Geospatial Technologies for Resources Planning & Management

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Content

• Geoinformatics for SDG
• Information Integration for Flood Risk Mapping (Prototype for awareness)
• UNESCAP Geo Portal for information integration (Potentials in the region)
• Summary

Meeting Target:
✓ Bridge the knowledge gap of potential use of Geospatial technologies
✓ Areas Geospatial technologies can effectively be used
✓ Integration/sustain in the local system
Sustainable Development Goals

1. The Sustainable Development Goals (SDGs) are a proposed set of targets relating to future international development.
2. They are to replace the Millennium Development Goals once they expire at the end of 2015.
3. The SDGs were first formally discussed at the United Nations Conference on Sustainable Development held in Rio de Janeiro in June 2012 (Rio+20)
4. SDGs contained 17 goals with 169 targets

https://sustainabledevelopment.un.org/sdgsproposal
SDGs Goals...

1. End poverty
2. End hunger
3. Ensure healthy lives
4. Equitable quality education
5. Gender equality
6. Management of water
7. Ensure access to modern energy
8. Sustainable economic growth
9. Sustainable industrialization
10. Reduce inequality within and among countries
11. Make settlements
12. Sustainable consumption and production patterns
13. Combat climate change
14. Conserve marine resources
15. Manage forests, combat desertification
16. Promote peaceful and inclusive societies
17. Strengthen the means of implementation and revitalize the global partnership for sustainable development

Location Specific Characteristic

Geo-Referenced Information & Need Location Specific Decision Making
SDG; End Poverty?

Poverty Incidence?, Poverty Line?

Why? Social and Physical factors

Where are they?

Geo-Referenced Information can help to answer

What Interventions?

Monitoring/Evaluation?
Relationship with the Depth of the Poverty (FGT1) and the distance from the Capital City - Bali Province, Indonesia

\[ P_i = \frac{1}{n} \sum_{i=1}^{n} \left( \frac{Z - Y_i}{Z} \right) \]

* measures the magnitude of poverty, considering both number of poor people and how poor they are

Poverty Mapping conducted for ASEAN
## Google Hits - ScienceDirect

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<tr>
<th>Keywords used for search</th>
<th>No. of Research</th>
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“Disaster” interact SDGs Goals

Goal 2 End hunger: Agriculture practices to adopt for climate change, extreme weather, flooding & other disasters

Goal 11 Safe Cities: Reduce losses due to disasters including water related .. Protecting poor and vulnerable people

Goal 11 Safe Cities: Mitigation and adoption to climate change and resilient to disasters

Goal 13 Climate Change: Strengthen resilience to natural disasters
Flood Hazard/Vulnerability/Risk Mapping
Data Integration prototype

Source: Irrigation Dept, Survey Dept of Sri Lanka, GIC/AIT
Flood Risk Mapping - How it is done

Data Collection/ Data basing

Hazard Analysis
- Runoff Modeling
- Inundation Modeling
- Rainfall, Runoff, Topography

Vulnerability Analysis
- Vulnerability Map
- Social, Physical
- H/H Data Infrastructure Agriculture ...

Risk Identification
- Risk Map

End Users?
Identify Vulnerability

(What/Who are vulnerable)
Household Vulnerability Analysis

Integration of Census, statistics, socio-economic and geo-location data
Out come

Flood Hazard Map
Corresponding to 100 yr RP

Flood Hazard
- Hazard Free
- Low
- Moderate
- High

"Kalu Ganga" River

Flood Hazard Maps from HEC-RAS

©Lal Samarakoon
Results

Vulnerability Analysis

Flood Vulnerability Map
Corresponding to 100 yr RP Flood Hazard & wrt Population

Vulnerability
- Invulnerable
- Low
- Moderate
- High

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"Kalu Ganga" River

©Lal Samarakoon
Results

Risk Analysis

Buildings (Physical) Risk Analysis

Flood Risk Map
Corresponding to 100 yr RP Flood Hazard & wrt Buildings

Flood Risk
- Risk Free
- Low
- Moderate
- High

"Kalu Ganga" River

0 2 4 8 12 16 Kilometers
Rainfall Trend Analysis (Met Data)

Rainfall Variability Analysis (Met # TRMM)

Rainfall, Satellite, water deficiency

Suitable areas for Agricultural development

Drought Risk Reduction needs to be implemented

Basemap: Variability Analysis (TRMM)

Basemap: TRMM

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A household's vulnerability to drought is proportional to the livelihood exposure and the household's resilience.

Source: WFP Lao PDR, CFSVA Community Survey, 2006
Drought Risk

Risk = Hazard * Vulnerability

Using TRMM Data

Using WFP Report

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Geo Portal for Data Sharing

Geo-Portal = Shareable data and sharing infrastructure

GIS Data
Satellite Images
Statistical Data
Documents

Geo-Reference & Upload

Authorized Users

Internet

User Access permissions can be set separately for each dataset, map or document

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## Technical Assistance for Implementation of Geo-referenced Information Systems for Disaster Risk Management

**IDD/UNESCAP**

<table>
<thead>
<tr>
<th>Country</th>
<th>Agencies</th>
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<tbody>
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<td>Afghanistan</td>
<td>• Afghanistan National Disaster Management Authority (ANDMA) - 5</td>
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<tr>
<td></td>
<td>• Central Statistic Organization (CSO) - 1</td>
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<td></td>
<td>• Ministry of Telecommunication and Technology - 1</td>
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<td>Bangladesh</td>
<td>• Department of Disaster Management, Ministry of Disaster Management and Relief - 4</td>
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<td></td>
<td>• Comprehensive Disaster Management Programme (CDMP) - 1</td>
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<td>Nepal</td>
<td>• Ministry of Home Affairs - 8</td>
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<td></td>
<td>• Police Department - 1</td>
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<td>• Armed Police Force - 1</td>
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<td>• National Planning Commission - 1</td>
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**Workshop 1:**
Technical Assistance on Implementation of Geo-referenced Information Systems for Disaster Risk Management (Geo-DRM)

28 October – 1 November 2013
UNCC & Geoinformatics Center (AIT), Bangkok, Thailand

**Workshop 2:**
Second session of Technical Assistance Training on Geo-referenced Information Systems for Disaster Risk Management (Geo-DRM) – For Nepal

11 – 14 February 2014
Kathmandu, Nepal

**Workshop 3:**
Second session of Technical Assistance Training on Geo-referenced Information Systems for Disaster Risk Management (Geo-DRM) – For Afghanistan & Bangladesh

24 – 28 March 2014
Geoinformatics Center (AIT), Bangkok, Thailand
Geo-Portal Implemented at MoHA, Nepal

Welcome to Nepal Government Geo-Portal

Nepal, officially known as the Democratic Republic of Nepal, is a landlocked sovereign country located in South Asia. It has an area of 147,181 square kilometres and a population of approximately 27 crores (27 million). It is located in the Himalayas and bordered to the north by the People's Republic of China, and to the south, east, and west by the Republic of India. Kathmandu is the capital of the country and the most populous city of the country.

Latest Layers

Total: 15

- Disaster Complete Data
  - Layer from moha, 9 months, 1 week ago
  - No abstract provided
  - 224 views
  - Average rating (0 votes)

- ls_eq
  - Layer from moha, 9 months, 1 week ago
  - No abstract provided
  - 103 views
  - Average rating (0 votes)
Geo-Portal of GIC/AIT

GIC GeoNode

Geoinformatics Center uses this GeoNode based Geo-Portal system to manage and share geospatial data with different stakeholders. To know more about Geoinformatics Center of Asian Institute of Technology, visit our website.

LATEST LAYERS

- Kaluthara Flood Risk Areas
  Layer from ramesh, 37 minutes ago
  No abstract provided
  3 views
  Average rating (0 votes)
  Download
  Create a map

- Kaluthara Flood Map
  Layer from ramesh, 34 minutes ago
  No abstract provided
  6 views
  Average rating (0 votes)
  Download
  Create a map

- Kaluthara Population Data
  Layer from ramesh, 35 minutes ago

LATEST MAPS

- Kaluthara District-Flood Map with Population Data
  Map from ramesh, 15 hours, 22 minutes ago
  This map shows population distribution in the Kaluthara District.
Population Vulnerability Layer
Flood Hazard Layer over a Flood Plane
Flood Hazard Layer + Vulnerability Map overlay
Flood Hazard Layer + Road Map overlay

GIC Geo Portal
In Summary

• Geospatial technologies provide efficient tools for information management and monitoring tasks of SDGs and Targets;
• Application of Geospatial technologies in “disaster” could be the “quick win” as it includes in number of SDGs and Targets;
• Integration of socio-economic and physical data through Geospatial technologies provides an effective platform for identify Vulnerability and Risk;
• While fostering the cooperation of NSO and Geospatial Agencies, effort should be given to reaching the end users, addressing end users needs;
• UN agencies need to continue to influence the inter-linkage among stakeholders, including decision makers.