

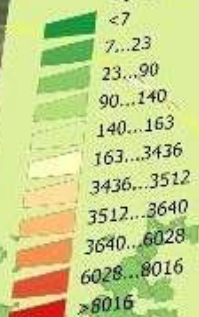


GTZ

Support of Remote Sensing for Natural Disaster Risk Maps in Leyte, Philippines

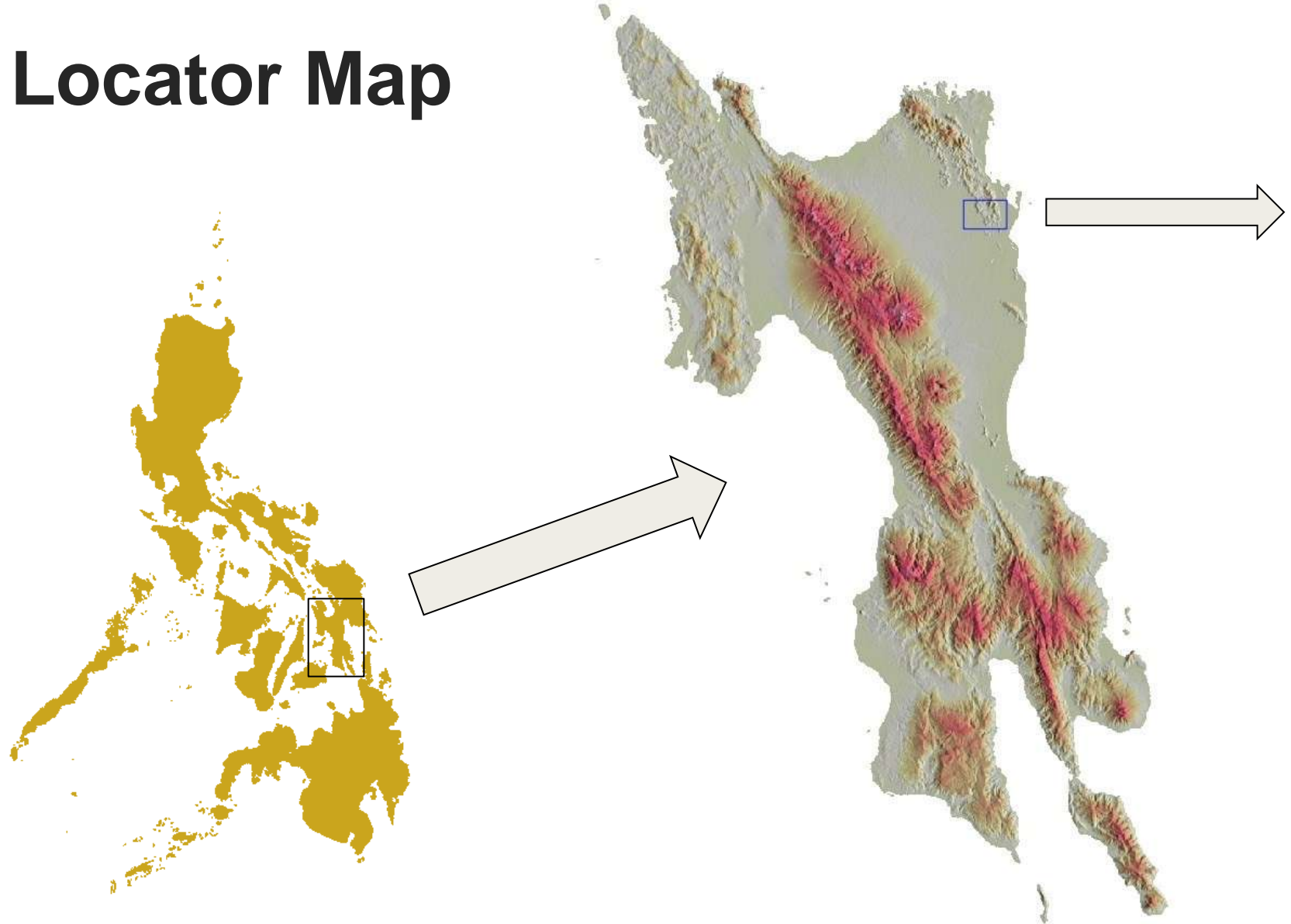
Olaf Neussner
13.10.2010

Ty Gs Ls FI Risk (P/ha/yr)





Locator Map





What is Risk?

Hazard

(Probability * Severity)

X

Vulnerability

(Susceptibility * Value)

Result in

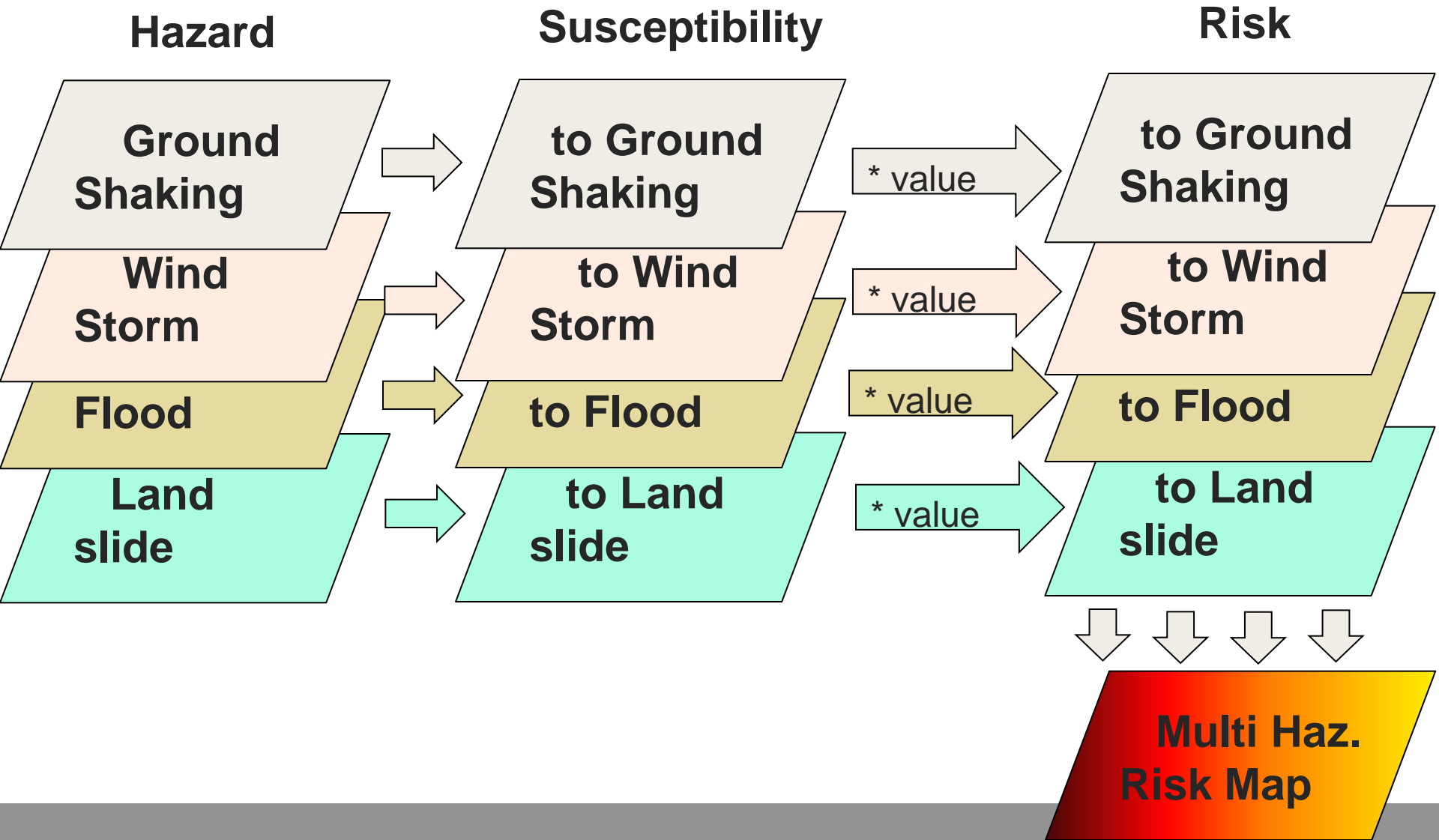
Risk

(Value/time/area)





What is Multi Hazard Risk?





How does RS come in?

Hazards

Ground shaking: Slope as proxy for soil amplification (from SRTM)

Flood: Flood modelling with RS-derived DEMs (corrected ASTER GDEM) and Land Cover maps (from SPOT, ASTER, Landsat) for roughness



Vulnerability

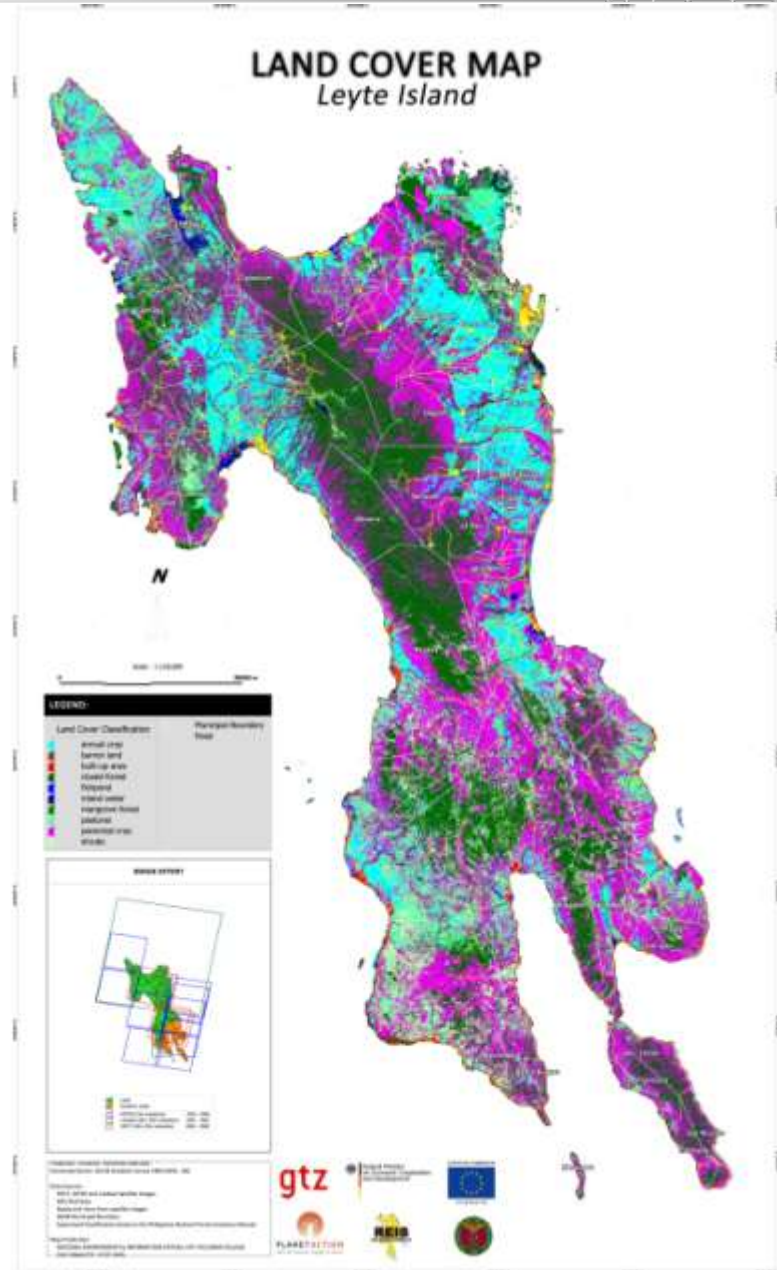
Combined images from

- SPOT5
- ASTER
- LANDSAT

Resolution from 10-29m,
Different spectral bands.

Land Use Map as a
Basis for a Risk Map

+ Vulnerabilities
+ Replacement value
+ Hazard
= Risk





Physical Susceptibility (Example: Flood – Wooden Buildings)

Flood Damage in %	Flood characteristics	Content of Buildings	Wooden Buildings
Very Low 5	0.3m, 4hours, very little current	People had to move objects to higher elevation, mop and clean	No damage, wall paint deteriorated.
Low 5-10	1m, 2-4days, slow current	Minor losses, particularly kitchen cupboards, clothes, shoes and mattresses, mop and clean	No structural damage, wall plaster may need repair and painting. Wooden frames need to be treated.
Moderate 10-50	2m, 5days, medium current	Almost total loss of the content, esp. Furniture equipment, kitchen cupboard, etc. People had to remove dirt and mud from insight	Considerable structural damage to wooden doors and frames, plaster and painted walls.
High 50-80	3m, 7 days, strong current	Total loss of content.	Partial destruction of foundation, wall and doors.
Very High 80-100	not experienced	Total loss of content.	Total destruction of the dwelling.



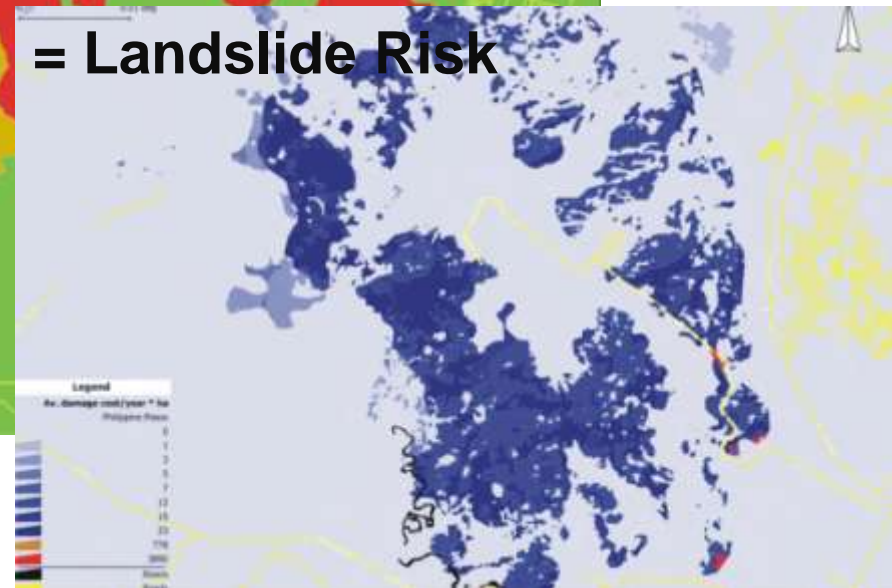
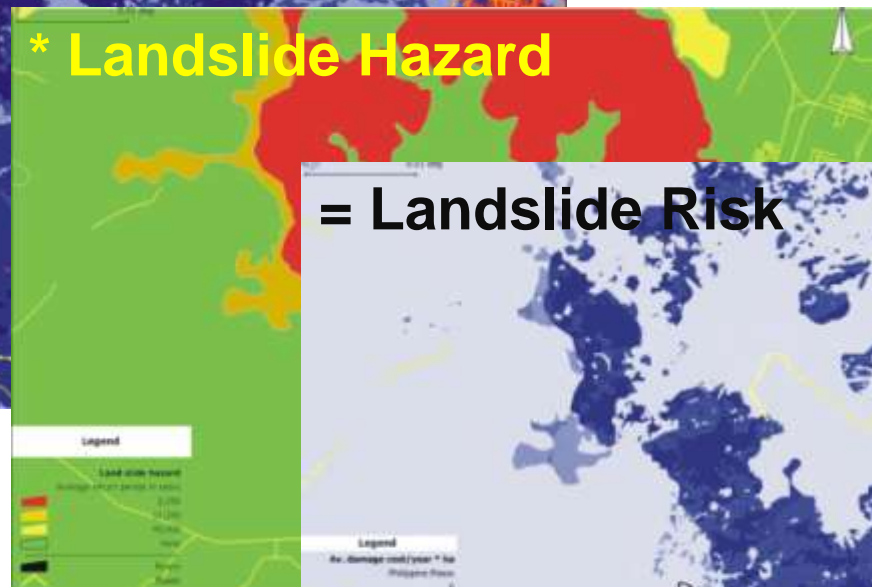
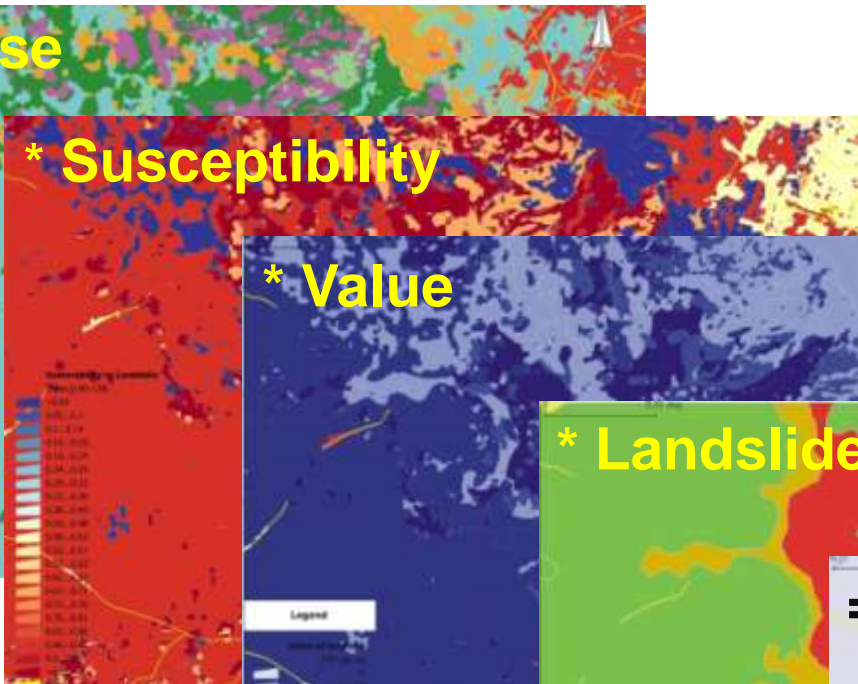
Value

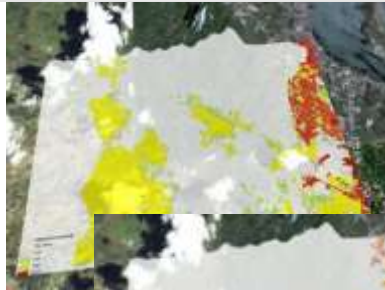
Land use	Replacement cost per hectare in Philippine Pesos
Annual crops	
Rice	30,000-40,000
Corn	18,000-24,000
Perennial crops	
Coconut	27,000
Banana	36,300
Natural sites	
Mangroves	15,700
Closed forest	51,200
Settlements	
High quality houses	9,900,000
Low quality houses	3,850,000



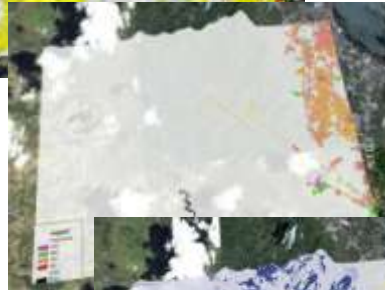
Land Use Map as a Basis for a Risk Map

Land use

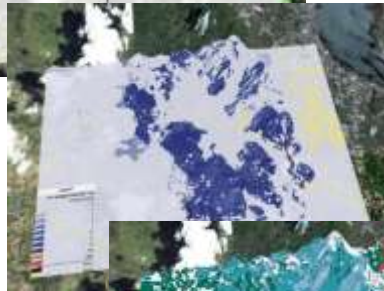




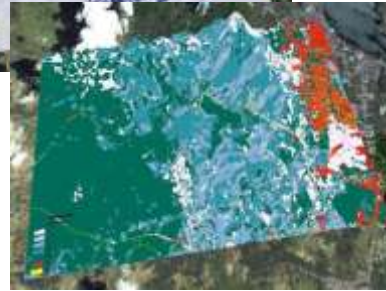
Flood Risk



Ground Shaking Risk



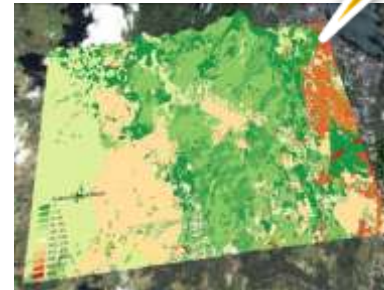
Landslide Risk



Storm Risk

Needed for
DRM
actions

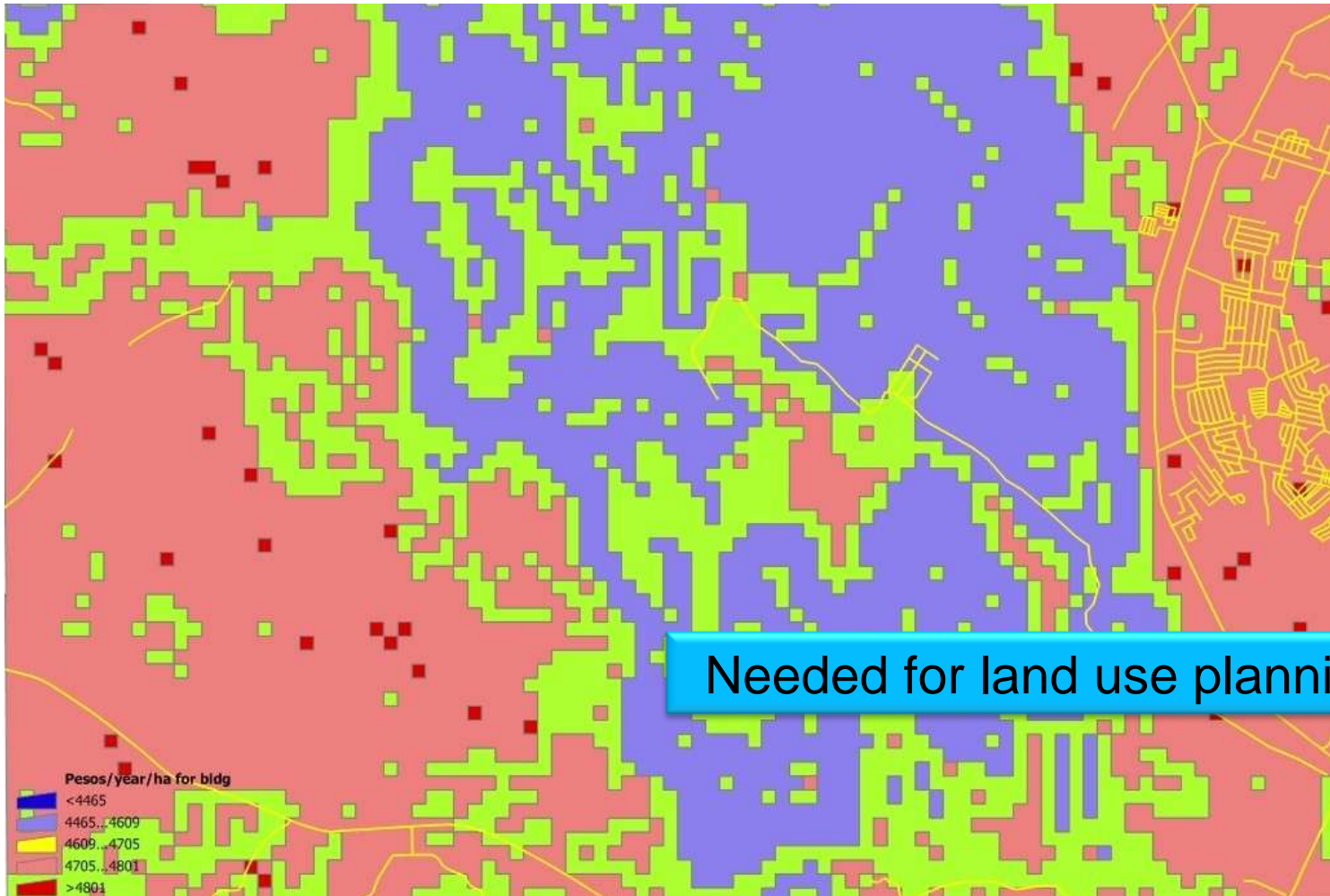
Pesos/Yr/ha



Multi Hazard
Risk Map



Building Suitability Map (Ground Shaking)



Slope
Derived
From
SRTM

Needed for land use planning



THANK YOU



EUROPEAN COMMISSION



Humanitarian Aid



Federal Ministry
for Economic Cooperation
and Development



PLANET ACTION

Spot the impacts, engage in action