the wheels made by either dismantling existing systems or crippled them by disfunctioning the systems in operation becomes a common practice in Sri Lanka with the blessings of political leaders who were very smart on rejecting the systems that they developed under their previous regimes by involving a new system at the new regime. The basic argument behind this is the technology driven systems make transparent, expeditious, impartial results on rationally analyzing the parameters implied on any situation. However the international best practices shows that reinventing the wheels provided much benefits and save unnecessary waste of valuable financial resources.

The wheels on the right track do not make any extreme and worst scenarios therefore the only possible approach is discouraging the operational staff in involving the system by transferring them from the division they work, creating administrative issues among the staff and cut down allocations for maintenance, new acquisitions, discouraging the training and education programmes and termination or delaying due promotions. These political and administrative interferences existed previously as well at present. It's a common practice at any time even though the leaders deliver their high level of expectation through technology enhancement. The level of achievement in practical sense is far below the reality. It would happen into the ICTA NSDI Programme unless the system of NSDI applied in its operation with full functionalities of the developed systems by each and every organization to re-engineer the core business functions of the organizations for which the institutions to be getting ready in advance. However the political interferences in the past over such activities if applies in same way in future too the expected results could not be achieved fully. Therefore it is required a key leadership to address these issues and compelled to obtain full partnership of each member in advancing the system in future as Sri Lanka already delayed in implementation of the program although many attempts were being made over the last two decades or so.

Creating integrated working environment within organizations wholly depend on internal politics. The provision of infrastructure facilities, changing of mind sets of the staff to transform into technology driven innovation approaches for business processes, reducing duplication and redundancy, structural changes to the organizational administration processes connected with spatial data handling centres are most important aspects to be carefully addressed by the political leaders of the organizations. This will become significant issues in the future too if adequate measures would have not been taken in time.

The past experience proves of collapsing of such organizations due to these reasons. Therefore the political decision making is important to understand the hidden resources in the machines as many of the systems are intangible spatial assets which could not be quantified by administrative or financing staff of any organizations.

6.8 Human Resources, Knowledge and Attitudes

Human resources is one of the key components in NSDI as all these system components are engineered by people involved in development of NSDI by framing out policies and standards to acquire, process, store, distribution and improvement of geographic data. Past experiences show that the country had a serious drawback in acquiring technology as agencies had very limited skilled man power with knowledge on working with full functional spatial data. However, today's organizations have opportunities to train identified staff at post graduate levels. Many of Sri Lankan universities offer Masters or Post Graduate Diploma Programmes aiming to build graduates in the fields of Remote Sensing, GIS, Geoinformatics, GPS, ICT, etc.

New developments in these disciplines are not shared among professionals and the officers in the field level, and this has created limitations in exposure to field level knowledge and experiences. This situation was clearly shown during the interactive workshops organized under ICTA NSDI initiative where the participating organizational level representatives were unable to comprehend the work of their organizations partakes in developing spatial data.

Human resource development is not only possible to provide training or academic level qualifications they should also have wider interactions in many disciplines and areas of spatial data development. Building confidence through knowledge acquisitions helps to find practical solutions in many issues that the industry faces during data sharing processes.

One of the other drawbacks of the government system in place is that the organization should have a contingency plan to continue commitment of staff to carry out defined functions of their spatial data handling; this part is usually neglected.

Future of NSDI is largely depending on the general interest of the involved parties and their encouraging inputs to promote the concept of NSDI.

6.9 Meeting the Expectation

Expectations of this project are seen at different levels such as Government level, political level, organizational level, team level, and individual level. In strategizing the future of NSDI, expectations of all these partners are required to be in one line for the purpose of defining high level expectations and setting feasible targets.

6.10 Challenges, Difficulties and Constraints

Baseline Study revealed that in latter part of 2010 there was number of attempts being made by Government Organizations in developing NSDI in Sri Lanka. The implementation of the programmes ended up with another programme up to the ICTA NSDI Initiative without any attempts in establishing at least foundation for the building up of the process due to lack of interest of the Government and the leading organizations that have been involved in the programme activities. One of the main challenges of the such growing consultancies and their final consultancy reports on NSDI during the latter part of 2015 was that the interest of the consultants and the participants for this task were gradually narrowing down and their participation on the deliberations and sharing required information to the new projects were limited and restricted in releasing of whole set of available data when the involved parties attempting in collecting data regarding factors such as past experiences, proposals made and

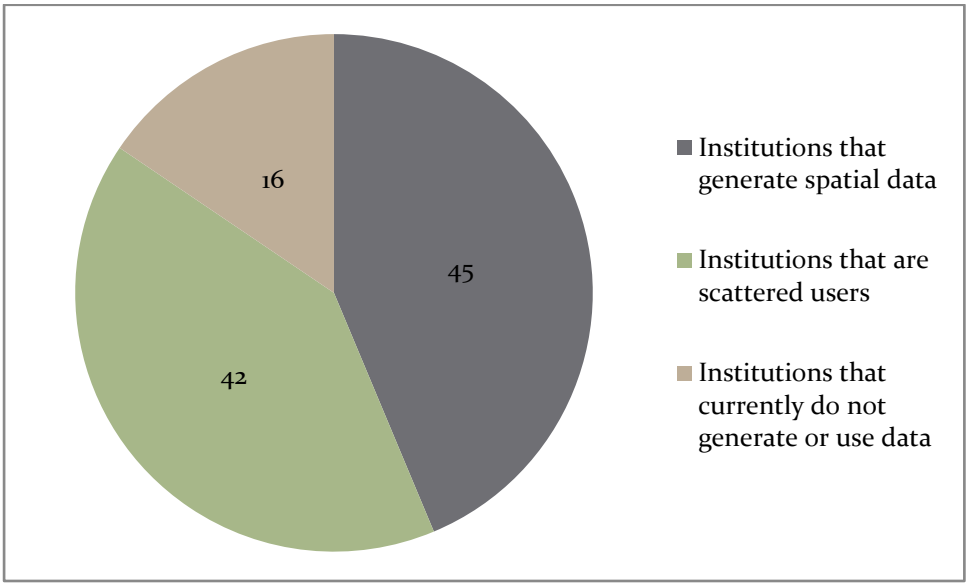
drawbacks and limitation faced by the implemented projects, factors for failure and addressing of these, situation of the country in spatial data generation, sharing and its use, how far systems developed over last two decades et cetera.

CHAPTER 7: OVERVIEW OF RESULTS AND DISCUSSION

Table 7.1 summarizes the outcomes of the NSDI Baseline Study in relation to the objectives of the baseline study.

The following are some of the major findings from this Baseline Study.

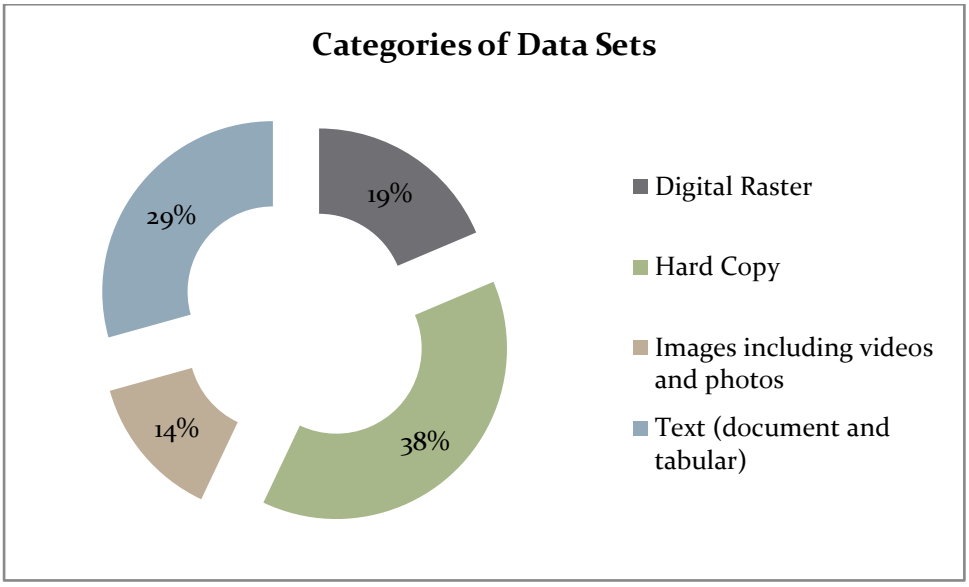
- Of the 103 total institutions that comprised the study population, it was found that a majority generated spatial data.



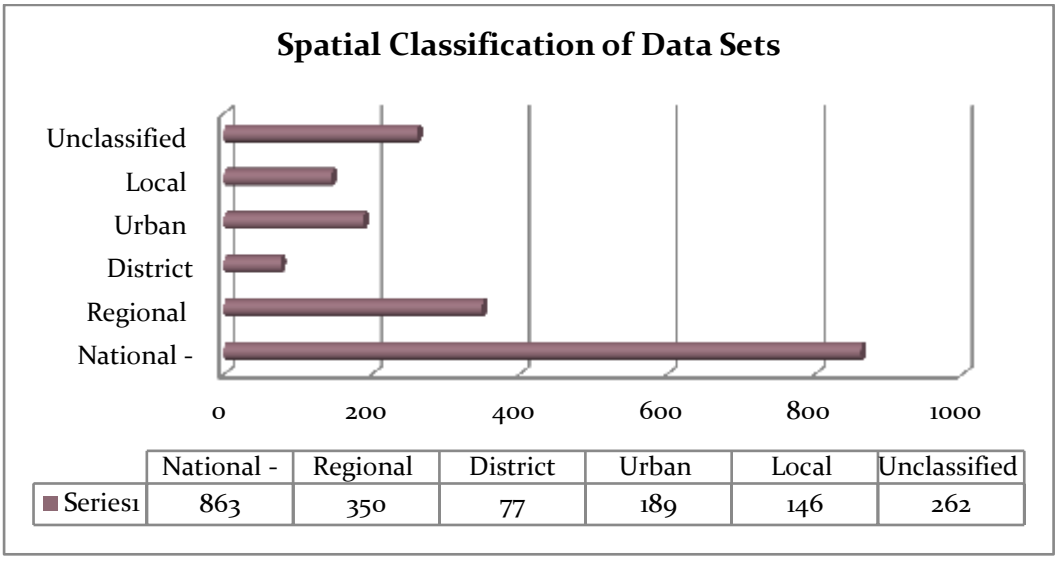
- The study population of 103 organizations had 403 core functional divisions under eight main thematic areas using spatial data under the following 8 major thematic areas:

1. *Planning, Design and Evaluation*
2. *Development, Engineering, Project Implementation and Regularization*
3. *GIS/ICT/ Information Management/ Data Centres*
4. *Research*
5. *Lands, Land Use, Land Development & Land Management*
6. *Surveying, Censuses, Sample Surveys and Mapping*
7. *Environmental, Natural Resources Management & Conservation*
8. *Disaster Management, Climate Change & Disaster Risk Reduction*

- The spatial data inventory provided data on 23 categories on **seven major types** of Spatial data and had 1887 data sets:



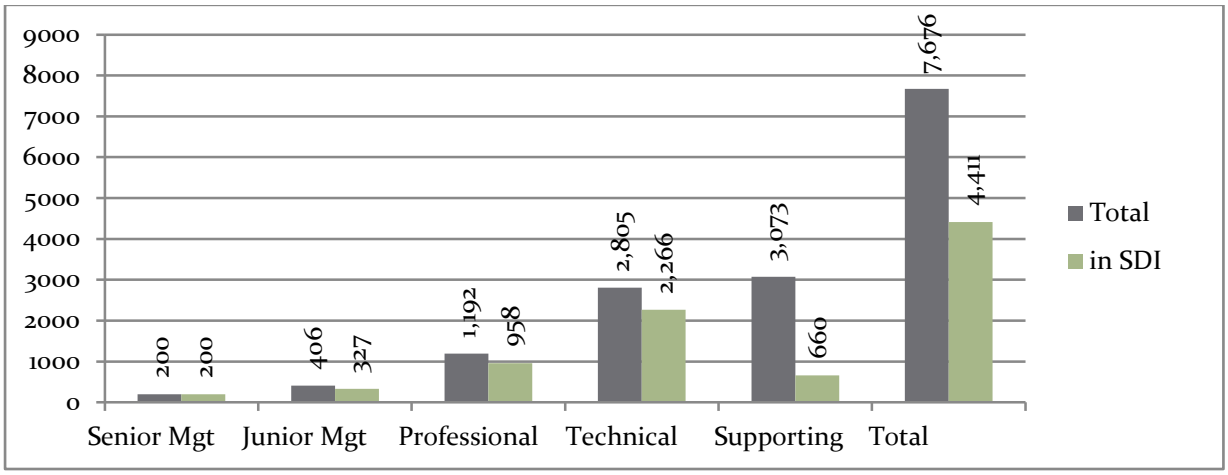
- Spatial classification of the data sets are distributed as follows:



- High Level Thematic Areas were identified as follows:

- Second Highest Level Thematic Areas were identified as follows:

- The Consultants investigated the capacities of the staff in terms of the capacities of the management and operational staff of data custodians, providers, users and people who are handling spatial data. (Note: 8 institutions responded) Please refer to Table 8.1 for more details.

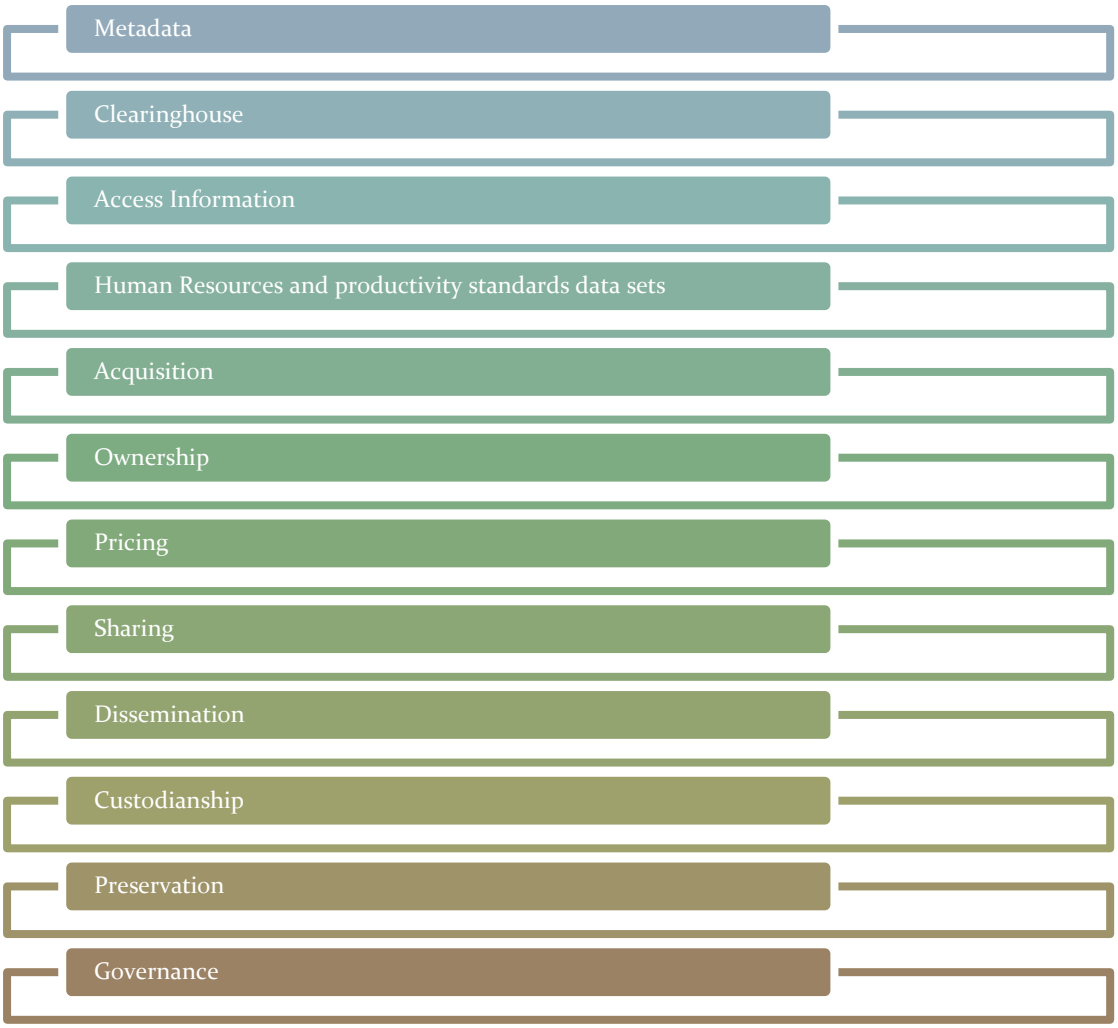


- There was a poor response regarding the organizational expectations in desired and improved future situation of the spatial data development. However, the following analysis was developed based on the information received.

Organizational expectations in desired and improved future situation	Level of expectation of the future programs identified
Overall presence of the Organization in the field of Spatial Data production and Use	Completely rely on spatial data from multi sectoral input for core business functions
	Data Sharing to be facilitated through the websites
Improvement of core business functions with the application of spatial data and NSDI	A higher improvement in National Spatial Data Infrastructure will be expected
	Evidence base decision Making in NSDI should be established
	Expects to encourage high involvement in NSDI
Steps in career development of the staff in delivering the services in NSDI	A higher improvement in training and capacity building will be expected
	Expected to implement a comprehensive capacity building through NSDI project
Opportunities in public-private partnerships to	A comprehensive promotional program on NSDI should be

improve citizen wellbeing	established.
	Private sector should be invited to participate in NSDI
Capacity enhancement of the organization in application development	Capacity building on modern technologies and application tools should be established
Outsourcing the key data collection processes as well as application development	Outsource key data collection processes and the application development
	Internal capacities of the organizations in application development is inadequate
	Capacities of in-house staff should be improved in modern technologies and application development
Application development programs using spatial data to improve core business function of the organization	software application development is not expected within the organization - but willing to work on NSDI/Standard Platform
Other factors for further improvements	Communication infrastructure development is needed to address through the NSDI Program
	Development of hardware/software in spatial data production lines are required to be improved
	Provide support facilities for software/hardware requirements

- The Consultant conducted an analysis case studies and international best practices. The generic component of spatial data infrastructure are quite similar in global and local levels, and its fundamental components covered include:



- According to the global perspectives researched, there are three organizational levels of SDI in operation:

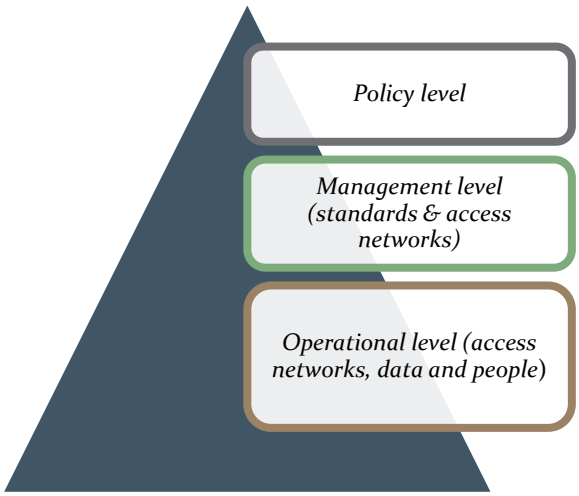


Table 7. 1 Objectives, Input, Output and Outcome of the NSDI Baseline Study

Objectives of NSDI Baseline Study	Input	Output	Outcome
1.Identify variables/ indicators and collect necessary data on the present situation of collection, storing and usage of spatial data, identify stakeholders and types (data providers, data users) of organizations **-To understand the range of spatial data sets currently collected by government** **-To define data custodians for each data set to ensure the responsible management and ongoing integrity of the data sets** **-To understand the gaps in data coverage and quality**	-Provided all the information requested to the baseline Study by the GIS provider and User Group -Identify & invited 103 organizations (study population) -45 organizations generate spatial data -42 organizations scattered users -16 currently not generate or use data *Note:* *-Most organizations did not show much interest in providing required data as requested by the Q1 and Q2 as well as other sources or at least participation of the awareness workshops conducted by ICTA which reflect their overall interest in delivering public services in a more concerted manner as well as the level of corporation extending for the national project which aims to integrated the supply of spatial data and maintaining the available and future generation data of its coverage*	-Complete and Comprehensive Spatial Data sets presently in existence in Sri Lanka. - 46 organizations Participated - 31 organizations that generate spatial data responded - 18 organizations that are scattered users responded - 7 organizations that do not generate or use spatial data responded 103 organizations had 403 core functional divisions under eight main thematic areas using spatial data: *1. Planning, Design and Evaluation* *2. Development, Engineering, Project Implementation and Regularization* *3. GIS/ICT/ Information Management/ Data Centres* *4.Research* *5,Lands, Land Use, Land Development & Land Management* *6.Surveying, Censuses, Sample Surveys and Mapping* *7.Environmental, Natural Resources Management & Conservation* *8.Disaster Management, Climate Change &*	Recognition of the National Spatial Data Framework as the authoritative reference by government, private, community, research and academia for all projects relating to infrastructure development, natural resource and environmental monitoring, disaster management and socio economic studies etc. Note: *-Expected outcome of defining National Spatial Data Framework will not be possible to develop within short period of time as well as would have serious gaps and lack of integration* *-Lack of strong leadership in monitoring the progress of participation and sharing of required data by the identified organizations leads to dismantle the Contributions made by each organization.* *-The lack of interest and minimal awareness of heads of organizations on NSDI Framework is an important finding to encourage further continuation of the disaggregate development of data similar to existing situation and difficulties in data integration from various sources.*

Objectives of NSDI Baseline Study	Input	Output	Outcome
	and quality. *-Lack of Leadership and the weak inputs by the Government creates a coordination issues among these organizations in future so as individual organizations and the respective officials may decides their level of participation for a nationally important project and curtailing the integrated effort in data sharing through National Map Portal which is a serious issue in the present context of development*	*Disaster Risk Reduction* The spatial data inventory provided data on 23 categories on **seven major types** of Spatial data and had 1887 data sets: *Digital Raster -221* *Hard Copy -456* *Images including videos and photos -162* *Text (document and tabular)-348* **Spatial coverage** of these datasets as: National -863 Regional -350 District -77 Urban -189 Local – 146 Unclassified -262 **High Level Thematic Areas** are: Political / Administration, GIS Data, Land Use & Land Covert, Surface Hydro, Climate, Remote Sensing Data, Imagery, Statistical Areas, Elevation, **Second Highest Level Thematic Areas are:** Biodiversity, Road Network, Special Management Areas, Soils, Structures, Planning Area, Service Area, Places, geology, cadastral.	-Considerable number of developed GIS Centres are facing in critical situation at present due to this type of lethargic attitudes of the Heads of organizations leads to degrade of the centres due to low quality of spatial data. -In the process of assessing the quality of High Level Thematic datasets and any proposals for further enhancement of its qualities cannot be comprehensively assessed and evaluated as a result of conflict of interest of organizations on many reasons as indicated by the individual organizations.

<table>
<tr><th>Objectives of NSDI Baseline Study</th><th>Input</th><th>Output</th><th>Outcome</th></tr>
<tr><td></td><td></td><td>Note:
-Output represented above on Data Inventory and Data Requirements for enhancing core business functions of organizations has not identified in detail by the organizations and some are not having any idea which will be badly represented when national standards and guidelines are prepared as well as system development incorporating every sector, every thematic areas, geographical coverage, accuracies and precision, level of using the available data for nationwide NSDI applications.</td><td></td></tr>
<tr><td>2.Assess the available hardware infrastructure, available infrastructure (in use), data, data formats, and software use, guideline standards, and policies</td><td>-Individual organizations were required to provide relevant data on:
-Hardware infrastructure
-Software use
-Communication Network
-Data formats
- List of Guidelines
- List of Standards
- Policy Document

Note:
-Although many of the organizations engage in the GIS applications a handpicked organizations have well developed, operated and maintained GIS infrastructure as the available</td><td>Very limited number of organizations responded
<table><tr><th>INPUT</th><th>OUTPUT</th></tr><tr><td>Hardware infrastructure</td><td>Full list not provided</td></tr><tr><td>Software use</td><td>Full list not provided</td></tr><tr><td>Communication Network</td><td>Full list not provided</td></tr><tr><td>Data formats</td><td>Full list not provided but shapefile, geodatabase is common</td></tr><tr><td>List of Guidelines</td><td>Two organizations had guidelines</td></tr><tr><td>List of Standards</td><td>Three organizations provided</td></tr><tr><td>Policy Document</td><td>Not available</td></tr></table>
Note:
-As many of the GIS Centres/Units of the organizations are operated as isolated centres</td><td>-Shared GIS services through the National Map Portal
-All government agencies engage in generation, use and sharing of spatial data have adopted the Spatial Data Infrastructure Policies within policy defined timeframes

Note:
-Long delays in development and delays in data generation process will further complicate the spatial data handling process in Sri Lanka.

-Although ICTA NSDI programme compelled to adopt the developed NSDI policies within defined framework and transform the defined standards and</td></tr>
</table>

Objectives of NSDI Baseline Study	Input	Output	Outcome
	centres are functioned as isolated centres from the main organizational structure. *-Except IWMI the other organizations do not provided any documents indicating guidelines, standards etc.*	*from main functional divisions these centres do not have strong arms to develop* *-ICT Work Plan* *-ICT Annual Budget* *-Communication and Network Infrastructure* *-Replacement and Maintenance Plan etc.* *Therefore the organizations were in complicated situation when such a comprehensive data requested from such organizations. The lack of integration of IT Centre from GIS Centre and lack of strengths in intervening on institutional matters influenced in difficulties of providing such data.* *-Most organizations facing difficulties in acquiring basic facilities due to lack of funds and budgets.* *-The policies, guidelines and standards indicated in this report mentioned that Sri Lanka does not poses any developed geo spatial data policy*	*guidelines for applications of spatial data generation, storage and sharing may not be able to implement as proposed as many of the organizations have their inherent problems, issue and constraints which are not easily solvable by a single organization like ICTA within short period of time amidst of weakening economic condition of the country.* *-Most complicated and problematic area of the adaptation of new standards and guidelines is the transformation of the already developed data layers by leading organizations which have their inherent issues related with finding justification for updation and prioritization against dismantled set of compliances by new administration and head of organizations as well as lack of awareness on all these technical and professional work by any new appointments made without having nay comprehensive knowledge on related subjects to a well-established centres and difficulties in giving assurance when new appointment made against the officers transferred or on retirement where ICTA has no control on such issues.* *- NSDI policies should be developed according to the spatial data supply chain.*
3. Identify the capacities of the management and	-Requested data on All Employees of the Organizations	Only 8 Organizations responded Total Number employed -7,676	-Fully functional Centres link with NSDI Office and National Map Portal

Objectives of NSDI Baseline Study	Input	Output	Outcome
operational staff of data custodians, providers, users and people who are generating spatial data, readiness of individuals, and organizations, assess the knowledge, skills, attitudes and expectations of officials of stakeholder organizations on the effective use of spatial data across the government, understand the willingness of the staff of stakeholders to effectively collaborate with the initiative.	and Staff involved in Spatial Data Handling under: Total Employees & Spatial Data Handling Senior Management Junior Management Professional Technical Supporting Educational Qualifications PhD MSc Post Graduate Diplomas Bachelors Technical Curses GCE (AL) GCE (OL)	Number engaged in Spatial Data Handling within the organization – 4,411(57.5%) **Employees of Organizations** Total / in SDI / % Senior Mgt 200 / 200 / 100.0 Junior Mgt 406 / 327 / 80.5 Professional 1,192 / 958 / 80.4 Technical 2,805 / 2,266 / 80.8 Supporting 3,073 / 660 / 19.5 **Total 7,676 / 4,411 / 57.5** **Educational Qualifications** PhD / MSc / PGD / BD / Tec / Other Senior Mgt 12 / 97 / 53 / 49 / 0 / 0 Junior Mgt 3 / 49 / 18 / 179 / 26 / 63 Professional 1 / 66 / 118 / 745 / 6 / 22 Technical 4 / 181 / 489 / 889 / 503 / 200 Supporting 0 / 0 / 0 / 36 / 50 / 574 Percentage 0.4% / 8.9% / 15.4% / 43.0% / 13.3% / 19% RS,GIS, ICT, related qualified staff in handling spatial data in the organizations: SM / JM / Prof / Tech / Sup / total / % Phd 4 / 2 / 0 / 0 / 0 / 6 / 0.6 Msc 10 / 12 / 3 / 2 / 1 / 28 / 2.8	-Expectations of this project are seen at different levels such as Government level, political level, organizational level, team level, and individual level. In strategizing the future of NSDI, expectations of all these partners are required to be in one line for the purpose of defining high level expectations and setting feasible targets. - Creating integrated working environment within organizations wholly depend on internal politics. The provision of infrastructure facilities, changing of mind sets of the staff to transform into technology driven innovation approaches for business processes, reducing duplication and redundancy, structural changes to the organizational administration processes connected with spatial data handling centres are most important aspects to be carefully addressed by the political leaders of the organizations. *Note:* *-Growing skills and number employed in spatial data handling divisions are required to direct in developing standardized spatial data enabling to share them across the*

Objectives of NSDI Baseline Study	Input	Output	Outcome
		PGD 2 11 0 2 0 15 1.5 BD 88 115 752 0 0 955 95.1 Total 104 140 755 4 1 1004 100 *Note:* *-About 60.0% of staff involved in spatial data handling* *-More than 80%of technical, professional, junior management and senior management staff involved in such activities* *-About 44% having basic degree, 16% post graduate diplomas, 9% with masters and 0.4% with Ph.Ds.*	*Government organizations* *-25% of staff of organizations are directly involved in with bachelor's degrees in relation to the fields of GIS, Remote Sensing, GeoInformatics, ICT etc. which shows a growing trend of key qualification in relation to spatial data handling.*
	-Current knowledge of the Staff on ♦ Declarative knowledge ♦ Procedural knowledge ♦ Problem Solving Knowledge and ♦ Overall Knowledge	50% of staff not responded 30% have medium knowledge 13% have high knowledge where as 7% have low level of knowledge *Note:* *Not responding means that they do not have proper understanding about their knowledge or the organizations not assessing the level of knowledge of their staff.* *-That's why so much of issues arise in the organizations as staff is not appropriately knowledgeable on the subjects although they have educational qualifications.* *-The levels does not have much differences in these three categories of knowledge*	Knowledge and high level of readiness is not only derived from the investment made but the motivation and encouragement is required to elevate the level. The present involvement of some large scale organizations discourage to enhance readiness level due to indirect political wish to have manual system in operation which leads to malpractices and corruption
	Readiness of the Organizations	30% – 36% not responded	

Objectives of NSDI Baseline Study	Input	Output	Outcome
	under 6 affecting factors: -Overall organizational readiness -Leadership -basic ICT infrastructure of the organizations -Implementation of Policies -Allocation of adequate resources -Human capacity development & lifelong learning	8% - 14% viewed as strong and high readiness 25% - 40% indicated the level is fair and 15% -35% said the organization is in primary level. *Note:* *If the knowledge and readiness is so poorly articulated among the organizations in its readiness for NSDI implementation the basic requirement f the programme is to promote the readiness level otherwise many of these organizations do not make their direct participation in the programme.* *-Responded are not adequately educated or having Knowledge to provide answers to many questions as they do not have required data.*	Continuation of such involvement is bad to a country .which keeps high expectation on development and foreign direct investment. The existing practices prove that visible corruption rates have a negative impact on anticipated foreign direct investment.
4.Draw/identify the desired and improved future situation (in the year 2020) by analyzing case studies and international best practices and make recommendations on potential use of spatial data (to develop mobile apps etc. through public private partnerships) to improve life of citizens.	-Inputs from ten case studies covering the various organizations varying from fully functional to collapsing situation of the GIS Centres in Sri Lanka. These are outlined in more detail in 'Volume III – Report on Case Studies' -"Full Operational Level Organization Generating and Spatial Data" -"Organization which is currently dynamic in establishing NSDI	Ten organizations have their own programmes in developing spatial data and future activities: **IWMI** – is a well-developed centre with an enabling environment to develop qualitative data using advanced facilities, and their clientele consist mainly of international funding agencies. The developed data shares through three active data portals where NSDI has the potential to link with Map Portal. **UDA**- was a very strong and powerful GIS centre which involved in developing	The work is carried out in ad hoc manner. The recent intention of acquiring 14 web portals do not make an integrated system development and facilitate all IT activities of the organizations. - Establishing central IT department, appointing key staff and linking the entire MASL activities to the system. -Expedite the development of spatial data covering entire Mahaweli Project Area and make arrangements to have a

Objectives of NSDI Baseline Study	Input	Output	Outcome
	Road Map and DMEM Map Portal" " Full Functional Level GIS Centre facing Challenges in Collapsing in Future Operations" "Organization Planning to Storage of Spatial data to Integrate Asset Management and Decision Support System" "Organization facing Institutional and Staffing Issues in continuing of GIS activities." Organization confronted difficulties in Sharing Spatial Data for the Users required geostatistical Basic Socio Economic Data" "Organization has cyclical changes in Operation due to Institutional Issues" "Organization having dynamic functional Divisions operating without having Central IT Department" "Organizations facing incompatibility in the Categorization of Spatial Data on Hierarchical Structure" "Organization thinking on use of spatial data for engineering	standardized spatial data in all disciplines had a large scale GIS infrastructure with skilled professionals having Masters Degrees. Once developed GeoWeb Portal, ICT infrastructure, hardware & software structure is becoming unusable due to lack of interest of the management. **DMC**-Disaster Management Centre is currently playing a dynamic role in the provision of spatial data in collaboration with number of international agencies and local institutions. The recent involvement in developing a NSDI Road Map and Pilot Project in DMC is planning to establish Metadata Portal and reorganization of data collection procedures during natural and man- made disasters. As the entire system of the country is having potential failures the DMC has increasing role to be played for which spatial data is required for them to analyse the situation and making arrangement for rehabilitation and reconstruction programmes. However DMC does not have the required skilled man power within the centre for doing analytical studies. The total amount of Survey plans available in MASL is not counted exactly but Polonnaruwa District alone has about	systematic spatial management programme for better results. FD- If the Forest Department could provide the accurate GPS coordinated forests boundary maps of Sri Lanka it would be created a massive impact to other sectors those who are working in spatial aspect. -Strengthening of the GIS Centre is important with the required staff in order to attend the all matters connected with spatial data handling. DCS- Whatever the data collected by the Department has no relationship with exact spatial relationship so it can be difficult to trace the origin of data and reclassification as the user wants. -Data provided by the statistical reports and aggregate data has a limited value in critical analysis like urbanization, agricultural statistics in forecasting yield, environmental data related to the exact location of sensitivity or pollution dispersed -It is difficult to understand critical hot spots and the critical areas of addressing the public needs using the

Objectives of NSDI Baseline Study	Input	Output	Outcome
	analysis, land Reclamation, Wetland Management and Development"	250,000 survey plans. Entire Mahaweli Project area has about 2.0 Mn agriculture land plots. The digitization will take considerable time period and produce spatial data in Mahaweli Project Area. **FD**- The British ODA project the Forest Department received assistance from the ADB funded Forest Resources Management Project in producing digital maps indicating the forest boundaries and developing a digital database with exact boundaries with GPS Coordinates. With the assistance of external project Forest Department was able to improve the spatial database and after the project activities of the updation will be slowed down due to internal changes of the staff. *Note:* *The delivery of spatial data indicating the forest boundaries was having legal, political and administrative issues connected with the general public and other organizations as the original database might be distorted as the pressure groups wanted and created huge implications as presently staged in Wilpattu, Madhu and many other areas.* **DCS**-All socio economic and agricultural, industrial and public sector employment data to be spatially link in order to	aggregate statistical data without having its spatial relationship. DCS needs skilled staff in handling spatial data and producing spatial statistics. Mapping of the distribution of IAS located within Colombo Wetland System The identification of Invasive Alien Species as the first task of the proposed programme by using advanced technologies like GIS and Remote Sensing with the application of 'Supervised Classification System' to generate spatial distribution pattern of these plant species using satellite images is one of the areas where SLLRDC attempts in analysis and develop very comprehensive database for wetland management *Note* *SLLRDC does not have a developed GIS Centre or staff required to perform spatial data handling. The available and already developed spatial data are the results of various consultancy services projects and the analysis carried out by the Consultants. The staff trained at UDA as well as various*

Objectives of NSDI Baseline Study	Input	Output	Outcome
		facilitate the NSDI initiatives in the future. At present the available data could be used in sharing among the users through the portal. -Erosion due to lack of satisfactory canal protection -Unplanned reclamation of low lying lands -Inefficient system performance -Hostility of residents in areas where essential work is carried out **SLLRDC** has provided spatial data to the organization under their special project activities mainly through the consultancy services carried out by external consultants. Following are some of the studies conducted recently and implemented projects as well 1. Weras Ganga Storm Water Drainage and Environment Improvement Project at Bellanwila 2.Preparation of Drawings for wetlands Identification of wetlands in 07 Provinces completed (except North & East). Wetlands in Southern & Central Provinces already identified & made ready for declaration. Western Province wetlands have already been Gazetted & declared.	*other organizations are individually working in the Divisions they attached so as the responsibilities of data sharing rests on the hands of the individual divisions.* *As the SLLRDC presently confront with international consultants as well as local consultants on various projects and understands the value of such data it is necessary to carefully analyse the potentials of establishing a proper functional unit at SLLRDC.* *Develop spatial database on wetland system of Sri Lanka.* *Most of the maps and hard copy data available as survey plans demarcating the plot boundaries and that should be taken into one common database for easy reference and the appropriate use*

Objectives of NSDI Baseline Study	Input	Output	Outcome
	10 countries indicated the current best practices in spatial data and its initiatives. These countries identified from different regions in global context representing the way the countries achieved the desired objectives of the Global SDI/ National SDI Six Regions: North American Region -United States of America -Canada Europe Region -European Union Countries -Iceland Asia and Pacific Region - South Korea - Australia/ New Zealand - India Middle East & North African Region -Oman Latin America & Caribbean Region	The generic component of spatial data infrastructure are quite similar from Global to local level and its fundamental components covered: -Metadata -Clearinghouse -Access Information -Human Resources and productivity Standards' -Data sets -many others including acquisition, ownership, pricing, sharing, dissemination, custodianship, preservation and governance. -Global perspectives distinguished that three organizational levels of SDI is in operation: -policy level -management level (standards & access networks) -operational level (access networks , data and people) As it was experienced in early 1990s on pool utilization of sophisticated and expensive equipments and allocating to depreciate due to lack of maintenance and repairs is happening today at same degree or in much in almost all the organizations although the knowledge and experience of	-More elaborately expands the ideas, knowledge, and different discussions and find practical solution to the issues of SDI concept. -National clearinghouse were regarded as facilitation to access spatial data and provided complementary services and improve the exchange and sharing spatial data. -In order to expedite the development countries have changed their strategies and update the conceptual models. -Change of technology and resistance to periodical influence of administrative version making and use of role model because a key components in effective and efficient operations of geospatialdata. - Spatial enablement in Smart World is the current initiatives in the advanced countries focusing on what is already in place provides us the opportunity to examines how far we have come with respect to spatially enabling 'smart city' and smart country and how much still needs to be done.

Objectives of NSDI Baseline Study	Input	Output	Outcome
	-Chile African Region -South Africa	the staff involved were increased in many fold due to the low level of efficiency of the management and other personnel agitation over individual members. **Develop Capabilities for National Shared Services** -Develop geospatial interoperability reference architecture. -Establish the Geospatial Platform as the national geospatial data, services, and applications Web-based service environment. -Expand the use of cloud computing. -Promote the use of geospatial multiagency acquisition vehicles for interagency and intergovernmental purchases.	
		Ensure Accountability and Effective Development and Management of Federal Geospatial Resources -Advance the portfolio management process for National Geospatial Data Assets (NGDA). -Identify potentially duplicative investments and opportunities for collaborative investments. **Convene Leadership of the National Geospatial Community**	**Anticipated outcomes:** -More current, complete data available to all through improving capabilities for NSDI partners to develop, maintain, share, and use geospatial information. Cost savings through better leveraging of shared technology infrastructure across Federal agencies and among our partners. -Efficient, effective use of shared

Objectives of NSDI Baseline Study	Input	Output	Outcome
		-Lead and participate in the development and coordination of national and international standards applicable to the geospatial community. -Convene the leadership of the geospatial and nongeospatial communities to develop shared approaches to critical national issues. -Raise awareness of the NSDI and its impact on critical national issues. -Provision of government, businesses, and citizens with a way to visualize and explore data to derive information and knowledge. -Creation of a network of resources and services for the seamless integration of location-based information into broader information assets to serve the needs of government, the business community, and citizens. -Serve as an enabling resource for discovery, access, integration, and application of location information for a growing body of users. -Leverage shared and open standards-based services and focus on applied information for improved decision making. -Promotion of place-based business intelligence and smart, shared	technology infrastructure to encourage and support better information sharing. Cost savings through shared geospatial investment planning. -Cost savings through expanded use of commodity cloud-hosting capabilities for the benefit of all NSDI partners. With cloud computing. -Increased access to high-priority, documented, and standards-based national geospatial datasets and services. Enhanced level of transparency into Federal activities and resources required to manage and provide access to geospatial resources. - Additional information is publicly available on geospatial acquisition plans resulting in cost efficiencies and decreased duplication of effort. Enhanced return on geospatial investments through partnerships across national and other sectors. -Greater adoption and utilization of standards resulting in enhanced interoperability of geospatial data, services, and systems. Decreased barriers to exchanging geospatial

Objectives of NSDI Baseline Study	Input	Output	Outcome
		applications. -Inclusion a core set of information layers that interface with other nonspatial data being generated.	content effectively and efficiently by reducing technical impediments to sharing geospatial data and services.
		Use real-time data feeds and sensor webs for improved monitoring, control, situational awareness, and decision making. -Facilitation to access to and use of multi-temporal information linked to place. -Integration of and use advanced technologies and their associated standards and best practices. -Facilitation for use of community-driven open standards with multiple implementations.	Guiding Principles: Ensure that spatial data from multiple sources (national, regional, urban and local governments; academia; and the private sector) are available and easily integrated to enhance understanding physical, natural, and cultural environment. -Facilitate the development of authoritative National Geospatial Data Assets that are complete, accurate, current, standards-compliant, and at the scale needed for shared uses by national, regional, urban and local governments, academia, the private sector, and the public. -Protect the privacy and security of citizens' personal data and ensure the accuracy of statistical information about people, both in raw form and in derived information products.

Objectives of NSDI Baseline Study	Input	Output	Outcome
			-Enable access for all citizens to spatial data, information, and derivative and interpretive products, -Protect proprietary interests related to licensed information and data. -Enable interoperability of information systems through the use of open and machine-readable formats to enable access to resources from multiple agencies and partners. -Ensure that investment and policy decisions consider the expected return on investment and effective use of resources. Lead and participate in the development and coordination of national and international standards applicable to the geospatial community.

CHAPTER 8: CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

This chapter illustrates the main conclusions arrived on the findings of the NSDI Baseline Study of the ICTA in support of other integrated studies conducted in the overall NSDI programme. The chapter has been split into two sections, where the first section outlines the major findings of the study and the second section provides recommendations to be considered in the future for actions related to the establishment of NSDI in facilitating the organizations in delivering the services to the nation with a common agreed format of spatial data with widely acceptable standards for enhancing the different thematic data developed by specialized agencies.

8.2 Conclusions

The baseline study on the national spatial data in Sri Lanka related to the technology, policies, standards, and human resources involved to acquire, process, store, distribute, and improve utilization of geospatial data examined and analyzed the status in the overall context by undergoing different techniques which included a questionnaire survey, focus group discussions, key informant interviews, case studies, documentary review as a part of the literature review and references of source data, reviewing the official web sites and discussions with the participated representatives of the Government Organizations.

The following major conclusions can be made on the status of NSDI in Sri Lanka:

1. The ICTA lead NSDI initiative in 2016 was a recent approach made in establishing NSDI in Sri Lanka which was initially discussed in 1990s by very few organizations that was active in developing spatial data in relation to the similar standards developed by the country that was introduced to the concept to the world. Over the years, the different organizations with different financial sources made positive approaches in conceptualizing the concept and realizations in the practical difficulties, issues and constraints related to the sharing of spatial data in Sri Lanka. It was noted that a limited number of organizations produced such data although relatively a large number of organizations are involved in using the available data.

2. The development of common spatial data that could be used by all was not in the agenda of the Government Policies until 1994, with the proposal made by the World Bank to have an Integrated GIS for Utility Management in the Colombo Metropolitan Region, the establishment of a comprehensive national spatial data base for realization of planned economic development of the country by integrating economic planning and spatial planning for the provision of Government Budgetary provision emphasized in establishing such a system in 2000. The devastation following the tsunami of 2004 resulted in the national realization of the practical necessity of having spatial data infrastructure to share

common data in an emergency situation enabling the organizational setup to attend the rehabilitation and reconstruction process.

3. The first ever WebGeo Portal introduced by UDA in 2007 was the first attempt in physical spatial data sharing, which was backed by the initiation made by the Ministry of Lands and Land Development and Ministry of Rehabilitation, Reconstruction and National Integration in 2007 with the drafting of National Policy on Spatial Data sharing.

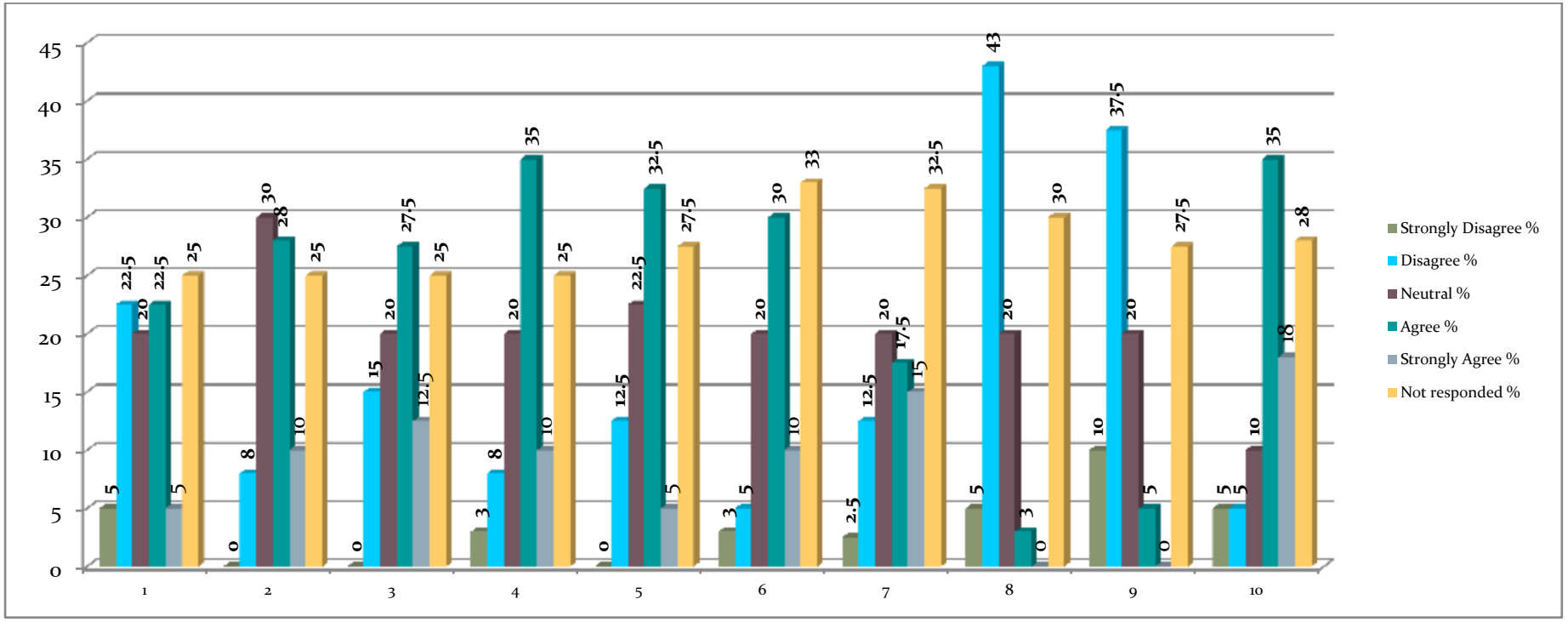
4. Although there were attempts to have extensive participation and streamlined process for a NSDI, a major constraints include poor knowledge, inadequate human resources and training, limited financial provisions, and inability to fill the vacuums created by transfers and retirements of the concerned officials. Furthermore, it was identified that the inconsistent changes in government policies may hinder progress made on any such matters connected for integrated efforts.

5. There was extremely poor participation at the awareness, and mini workshops to explain the NSDI organized by the ICTA in collaboration with the Consultancy Firm

6. It would be more effective and efficient for the NSDI Program to consider the issues that have come up from previous work and continue the progress made. In this context the initiatives made by the Ministry of Lands with facilitation by the Government of Korea, Disaster Management Centre with funding arrangements made by the World Bank and the United Nations Development Programme are key attempts made.

7. There is significant room for improvement in the decision making processes in the institutions engaged in spatial data usage and production when it comes to implementing spatial data sharing among the organizations, or providing meta data related to certain specific sector interest or establishing National Spatial Data Clearinghouse or combination of all.

Figure 7. 1 Employee Attitudes and Skills on Spatial Data Handling and Manipulation in the participating organizations (Expressed as a percentage)



	LEGEND
1	More than 50% of Senior and Junior staff of the organization are conversant in developing core business functions using Geographic Information System
2	Awareness of latest technologies and e-government Principles
3	Staff are affectively involved in collaboration with each other in the development of skills for application development using ICT and advanced technologies
4	Frequent data sharing requests received from various Government organizations which are developed or maintained by respective divisions are positively addressed
5	A majority of staff are dedicated to work on external requests for data sharing
6	Staff perception of the importance of data
7	Promotion of careers in the field of GIS/RS and encouragement of wider knowledge on multi-disciplinary subjects
8	Negatively response of staff to urgent requests for digital data produced by respective divisions
9	Negative perception on spatial data handing by a majority of staff
10	Staff willing to effectively collaborate with the new initiatives

8. There is a lack of strong assessment and knowledge over the availability of spatial data produced by the key organizations. More efficient collaborative efforts and transparency in decision making would result in a better understanding of critical issues like user requirements, specifications of Map Portal, System Development, understanding key stakeholders in performing spatial data development etc. This will enable more rational and effective solutions to the issues at hand.

Key areas of policy	Not responded		Policies, Standards & Guidelines operative		Policies, Standards & Guidelines not operative		Policies, Standards & Guidelines under preparation	
	No.	%	No.	%	No.	%	No.	%
Allowing data from multi sector sources to add other geo-spatial data	13	33%	6	15%	17	43%	4	10%
Restriction of sharing-Physical	15	38%	10	25%	12	30%	3	8%
Restriction of sharing-Legal	16	40%	13	33%	7	18%	4	10%
Policies of Data Ownership	17	43%	9	23%	11	28%	3	8%
Licensing & Copyright policies	16	40%	9	23%	13	33%	2	5%
Right Data Modification	15	38%	9	23%	15	38%	1	3%
Right for Reproduction of Data by User	17	43%	11	28%	11	28%	1	3%
Compliance to Government Systems Interoperability Guidelines	19	48%	4	10%	16	40%	1	3%
Protecting Proprietary License Information	20	50%	4	10%	14	35%	2	5%
Policies on use of open data	17	43%	6	15%	14	35%	3	8%
Data classification Standards	16	40%	9	23%	13	33%	2	5%
Institutional Pricing Policy	17	43%	8	20%	13	33%	2	5%
Cryptography and Communication Security	19	48%	3	8%	16	40%	2	5%
Access Control	18	45%	8	20%	12	30%	2	5%
Information Security policies	21	53%	4	10%	14	35%	1	3%
Meta Data Development Policy	17	43%	0	0%	21	53%	2	5%
Is it possible to use the available or proposed policy	20	50%	7	18%	12	30%	1	3%
IPR, Data Disclaimer	20	50%	4	10%	15	38%	1	3%
Rights for Redistribution	17	43%	9	23%	13	33%	1	3%
Spatial Data Management	17	43%	7	18%	14	35%	2	5%
Physical and Environmental Security	17	43%	9	23%	13	33%	1	3%
Operations Security	18	45%	8	20%	13	33%	1	3%
System Acquisition development and maintenance	19	48%	6	15%	14	35%	1	3%
Information Security Incident Management	19	48%	6	15%	13	33%	2	5%
Meta Data Handing Policy	19	48%	2	5%	17	43%	2	5%
Data Dictionary	17	43%	7	18%	14	35%	2	5%
Overall		46%		18%		36%		5%

9. The initiatives in implementation of NSDI process in Sri Lanka have seen a gradual improvement over the time. A focus on spatial data requirements that are of practical application and use on a national level would increase coordination, awareness and interest on sharing data.

10. The study of international best practices has demonstrated that many of these countries confronted similar situation at it primary stages. However, the careful selection of currently available spatial data for updating and filling of gaps for the long term implementation of the program provided good results of this initiative. The strong leadership provided proper coordination required to call over the officials and presented at the forums that would discussed the current status and level of accuracies of which prioritization of the fundamental data layers were made to share with the portal.

11. The most important text data available at local authority level is the Assessment Registry and Trade License Registry which records the most valuable data set on all the assessed properties and land plots as well as all the business premises registered with the particular local authority. If the total number of local authorities is considered as 335, the amount of data topics by these 2 data sets results in a total of 670. In addition, the record keeping on approval of building applications as well as land subdivision plans also have two separate registries providing further valuable information to develop an assessor's parcel level block maps at the local authority level against the development taken place in particular local authority doubling the available text data at local authority level.

12. According to core business functions of 403 functional divisions, the most required high-end thematic data requested are in the areas of political / administrative boundaries, land use and land cover, surface hydro, climate, remote sensing data, statistical areas and elevation. The second highest demanded categories of data are biodiversity, road network, special management areas, soils, structures, planning areas, service areas, places, sub surface hydro, geology and cadastral data.

13. The current practice in meeting the data needs of many organizations always looked into the national mapping agency for their information requirements, as many of them are interested in the use of the available digital spatial data and maps of their area of interest. In the absence of that, the organizations generally request for the required data at a cost which enables the production of the requested data as a separate special project activity within specific time period. When all the parameters do not adequately match each other, the users may seek alternative avenues to obtain their spatial data needs such as outsourcing, and use freely available Google images depending on the requirement. The other alternatives available include obtaining the most recent images using UAVs or Drone for quick and updated results.

14. Therefore the availability of fundamental data sets is most important for the users who are working on thematic areas in order to produce compatible layers which could be shareable and compatible with other producer's data. As a result, many organizations produce their

own thematic data layers but fundamental data layers are produced only by the most dynamic organizations in meeting their business needs as against their mandatory tasks by overriding the authority.

15. The analysis shows that the main focus of this NSDI initiative has to be done on the component of regular updates while ensuring the development of accurate and standardized fundamental data layers and most important key thematic layers at the national level.

8.3 Recommendations

The ICTA NSDI Baseline Study has identified many issues and challenges related to the data inventory, data requirements and availability of well-defined policies, standards and guidelines for the development, storing, sharing and application software development at all the levels including national, regional, urban and local levels. The following recommendations have been made in addressing these concerns of the organizations that participated in this study and for the overall framework of the NSDI in Sri Lanka.

1. The NSDI Baseline Study was able to identify the organizations presently involved in using and producing spatial data irrespective of their direct understanding or participation with the overall framework of NSDI initiatives. Therefore it is recommended to focus more attention on the organizations that are engaged in reducing fundamental vector data as these data becomes the most important data sets for all the other organizations to develop their thematic vector data related to the specific subject areas.

2. At present the country is facing critical position in correctly identify the political administrative boundaries at Grama Niladhari Levels. Therefore it is recommended to provide high priority to develop the boundary network using very high resolution satellite images and GPS technology enabling the capture of location details at the next stage to implement the SMART Homeland concept.

3. Most stakeholders pointed out that the land use /land cover data at the national level and regional level is more important in the context of making rational economic decisions. The existing available data is a reproduction of 1:50,000 topographic sheets and the available 1;10,000 scale data is also similar to the topographic features represented. Therefore using scientifically defined land use classification system can result in the district level land use/land cover maps to be produced at two different scales within reasonable time frames that are tolerable to the major land use changes that occur within the period. It is also recommended to incorporate the specifically defined boundaries by the Gazette notifications covering forest, wild life conservation, archaeological areas, coastal zone management areas, environmental sensitive areas defined by the Central Environmental Authority, reservation boundaries of all water bodies, rivers and streams, canals, watershed catchment areas, etc with respective GPS coordinates enabling the regular monitoring of changes as a result of human encroachments and other illegal activities.

4. There is currently a lack of a properly defined hierarchically structured road network of Sri Lanka, which is a highly important task as the relevant information is available on National Highways and Expressways defined by the Road Development Authority at the scale of 1:50,000. However, this is not available for the respective provincial road networks maintained

by the respective Provincial Road Development Authorities/ Provincial Road Development Departments under relevant Provincial Councils even at this scale. It is required to redefine these road networks at the scale of 1:10,000 for easy reference and the use for various other purposes. The already developed basic information is also not released by some PRDAs without having any valid reasons as these are very common data sets at the general scale.

5. There were some instances where the officers were reluctant to inform that the organization is not ready to participate and provide spatial data while conducting the baseline study. Those officers who have received the questionnaire might not have authority to supply the data, share the questionnaire among relevant divisions and send back the completed questionnaire on time. Therefore, a clear cut understanding in the future involvement with high level participation is required along with strong leadership enabling each participant to attend such interactions with an increased awareness of the overall framework of the NSDI and the participation of each organization in the framework in a mutually benefitting manner.

6. The Baseline Study shows that most important analyses were not as comprehensive, as data fitness was not possible to evaluate by considering at least four main areas of data fitness namely- currency, accuracy, completeness, and coverage. Spatial data produced by these organizations vary, especially when the data is developed using nonstandard fundamental data sets, satellite images, or geo-referencing using different kinds of GPS equipment, vector bases, identified coordinates etc. This analysis becomes further complicated when the relevant information is not provided. The parameters used for defining the accuracies were not available in order for selected layers of any organization to be scrutinized to assess the level of fitness for use as either fundamental and thematic data sets selected for preliminary sharing purposes through the portal. It is recommended to introduce such typed of screening and evaluation processes on all available data layers and make a decision on either updation or improvements.

7. Numerous organizations mentioned that these organizations used satellite images for extracting data or that these were used for different project works but many of them have not clearly indicated the type and coverage of satellite images used. At present the availability, accuracy and resolution, temporal resolution of satellite images are enhanced and it is improving and introducing many new sensor systems. At present there is no coordination of acquiring satellite images from resellers of the principles. Therefore, it is recommended to coordinate this with the NSDI Office and requested parties and providers of data.

8. The analysis shows that many of the GIS Centers are presently facing many issues of its existence due to various reasons including administration, managerial, human resources, lack of leadership, lack of financial commitments, lack of programmes, lack of interest of Senior Management in developing spatial databases, lack of understanding of the usefulness and incorporating business process reengineering to enhance their formal tasks to digital applications. Another reason is that the digital data and its power is not visible to human eye therefore, decision makers are not in a position to comprehend the magnitude of its values. If the proposed NSDI programme is required to be implemented in a sustainable manner, it is recommended to stress the importance of these centres in the long term.

9. It is recommended that ICTA directly interact with the key organizations to draw up a customized spatial data development road map for each organization and the time schedules and investment programmes to strengthen these activities.

10. The past experience shows that the functions related to spatial data in each organization progresses rapidly when the key figures of the organizations have the same view and enthusiasm to introduce the system in every aspects of the organization. The key figures of the organizations include the Chairman, Director General, and the Division or centre officer-in-Charge. ICTA should build a strong interpersonal relationship with these organizations to and maintain the vision of achieving the objectives while encouraging positive initiatives and increase knowledge, interest and awareness of the overall NSDI initiative and ensure its success due to its high national importance.

GREENTECH
CONSULTANTS