



UN-GGIM
UNITED NATIONS
COMMITTEE OF EXPERTS ON
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT



SUSTAINABLE
DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD

LANDS & GEOSPATIAL INFORMATION SERVICES IN TONGA

MINISTRY OF LANDS & NATURAL RESOURCES

UN-GGIM-AP WORKSHOP, 10-12, MARCH, 2018



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OUTLINE

1. UN GLOBAL GEOSPATIAL INFORMATION STRATEGIC FRAMEWORK
2. REGIONAL GEOSPATIAL INFORMATION STRATEGIC FRAMEWORK
3. TONGA STRATEGIC DEVELOPMENT FRAMEWORK
4. MINISTRY OF LANDS & NATURAL RESOURCES OUTCOME
5. LANDS & GEOGRAPHICAL INFORMATION DIVISION'S OUTPUTS
6. GIS COLLECTION APPROACH
7. GIS PRODUCTION APPROACH
8. GIS DISSEMINATION
9. IDENTIFIED ISSUES
10. RECOMMENDATIONS



SFDRR:2015-2030, Expected outcomes

- ▶ Enhance the capability of NGIAs in contributing to disaster risk reduction through **utilizing geospatial information**, with a view to an effective implementation of SFDRR in Asia-Pacific region.
- ▶ By 2030 NGIAs in Asia-Pacific region will implement necessary disaster risk reduction measures, by fully mobilizing their technical and administrative competency.
- ▶ These measures will greatly contribute to reducing casualties and property loss by disasters in the region.

SFDRR: Sendai Framework for Disaster Risk Reduction 2015-2030



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WORK PLAN OF UN-GGIM-AP (2015-2018)

WORK ITEM	ACTIVITIES	PERIOD	OUTPUT
1	Identify NGIAs' contribution areas for effective implementation of the SFDRR	2015-2018	Contribution lists
2	Investigate present and future roles of NGIAs through a questionnaire survey.	2015-2017	Survey Report
3	Collect Best Practices (BP)	2015-2017	BP Collection
4	Compile a guideline to help NGIAs promote geospatial activities for DRR.	2015-2018	Guideline
5	Coordination and cooperation with the UN-GGIM Working Group on disasters.	2015-2018	(enhanced coordination)
6	Encourage Member States to share earth observations infrastructure, technology and data resources.	2015-2018	Further sharing



VISION: GEOSPATIAL INFORMATION PACIFIC REGION

- Sustainable development in the Pacific Islands region enabled by world-class geospatial information and surveying services.



Source: PGSC Strategy 2017-2027



PACIFIC REGION STRATEGIES

1. Enable regional leadership, guidance and support for members to engage stakeholders and the community on geospatial and surveying activities.
2. Adopt a modern Geodetic Reference Frame (GRF) and improved technology that underpins geospatial systems and applications.
3. Geospatial and surveying activities at the national and regional level are supported by a diverse and sustainable resource base.
4. The geospatial and surveying community is self-reliant with a culture supportive of learning, innovation and gender equity.

These goals will be achieved by indicative activities implemented at the national, regional and international level.





TONGA STRATEGIC DEVELOPMENT FRAMEWORK OUTCOMES (TSDF 2015-2025)

PILLAR 4: INFRASTRUCTURE AND TECHNOLOGY INPUTS

- ▶ 4.1: More reliable, safe, affordable energy services
- ▶ 4.3: More reliable, safe and affordable transport services
- ▶ 4.4: More reliable, safe and affordable buildings and other structures, Organisational Outcome
- ▶ 4.5: Improved use of relevant research and development focusing on priority needs and better use of our resources and environment and be more resilient in face of future risks.

PILLAR 5: NATURAL RESOURCES AND ENVIRONMENT INPUTS

- ▶ 5.1 Improved land use planning, administration & management for private and public spaces
- ▶ 5.2 Improved use of natural resources for long term flow of benefits
- ▶ 5.3 Cleaner environment with approved waste recycling
- ▶ 5.4 Improved resilience to extreme natural events and impact of climate change



VISION: MINISTRY OF LANDS & NATURAL RESOURCES

- ▶ Promoting Sustainable use and access to the Kingdom's Lands & Natural Resources to generate social, economic and environmental benefits for the people of Tonga.



MINISTRY OF LANDS & NATURAL RESOURCES OUTCOMES, 2016-2019

- ▶ 1) Effective and efficient land management and administration system consistent with the legislation and policies and the facilitation of infrastructure developments and constructions
- ▶ 2) Efficient and effective system of survey, mapping and sub-divisional design of land in Tonga to facilitate social and economic development based on global, updated and accurate geodetic infrastructure
- ▶ 3) That a system is in place to ensure sustainable management of natural resources and optimum benefits and equitable distribution of wealth to all citizens and future generations
- ▶ 4) **Provide a reliable land and geospatial information system to promote and support disaster risk reduction and environment conservation and its applications to strengthen resilience to natural hazards and climate change effects, ensuring vastly safer, more protected citizens and livelihood**
- ▶ 5) Effective placement of the right people in the right place at the right time within a well-managed organization able to handle change effectively

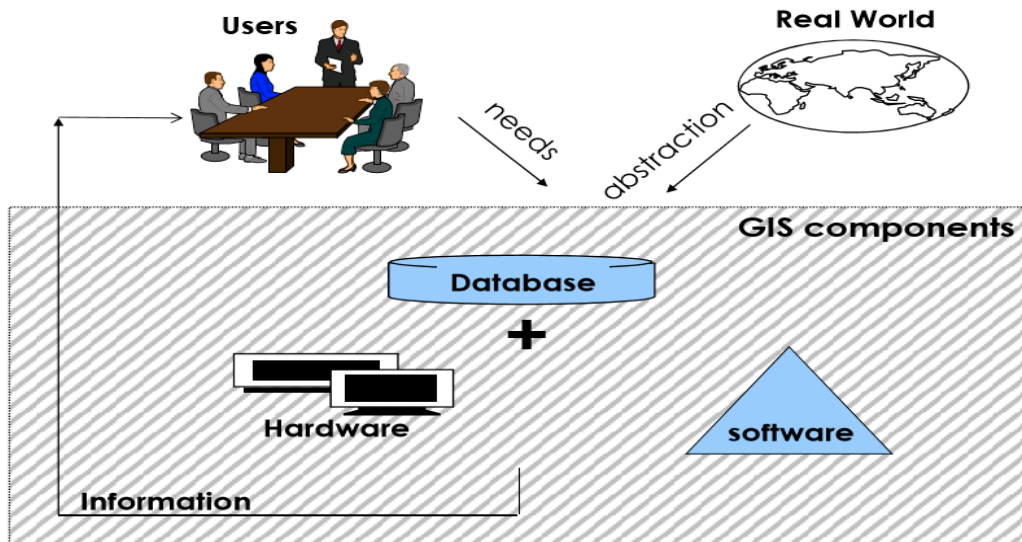
MLNR CP 2016-19



VISION: Lands & Geospatial Information Services Division

- ▶ **Developing Integrated Land Information system to provide Lands & Geospatial Information Services in very competent manner and to supporting informed decision making.**

CONCEPTUAL MODEL OF LIS Division



GEOGRAPHICAL INFORMATION SYSTEM COLLECTION

RASTER DATA SETS

- ▶ SATELLITE IMAGERY & DEM (QUICKBIRD-2005) - 0.6m spatial resolution
- ▶ LIDAR OTHOPHOTO & DEM 2011, Tongatapu & Haapai-0.3m Spatial resolution
- ▶ GEOEYE IMAGERY
- ▶ DIGITAL GLOBE IMAGERIES- covered entire Tonga
- ▶ UAV IMAGERY 2017- PART OF TONGATAPU
- ▶ SCANNED OLD CADASTRAL MAPS OF TONGA

VECTOR DATA SETS

- ▶ TONGA TOPOGRAPHIC GEODATABASE
- ▶ INFRASTRUCTURE GEODATABASE
- ▶ LAND RESOURCES
- ▶ TONGA HYDROGRAPHY
- ▶ TONGA PLACES
- ▶ TONGA POWER POLES INCL. SOLA POWER
- ▶ TONGA CADASTRE



GIS PRODUCTIONS

- ▶ TOPOGRAPHIC MAPS -1:50000 SCALE
- ▶ TONGA NAVIGATIONAL CHARTS
- ▶ THEMATIC MAPS
- ▶ CUSTOMIZED MAPS
- ▶ GEO-HAZARD MAPPING
- ▶ TONGA AVIATION EMERGENCY GRID MAP
- ▶ CADASTRAL MAPPING



LANDS & GEOGRAPHICAL INFORMATION DIVISION OUTPUTS

- ▶ GIS-BASED DECISION SUPPORT SYSTEM
- ▶ DISASTER RISK MANAGEMENT MAPPING
- ▶ CLIMATE CHANGE IMPACT MAPPING
- ▶ LAND INFORMATION SYSTEM
- ▶ CADASTRAL MAPPING
- ▶ TOPOGRAPHIC MAPS



DISSEMINATION APPROACH

- ▶ E-COPY
- ▶ HARD COPY
- ▶ TERMS OF USE & CONDITIONS AGREEMENT



GIS IDENTIFIED ISSUES

- ▶ NO GIS WEB SERVICES APPLICATION
- ▶ NO ACCESS TO SATELLITE IMAGERIES
- ▶ NO POLICY FRAMEWORK FOR DATA SHARING EXIST
- ▶ INSUFFICIENT GIS CAPACITY
- ▶ POOR SPATIAL RESOLUTION IMAGERY- 3 MULTISPECTRUMS
- ▶ LACK OF GIS DATA
- ▶ STANDARD COST FOR GIS MAPPING SERVICES
- ▶ AWARENESS PROGRAM AMONG LINE MINISTRIES



RECOMMENDATIONS

- ▶ GIS CAPACITY BUILDING
- ▶ DRAFTING DATA SHARING POLICY
- ▶ OPPORTUNITY TO ACCESS TO REAL TIME SATELLITE IMAGERIES
- ▶ DEVELOP GIS WEB SERVICE APPLICATION
- ▶ TRANSPORTATION FOR SPATIAL DATA COLLECTION
- ▶ FUNDING FOR GIS EQUIPMENT
- ▶ AWARENESS RAISING FUND FOR SPATIAL DATA SHARING
- ▶ FUNDING A HIGH RESOLUTION UAV/DRONE



THANKS FOR ATTENTIONS

By GIS TEAM, MLNR

