MALDIVES

Regional Expert Workshop On Land Accounting For SDG Monitoring & Reporting (25-27\textsuperscript{th} Sept 2017)

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ABOUT MALDIVES

- Approximately 860 km long and 120 km wide
- Consists of 26 geographic atolls; 20 administrative divisions across 298 sqkm
- 1192 coral islands covering an area of approximately 300 sqkm.
- 199 Inhabited Islands
- Lowest country in the world.
- Average 1.5 m above sea level.
- Tropical monsoon climate.
- Presidential Republic
ABOUT MALDIVES

• Approximately 100 islands developed as tourist resorts

• Main economic Activities: Tourism, Fisheries

• Population: 402,071
• Capital City: Male’ (153,00)
• Density In Male’: approx. 26,379.31

• 4 International Airports
• 8 Domestic Airports

• Mean Annual Temperature 28C
• Humidity 75%
• Average Rainfall 1900mm
1. Environmental Concerns

- **Erosion**
  more frequent due to Harbor and reclamation projects in the country.

- **Tidal Waves**
  Development activities too close to shoreline is affected more by tidal waves.

- **Loss of Mangroves for Development**
  Developments too close to protected mangroves and sometimes filled up for newer developments; Ex: Kulhudhuffushi Airport Project.

- **Scarcity of Vacant Land**
  Overcrowding in Male’ City. Several other islands experiencing population densities equal to and in few cases higher than that of Male’.

Political Influence is a major influence on the Development control of the country; thus having a great impact on the environment and ecosystems.
1. Environmental Concerns (cont’d)

- **Salination of Water**
  Population density being too high and the continuous use of ground water becomes salty after some time in most islands.

- **Contamination of Ground Water**
  Use of Pesticides and other chemicals in Agricultural use contaminates ground water.

- **Land Reclamation**
  Reclaimed to newer heights causes the inner island prone to flooding without proper drainage systems.
  Large Scale Reclamation projects have caused major effects on the oceans; muddy water, destruction of reefs, and fishing.
2. Approach

Institutional Arrangement and Role of land & Survey Authority

• The Ministry of Housing and Infrastructure has the mandate to control, manage, plan and regulate the use of land resources in the country and is the principle urban planning authority for the country.

• The three areas of Land Management, Surveying and Spatial Planning was combined together to form Maldives Land and Survey Authority (MLSA) in 2011; under the Ministry of Housing and Infrastructure.
Maldives Land and Survey Authority - Organization Structure

Maldives Land and Survey Authority (MLSA)

- Land Valuation Committee
- NGIS Steering Committee

Corporate
- Administration
- Procurement and Finance

Survey Section
- Regulations and Standards
- Cadastral Surveying
- Engineering / Hydrographic Surveying

Spatial Section
- Geographic Data and Mapping
- NGIS

Land Section
- Land Information and Management
- Valuation and Registration
National Bureau of Statistics

- Institutional Arrangement and Role of NSO

- The National Statistical System of the Maldives has evolved in a decentralized manner

- Within the decentralized system, the relevant agencies will be responsible for the collection and compilation related statistics

- The National Bureau of Statistics (NBS) is responsible for the core statistical activities
NBS (cont’d)

. Coordinate NSS, conduct population census, National Accounts, price statistics, poverty statistics, major HH survey (HIES & ES)

• Develop the different sectorial statistics in coordination with the sectorial agencies

• Environment statistics is being in the identified as one of the weak area and now the development process in progress

• Core set of environment indicators in line with the FDES and the key indicators for the SOE reporting have been identified

• Strengthening land statistics and coordination among the agencies will be the key role of NBS

• Land Account indicators will be very important for NBS on reporting SGDs.
2. Approach (cont’d)

Objectives

• The Authority (MLSA) is mandated with establishing a National Geographic Information System and Land Information System to manage all natural resources including land within the country.

• The Authority is also responsible for creating and maintaining a land registry of the country and to publish official charts and atlas of the Maldives.

• In Addition, the authority implements and regulates land policies formulated by the ministry and relevant land management clauses and regulations.
2. Approach (cont’d)

Objectives

- As a part of decentralization policy, land use planning has been reformed and the central government has become proactive in ensuring that local governments have greater control over land use planning. *(Decentralization Act).*
- During mid 2000, a procedure to manage some of the land information was initiated.
  - Identifying allocated lands on charts produced by former Ministry of Atolls Administration and Atoll Offices.
    (This was a difficult task as accurate maps were not available and there was no system to manage the changes of the use of land)
- Physical Surveying to produce island maps commenced in late 1980s.
  - Initially involved producing existing boundary charts, setting out new developed land and producing land use plans for selected islands.
- Management of Spatial Data (including maps and other geospatial information) was started in early 2000.
  - Involved producing spatially referenced maps and imagery
  - Incorporating socio-economic data in geo-databases.
2. Approach (cont’d)

Data Sources

• Maps have been digitized mainly from Satellite Imagery from 2004, 2007 and Google maps.
• Land Data are mainly collected from Island Councils. There are about 199 island councils. Data from Councils include Plot Registration Data and Land Titles.
• However, these are not surveyed data and are not mapped to an established standard.
• There have been block level survey maps produced for some islands (from projects) but cadastral level surveys are not done in these projects.
• National Bureau of Statistics provide socio-economic statistics.
2. Approach (cont’d)

Methods Used

• Started the implementation of a National Spatial Data Infrastructure (NSDI) in the Maldives in the early 2000.
• NGIS system (Hardware + Software) established within few Government Offices.
• No agencies except MLSA have collected spatial data in the past. Most data collected by agencies are in attribute form.
• Objective: All government agencies to share information through the system. However, there is lack of spatial data, technical expertise, equipment and resources.
• Data from NGIS (by stakeholders) can be used in the decision making process in the planning and development of the country.
• National Base maps have been published in 2008 and updated in 2015.
2. Approach (cont’d)

Methods Used

LIS Project

• Collection of Registry Data of all islands - ongoing.
• Title information for Capital Island Male’ have been incorporated in the Land Information System.

• Onemap.mv
2. Approach (cont’d)
2. Approach (cont’d)

Methods Used

• Data collection of Registry information have been collected directly from Island Councils by the Ministry.

• Data collected from Councils are not georeferenced data, or validated.

• Surveys are done by ministry to solve boundary disputes.

• Data provided by Ministry of Housing for the Statistical Yearbook is limited

• Although the National GIS is being implemented, use of remote sensing and GIS to control, plan and monitor land use change is not being used, given that the National GIS hasn’t been fully implemented and the lack of trained staff in the use of remote sensing tools or GIS.
2. Approach (cont’d)
4. Challenges

Challenges needed to overcome to produce results

• Need to establish a Geodetic Reference System in Maldives for proper accurate surveying in the Maldives.
• Difficulty in collection of Data due to the geographic nature of country (Time, Cost, Travel)
• Strengthen the Land Laws and Regulations to support accurate land accounting. (ex: standardization of Land Registration Data)
• Lack of Technical Expertise in the field. (Very few professionals in the Land Management, Planning, Surveying field)
• The current NGIS system is limited to a few agencies that can connect to the system. Need to establish a National Spatial Data Infrastructure within all Government Agencies.
4. Challenges

Challenges needed to overcome to produce results

• Equipment, Software, Trainings required for staff.
• Budget constraints.
• Lack of data
• Weak inter sectorial coordination

• Land surveying and mapping is crucial in managing accurate information on land and other resources. Management requires accurate and up to date data for which detailed mapping of the country is crucial.

• In addition to producing maps, the spatial data generated from surveying and mapping should be properly managed so that it can be readily available for all stakeholders. The NGIS needs to be developed with various interactive web applications such as the Land Information System (LIS) so that data can be produced from NGIS based on the user’s input.
thank you

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