EARTH OBSERVATION FOR SUSTAINABLE DEVELOPMENT

Disaster Risk Reduction

EO4SD DRR Wrap-up

“Earth Observation actionable information for disaster-impacted areas: Mozambique”
26th April 2022
1. Infrastructure monitoring with satellites: World Bank activity in Asia
2. **Earth Observation actionable information for disaster-impacted areas: Mozambique**
3. Terrain deformation from space for subsidence monitoring in cities: City Resilience Program
Earth Observation actionable information for disaster-impacted areas
Two experiences of support on disaster-impacted areas

Cyclones Idai and Kenneth (Mozambique)
- March-May 2019
- 600+ direct casualties
- 223,000 houses destroyed
- 160,000 people displaced

Financial and technical support
- WB

Users
- UN-Habitat
- GREPOC (Reconstruction office)

EO solutions
- Damage assessment

Earthquake in Palu (Indonesia)
- September 2018
- 70,000 houses damaged
- 210,000 people displaced
- 100,000 houses destroyed

Financial and technical support
- ADB

Users
- Ministry of Public Works and Housing
- BAPPENAS (Agency for land planning)

EO solutions
- Damage assessment
- Terrain deformation assessment
- Reconstruction monitoring
**Issues and aim**

**Situation**

Months after Cyclone Idai and Kenneth:

Mozambique still dealing with consequences

Accelerating the resilient reconstruction of households and infrastructures -> taking decision on where to focus investments

**Actors**

- GREPOC (Reconstruction office) was in charge of reconstruction efforts
- INE (National Statistics Institute)
- UN-Habitat
- World Bank

**Aim of the collaboration**

- Production of evidence-based assessment of house damage
- To support decision-taking to organize housing reconstruction survey / help prioritize reconstruction efforts
Steps in the demo process

1. **Preparatory activities:** Image acquisition and preparation, design of database and method (e.g. typology of features to detect)

2. **Elaboration of the products:** Elaboration of the geospatial products of damage assessment with imagery intelligence. Including quality control, preliminary delivery and user's feedback and corrections/enhancements

3. **Verification/validation and users' final delivery acceptance**

4. **Delivery:** Delivery of products and integration in users systems

5. **Capacity building, training and support**
Results and outcomes

Damage assessment in pilot areas

Results:
• A geospatial database to be exploited with GIS tools
• A visualization dashboard
• Map series
• Summary reports
• Capacity building and technical support to users for exploitation of the database

Outcomes
(Seems small but...)
• 38,000 building assessed, of which:
  • 26,100 damaged
Results

Damage and reconstruction assessment (WB-MOZ-02)

https://indrasa.maps.arcgis.com/apps/opsdashboard/index.html#/fd46564365eb4e6fbdc7f9ca24c579e0

Legend T1-T2 building status:
- Not affected
- Rebuilt
- Removed

Image acquisition:
T2: 07 may 2020 / 17 mar 2020
Last update: a few seconds ago

Statistics T1-T2 building status:
- Removed 43.14%
- New building in T2 45.02%
- Rebuilt 8.39%
- Not affected 0.69%
- Not rebuilt 1.96%

Total buildings: 2,754
Last update: a few seconds ago

Download:
GeoProduct / Product Sheet
Utility/Benefits

- Assessing the situation at large scale with limited costs
- Allows monitoring of reconstruction efforts
- Allows better planning of Housing Reconstruction Survey

Limitations

- Methods already in place: Decision of reconstruction efforts require thorough analysis of socioeconomic profile of households
- Timeliness: Information shall be available at the beginning of the process

Follow-up

- After destruction of households due to terrorism in Cabo Delgado province: products allow evaluation of damage due to different causes
- Possibility of extending the analysis to a whole province (costed option offered)

Lessons learned

- Users need to be engaged from the beginning to optimal uptake
- Users need to be trained beforehand
- It is needed to have a plan for acquisition of images regularly and especially right after the events occurred and regularly if monitoring is needed