BENGKEL KONSULTATIF PELAN SAINS, TEKNOLOGI, INOVASI BAGI PENGURANGAN RISIKO BENCANA DRR (STI4DRR)

TAKLIMAT

STI FOR LANDSLIDE HAZARDS

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Jabatan Mineral Dan Geosains Malaysia

ISNIN | 24 JULAI 2017 | 8.30pagi -5.00 Petang

KELAB GOLF DANAU KOTA,UKM BANGI

LANDSLIDE OVERVIEW IN MALAYSIA

Highland Tower (1993)

Bukit Lanjan (2003)

Kapit (2008)

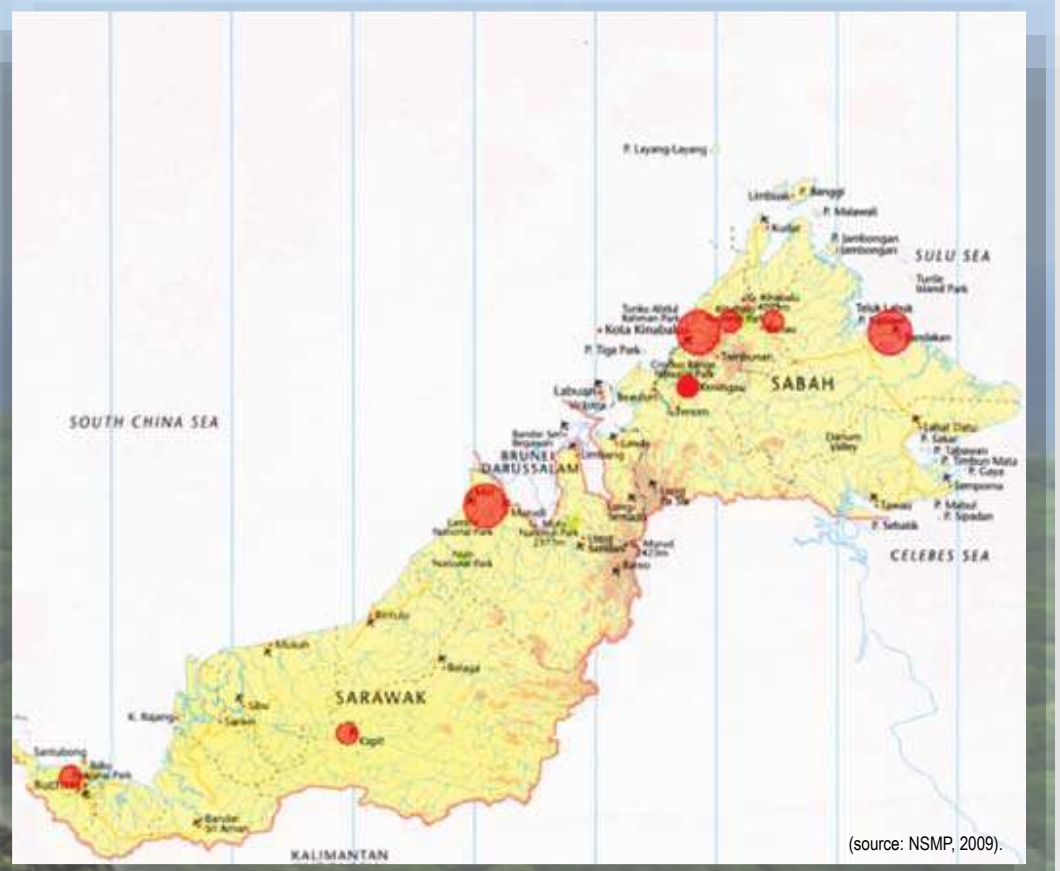
- ✓ **Extreme climate, rapid urbanization, excessive anthropogenic activity and environmental degradation increase our exposure to natural hazards**

"Expected to lose an additional RM 17 billion in the next 25 years if comprehensive mitigation plan is not seriously taken into account"

Since 1973:

- **More then 400 landslides reported**
- **More then 600 fatalities**
- **RM 3 billions economic loss**

LANDSLIDE PRONE AREAS



(source: NSMP, 2009).

Landslide prone areas in Malaysia

Detailed mapping on slope hazard and risk

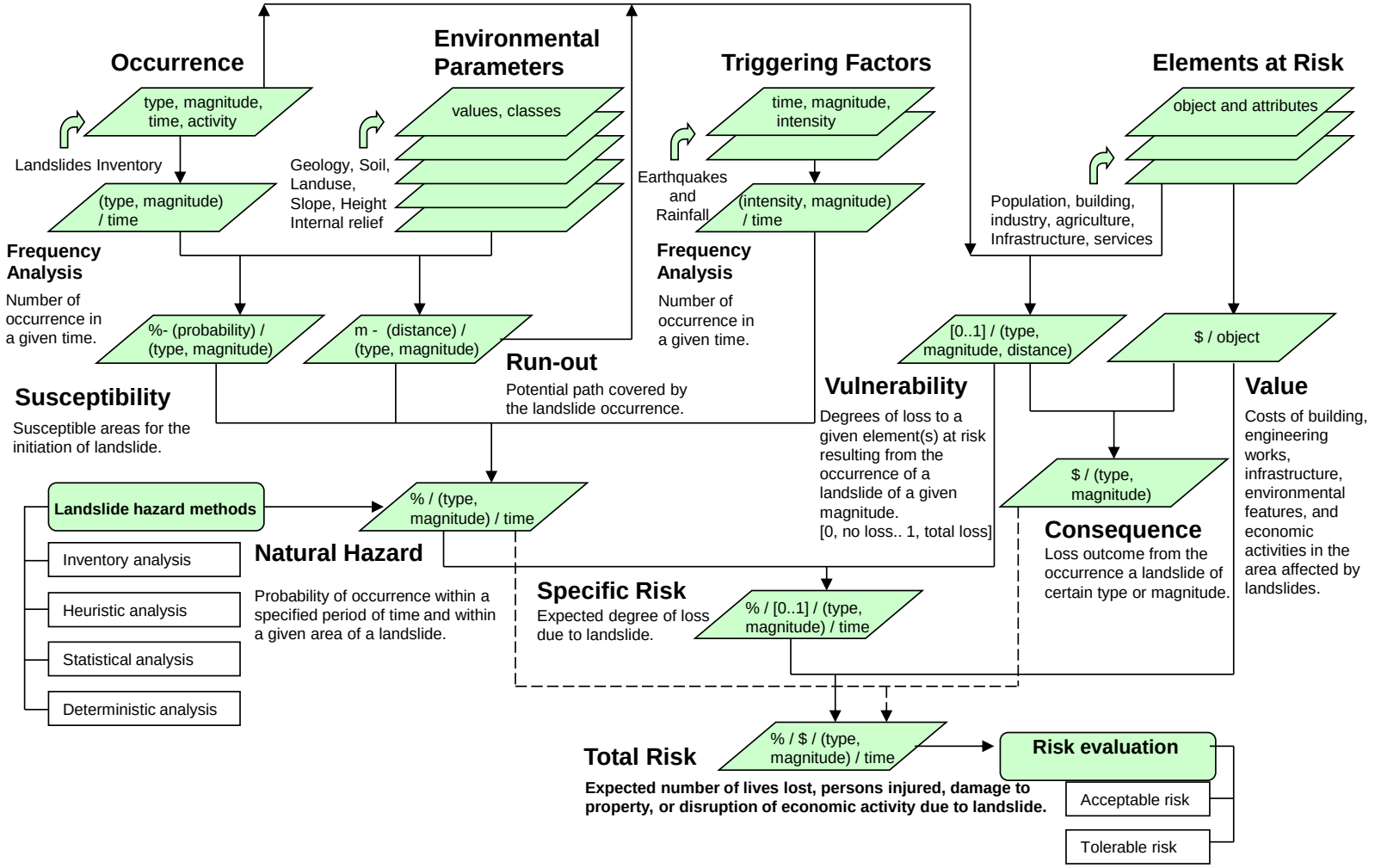
Foster Disaster Risk Reduction (DRR)

Crucial to address the issues and solutions in a comprehensive and effective data management to assist decision-making system.

Need a fast, accurate, efficient, cost effective, low-labor, reliable mapping and analyzing tool

Driven by the state of art-of-the-art SCIENCE, TECHNOLOGY & INNOVATION

Spatial Landslide Hazard and Risk Assessment Framework



Source: Prof Cees van Westen (UNU-DGM' ITC-UT Netherlands)

LANDSLIDE AND ADVANCED LiDAR TECHNOLOGY

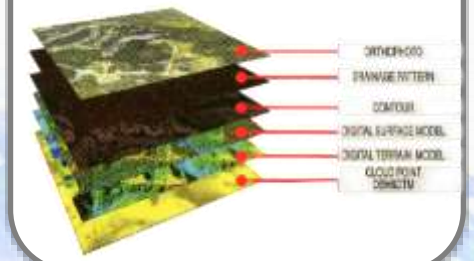
Implementation Framework for Landslide Hazard and Risk Mapping

3 GPS Survey

4 Mobile GNSS-GIS Field Mapping

5 LiDAR-GIS Data Processing

6 LiDAR-derivatives & parameterisation



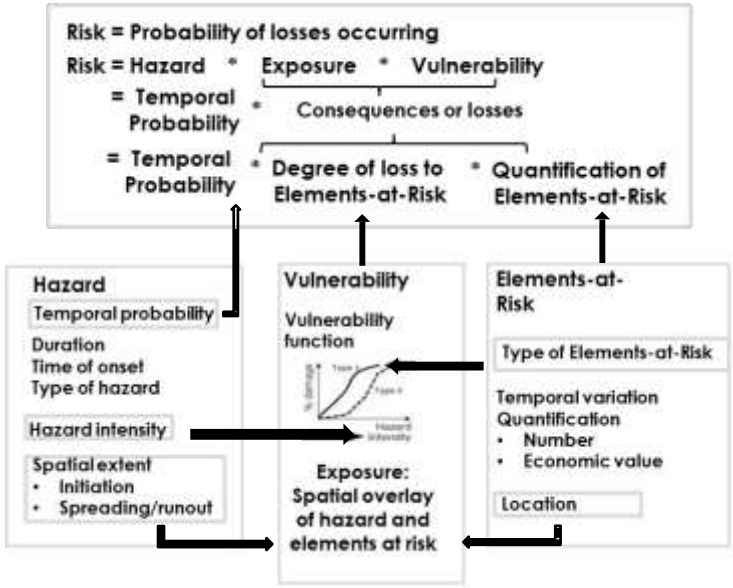
7 Landslide Inventory Mapping

2 Terrestrial LiDAR Data Capture

Characterization or monitoring Landslide or slopes

1 Airborne LiDAR Data Capture

Slope & Landslide Inventory Maps



8 Landslide Susceptibility Analysis

9 Landslide Hazard and Risk

10 Geotechnical Risk Assessment

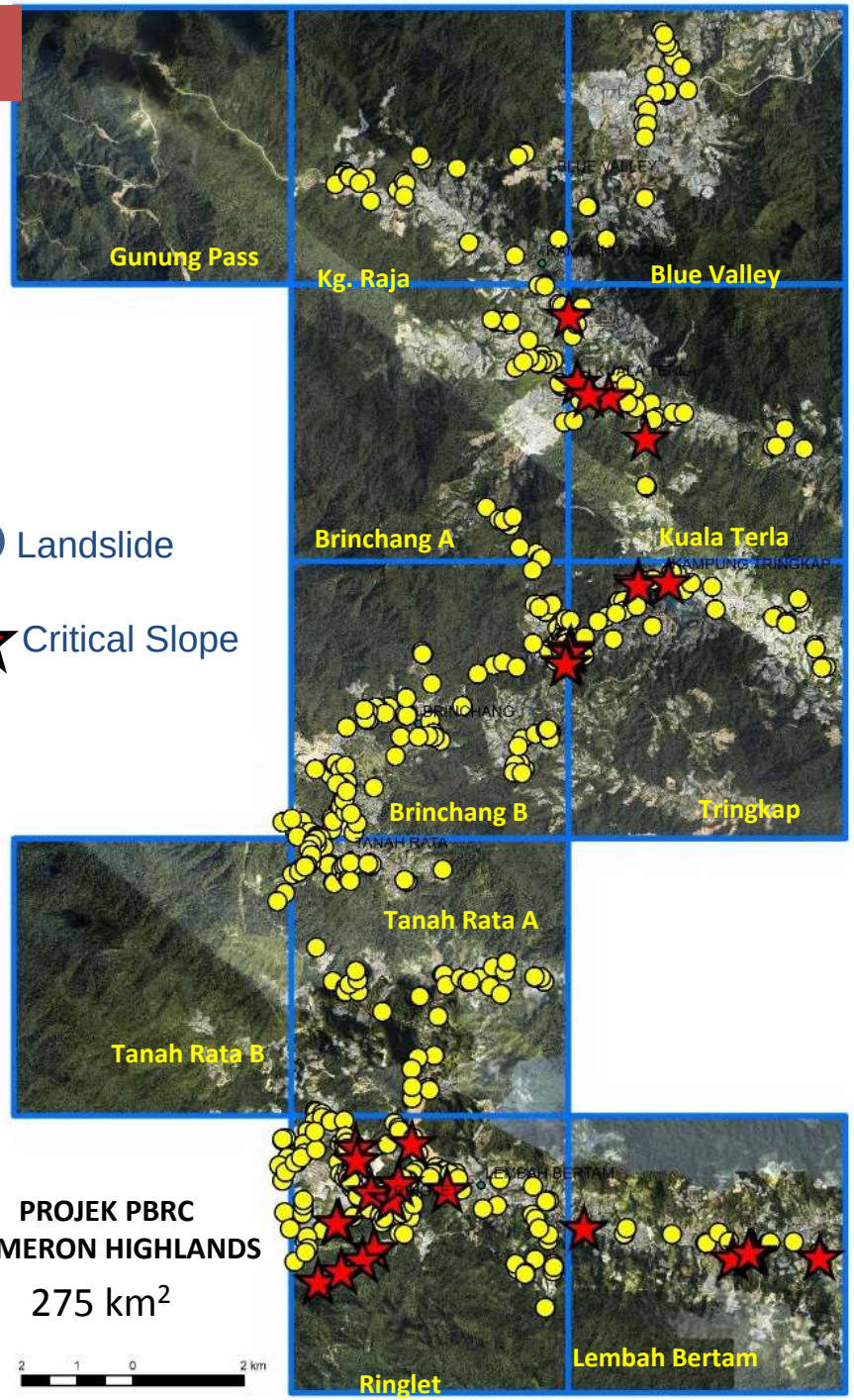
Implementation Team

Technical and professional expertise from several fields: Engineering geology, geotechnical engineering, land survey, remote sensing (LIDAR) and geospatial.

National Landslide and Slope Inventory (2014-2016)

TOTAL INVENTORY	
Total Area	1350 km²
Landslides	2188
Slopes	7410
Critical Slopes	262

BIL	AREA (KM²)	INVENTORY	TOTAL
1	Selangor (650 km²) (North and South)	Landslides	197
		Slopes	5003
		Critical Slopes	151
2	Pahang Cameron Highlands (275 km²)	Landslides	626
		Slopes	1214
		Critical Slopes	33
3	Perak Ipoh (200 km²)	Landslides	23
		Slopes	206
		Critical Slopes	13
4	Sabah Kota Kinabalu (155 km²)	Landslides	258
		Slopes	868
		Critical Slopes	35
	Kundasang (70 km²)	Landslides	1084
		Slopes	11
		Critical Slopes	30



STATE-OF-THE-ART HAZARD AND RISK MANAGEMENT TOOL

National Geospatial Terrain and Slope Information System (NaTSIS)

www.natsis.jmg.gov.my

This sophisticated and advanced system will be offering many datasets and outputs, which will be utilised by stakeholders from the federal government, state government agencies, local councils and the public.

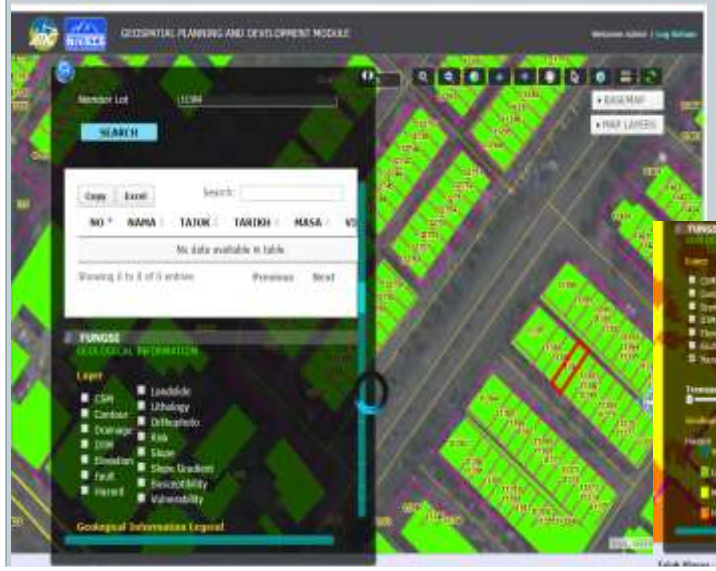
MAP VIEWER

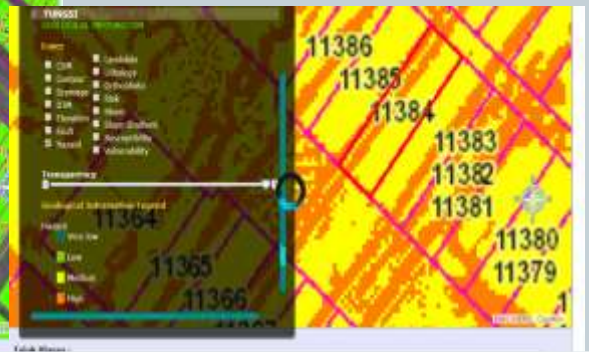
LANDSLIDE & SLOPE INVENTORY

GEOSPATIAL TERRAIN & SLOPE MANAGEMENT

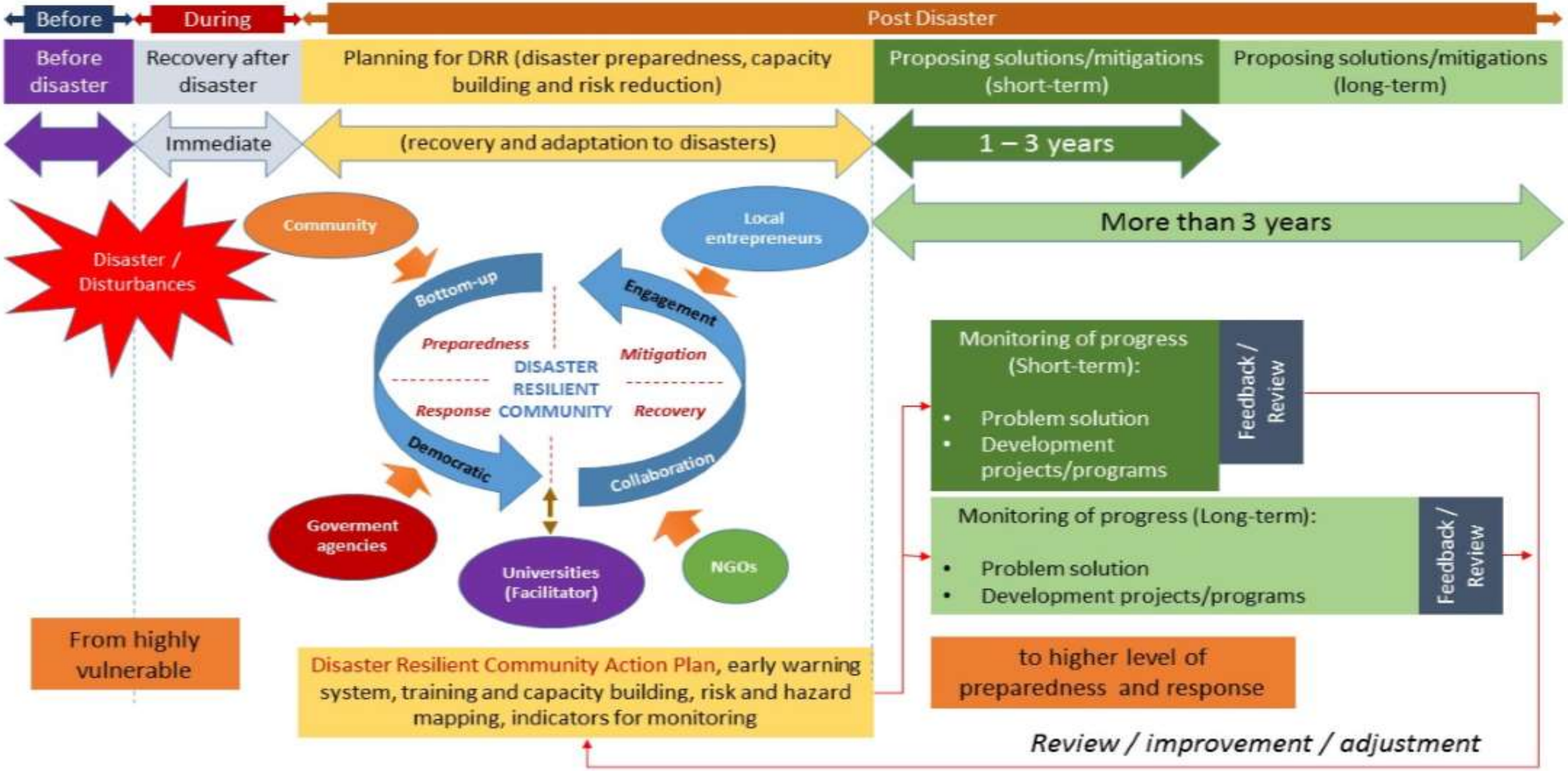
Modul 11 Geospatial planning &development

- http://www.natsis.jmg.gov.my/natsisMap/PlanningDevelopment.jsp





STI Towards A Resilient Community



Cabaran memperkasakan STI

- **Kesukaran menterjemahkan pengetahuan sains kepada dasar dan garispanduan pelaksanaan** (sumber Komoo,2017)
  - Maklumat terkumpul lengkap…respon polisi masih terbatas dan tidak selari dengan pengetahuan yang telah terkumpul.
  - Kurang kerjasama antara para saintis dengan pembuat dan pelaksana dasar
  - Kurangnya kemahiran untuk mengolah dapatan sains menjadi dokumen pengaruh dasar
- **Akses dan Penyelarasan Maklumat Inter Agensi**
- **Kekangan Bajet**

SYOR memperkasakan STI Bahaya Tanah Runtuh

- **Pemakaian Elemen STI Dalam Garispanduan/Polisi/Akta**
- **Penglibatan Pelbagai Disiplin Kepakaran** *(dedicated group)*
- **Multi Engagement** (termasuk Perkukuhkan jaringan dan galakkan dialog serta kerjasama di kalangan pakar-pakar bencana, teknikal dan saintifik, perancang pihak-pihak berkepentingan (stakeholders) dgn komuniti yang terlibat)
- **Penyelidikan dan Pembangunan** (Lebih banyak penyelidikan yang serius, bersepadu dan beritegrasi dengan menggunakan pendekatan pelbagai disiplin)
- **Amaran Awal** (cerun-cerun yang kritikal menyebabkan bencana, melakukan pemantauan dan penyebaran maklumat)
- **Mitigasi** (Memberi Penekanan kepada Kawalan Bukan Struktur Berbanding Kawalan Struktur)

TERIMA KASIH..

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