

2014 Geospatial World Forum

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GIS and Remote Sensing for vulnerability analysis in the UN World Food Programme

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Summary

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- Introduction to the World Food Programme
- Disaster cycle
- GIS applications for:
 - Preparedness and Response
 - Logistics
 - Planning possible interventions (ICA)
- Automatic System for Emergency Mapping (ASEM)

WFP

The world's largest humanitarian organization
fighting hunger worldwide,
operating in more than 90 countries



90 million people assisted each year, 58
million of whom are children

Established in 1963 by FAO and the United
Nations General Assembly



Goals of the WFP:

WFP



Save lives in emergency situations

Eradicate hunger and malnutrition

Promote autonomy of poor communities

Disaster cycle:

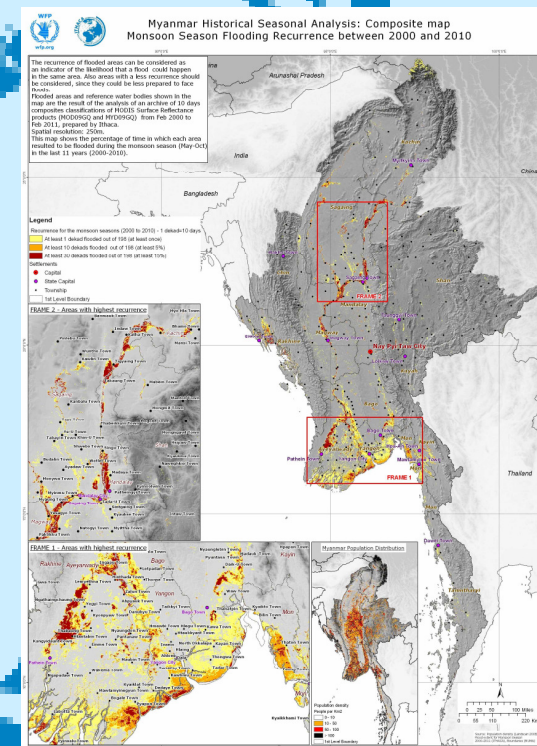
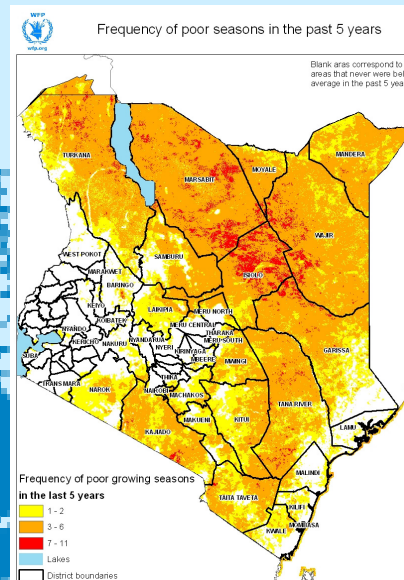
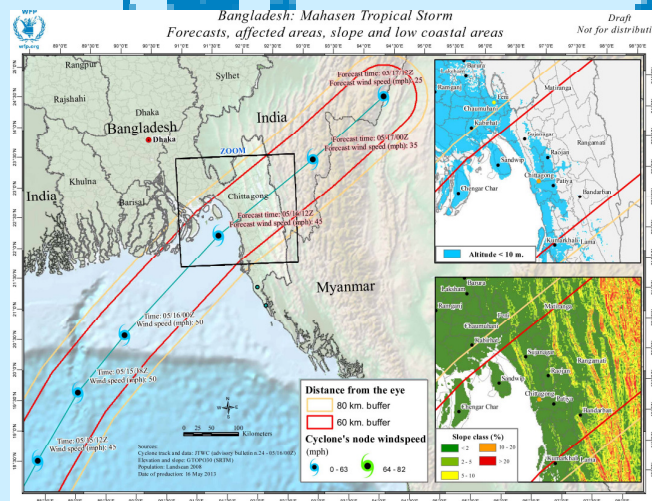
The disaster cycle is the framework used by the organizations of the emergency management community

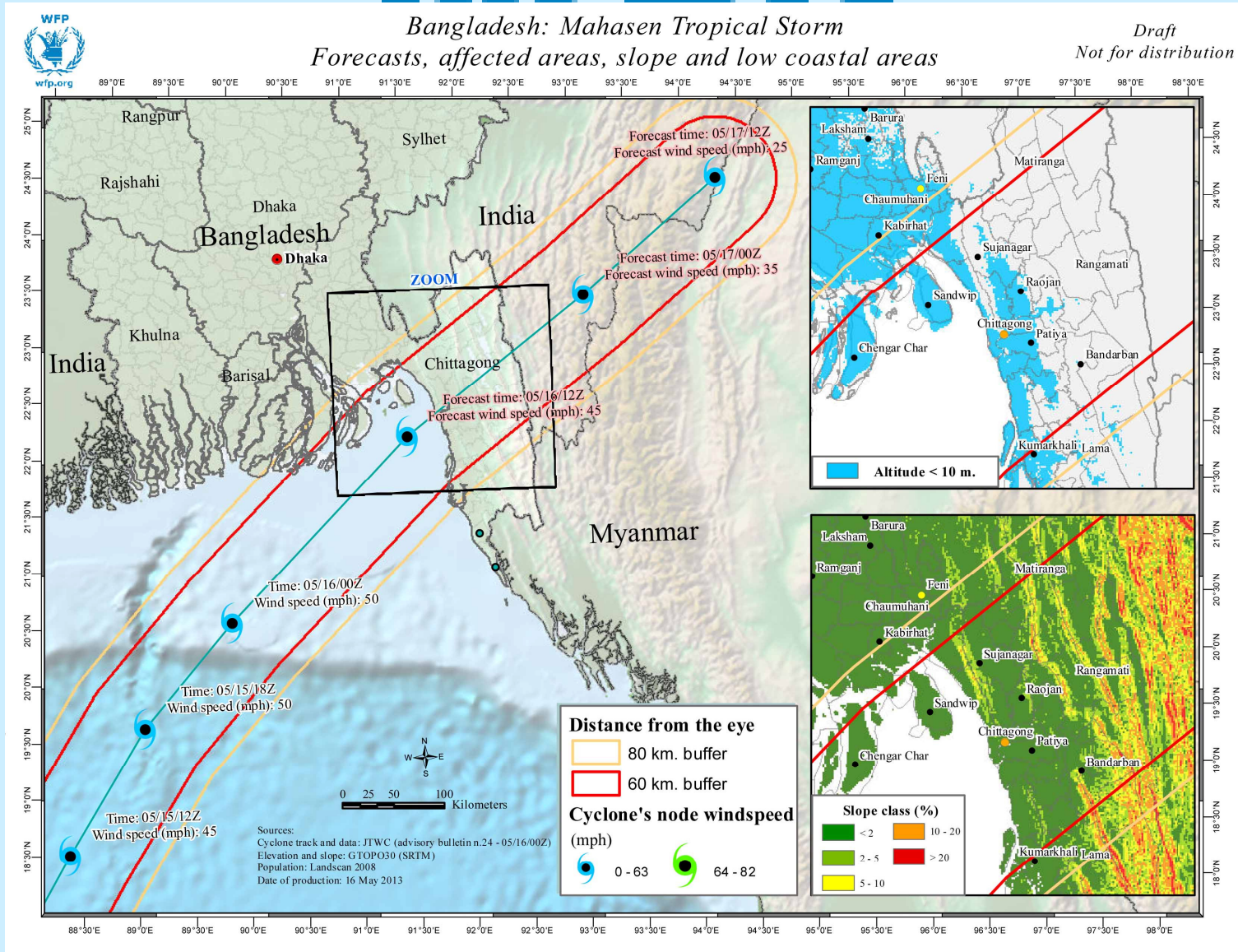
- Prevention: measures which actions can be taken in disaster-prone areas in order to limit the consequences of a possible shock
- Preparedness: identifies human and material resources needed during a specific possible disaster
- Response: issues warnings and evacuations. Shelters are prepared, actions are taken, and the situation is assessed.
- Recovery: focuses on cleanup and rebuilding, concentrating on the longer-term response to the disaster.



GIS for Preparedness

- Food insecurity patterns
- Number of shocks in the past
- Areas with environ. degradation
- Population at risk

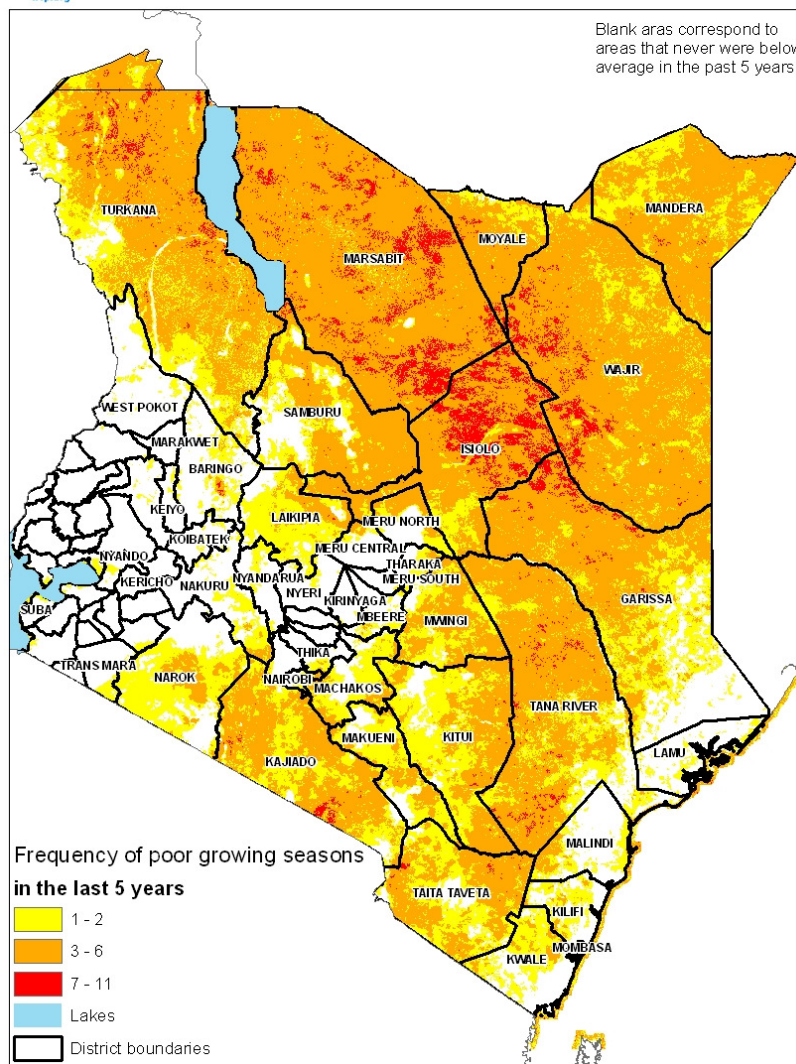




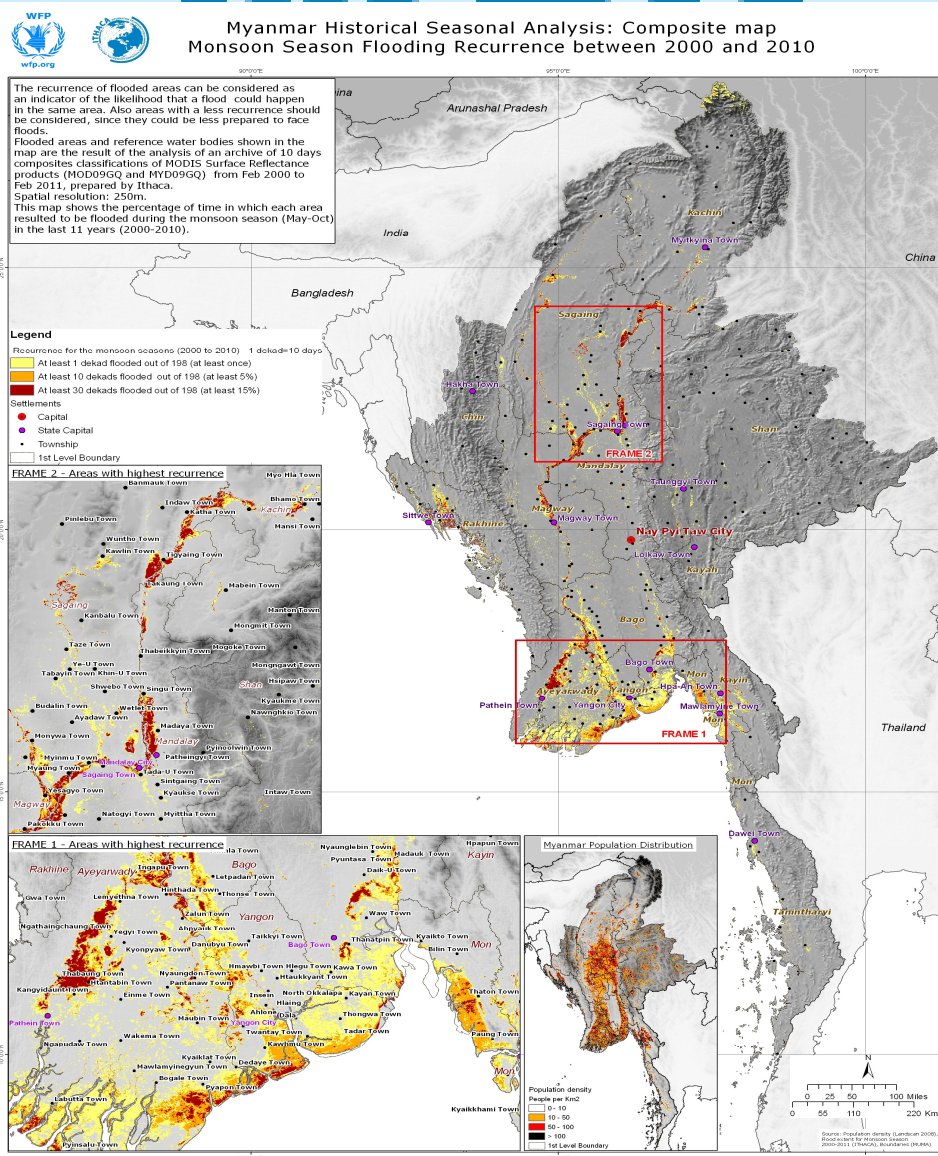


Frequency of poor seasons in the past 5 years

Blank areas correspond to areas that never were below average in the past 5 years

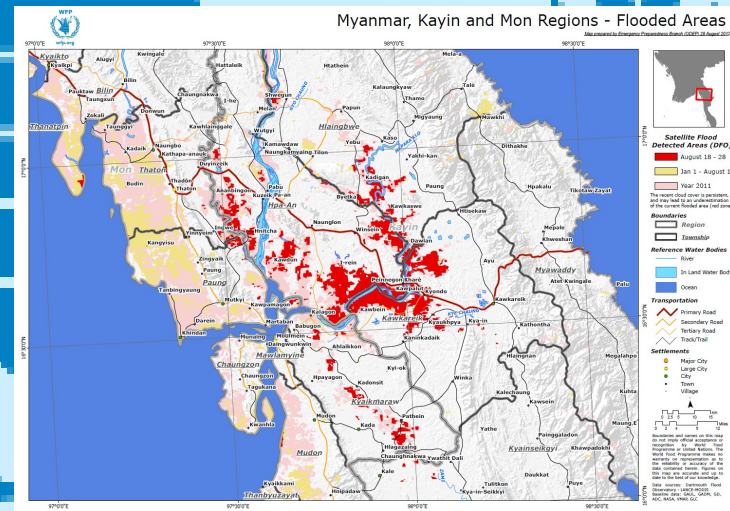
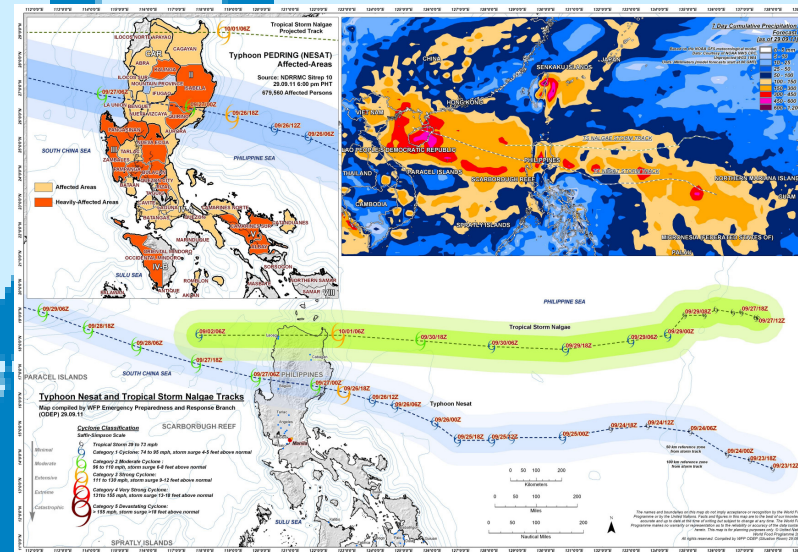
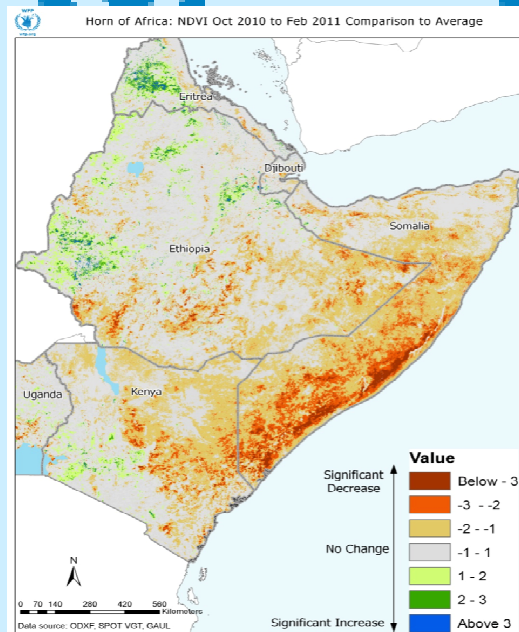


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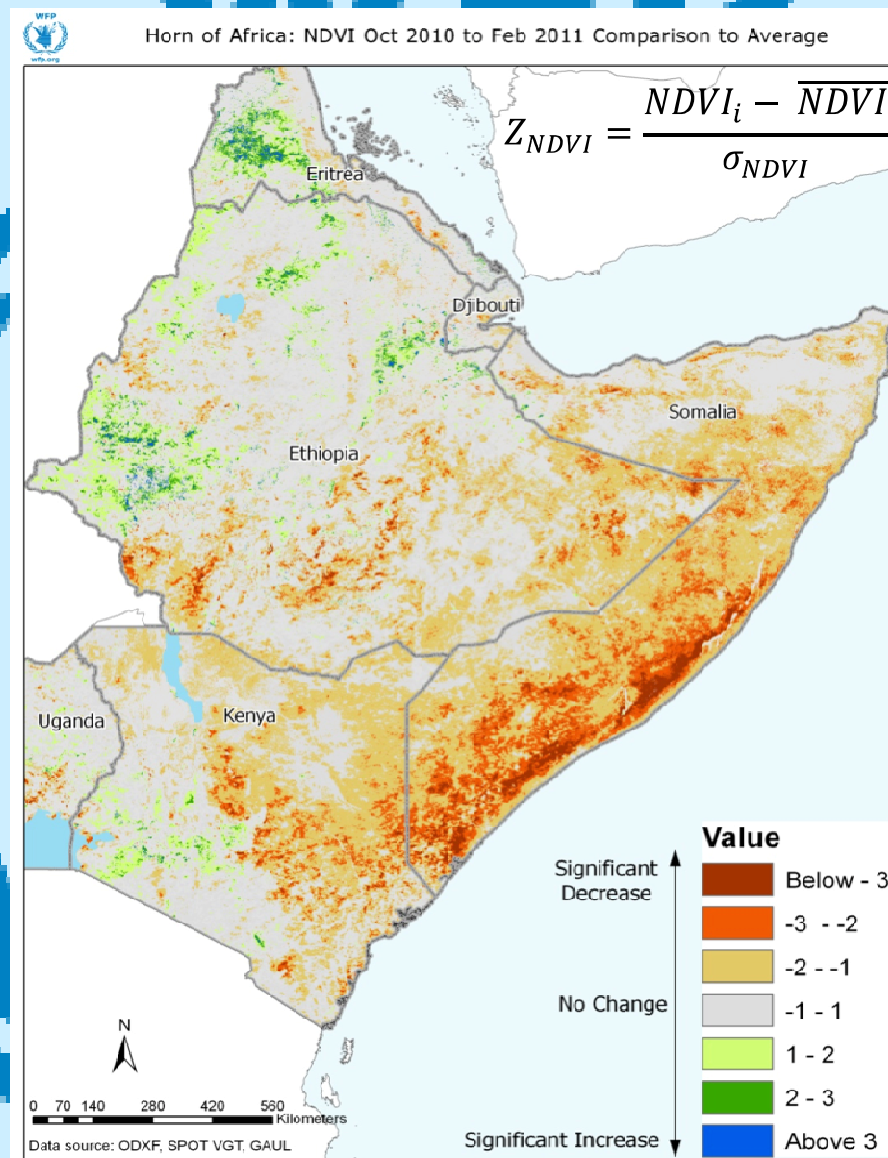


GIS for Response

1. Magnitude and location of the shock
2. Forecast of the shock evolution
3. Infrastructures of the impacted area
4. Population in need of assistance
5. Possible areas of intervention



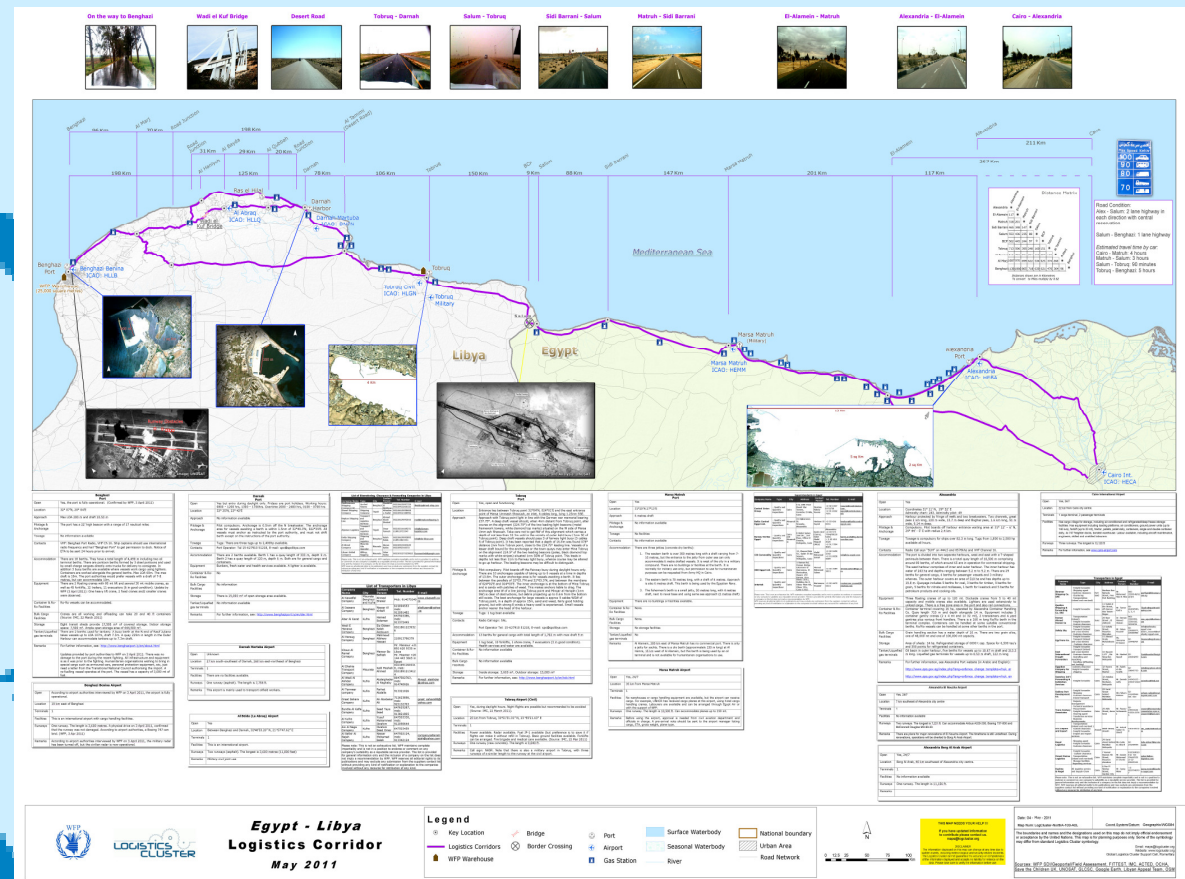
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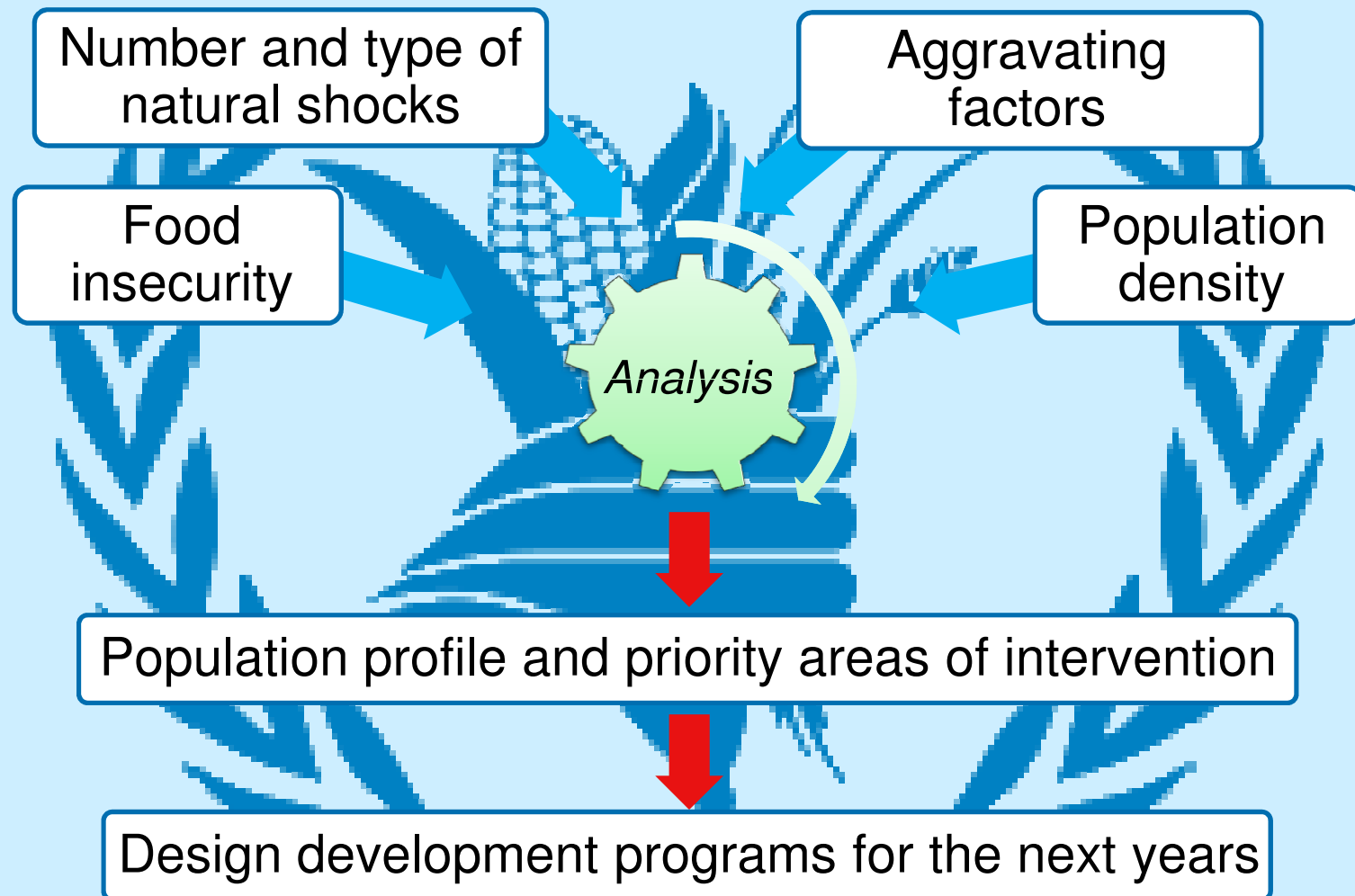
GIS for Logistics

Settlements
 Hydrology
 Admin. Boundaries
 Highways, roads and trails
 Airports
 Ports
 Refugee camps
 Food distribution points
 Security conditions
 Entry points
 Check points
 Humanitarian corridors
 ...

Data stored in an SDI
 and continuously
 updated

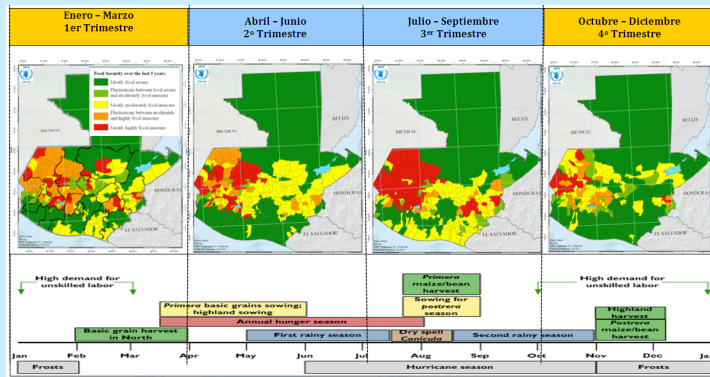


GIS for planning: Integrated Context Analysis

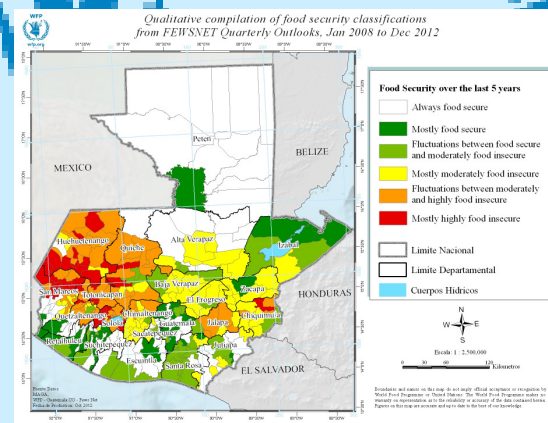


GIS for planning

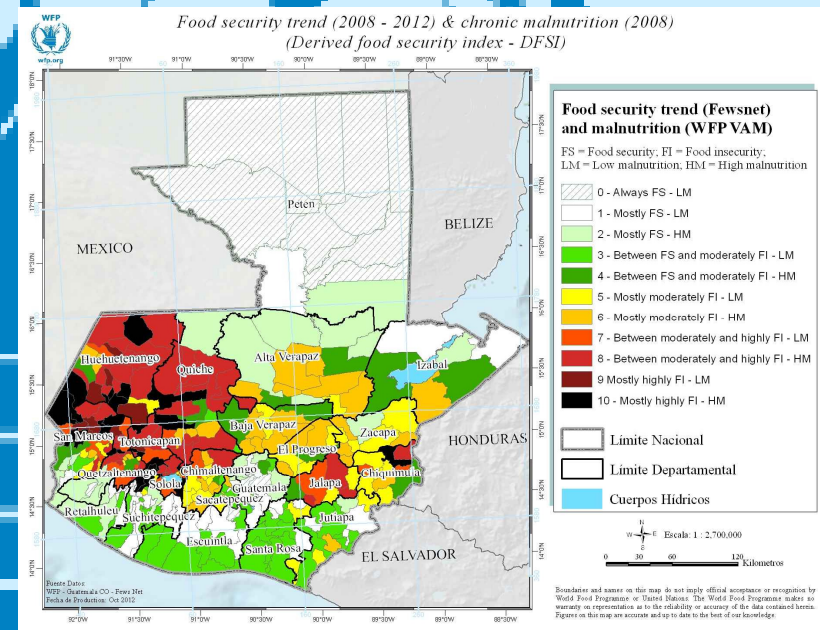
Guatemala Case Study



① Seasonal food insecurity trends



② Annual average food insecurity

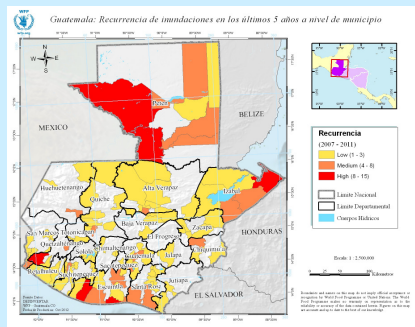


③ Food insecurity and malnutrition map

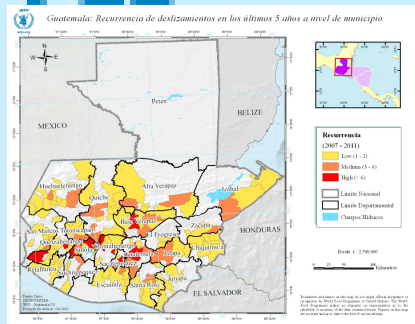
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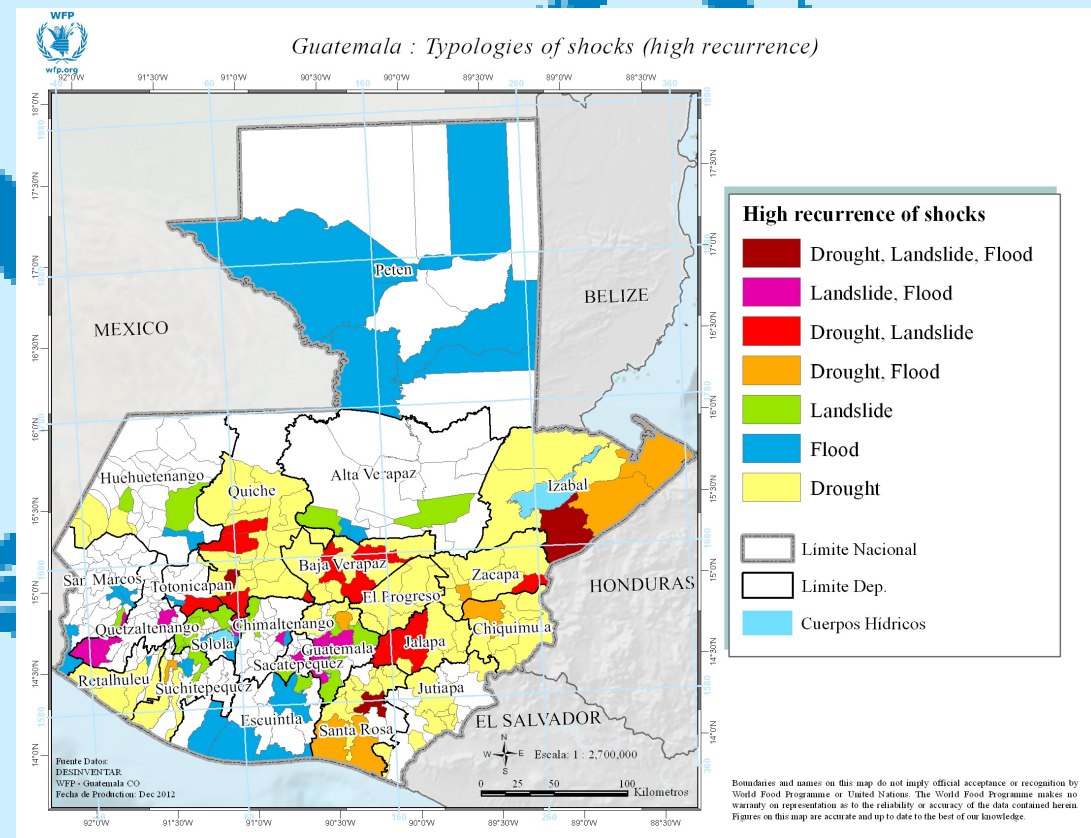
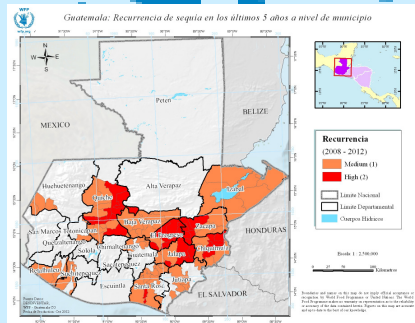
Floods



Landslides



Droughts

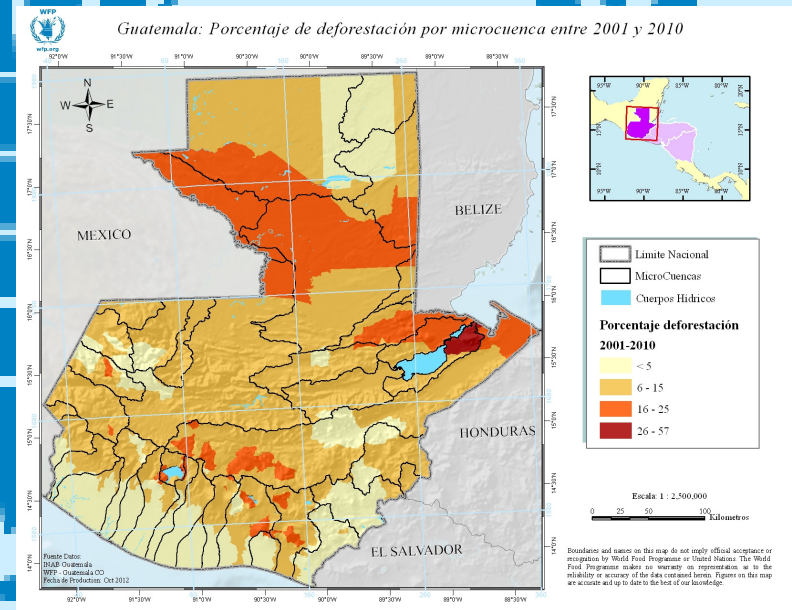
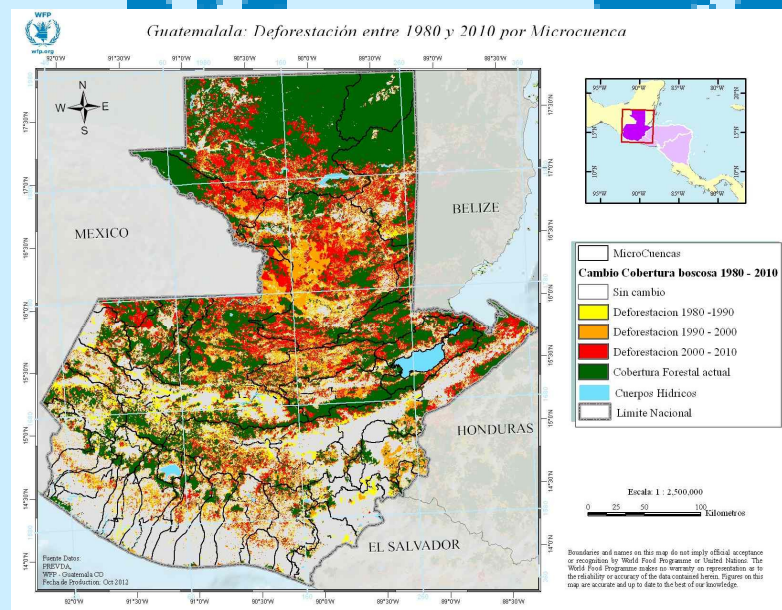


Categories of shocks with high recurrence

GIS for planning

Guatemala Case Study

- A degraded environment increases a community's vulnerability to the effects of natural hazards
- Intense deforestation has direct consequences on soil degradation, relief stability and livelihoods
- Recent deforestation patterns are therefore considered the main aggravating factor

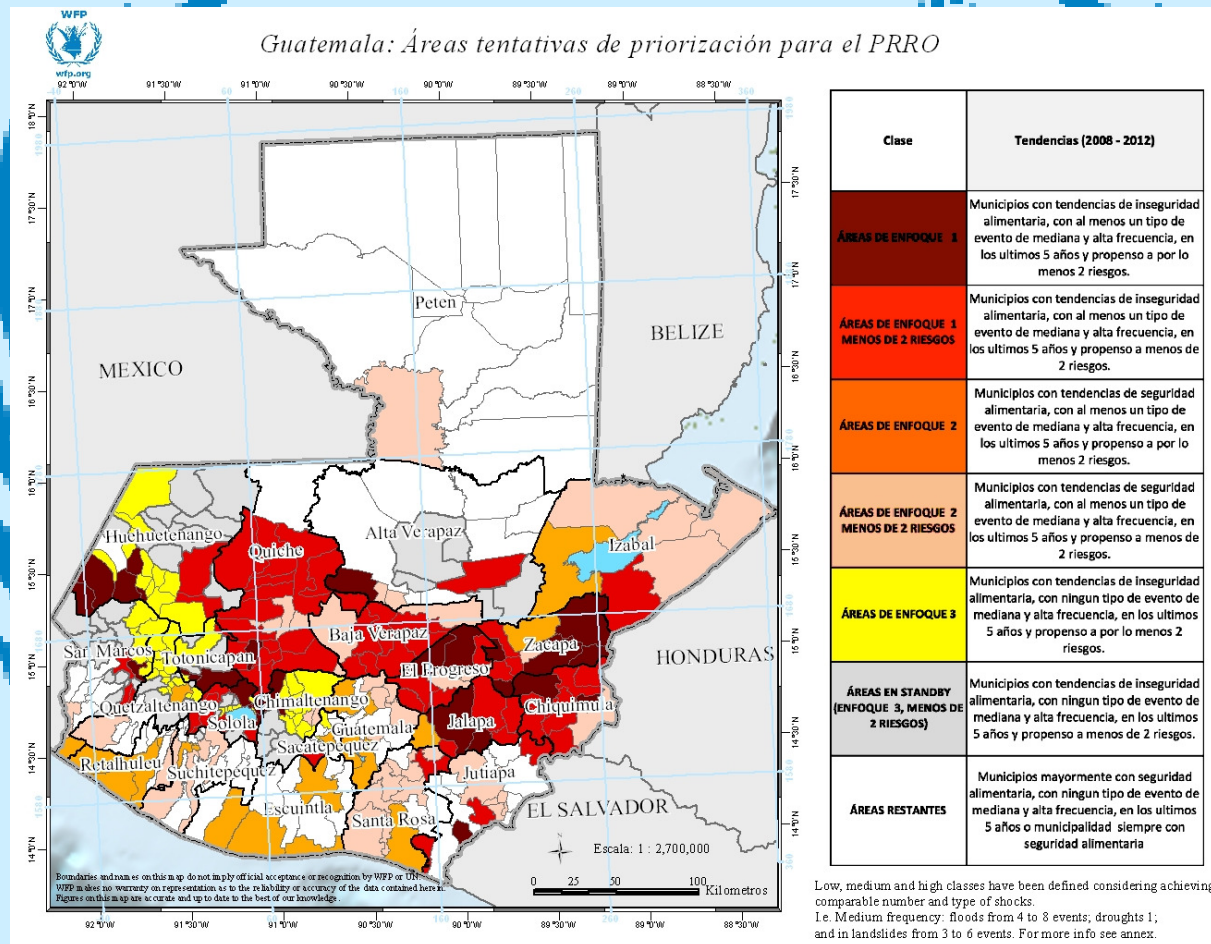


GIS for planning



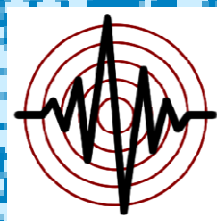
Guatemala Case Study

Analysis output:

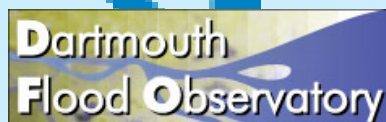


Automatic System for Emergency Mapping (ASEM)

- --- Currently in development phase ---
- Shock categories constantly monitored:



- Exploiting databases of natural hazards data main providers

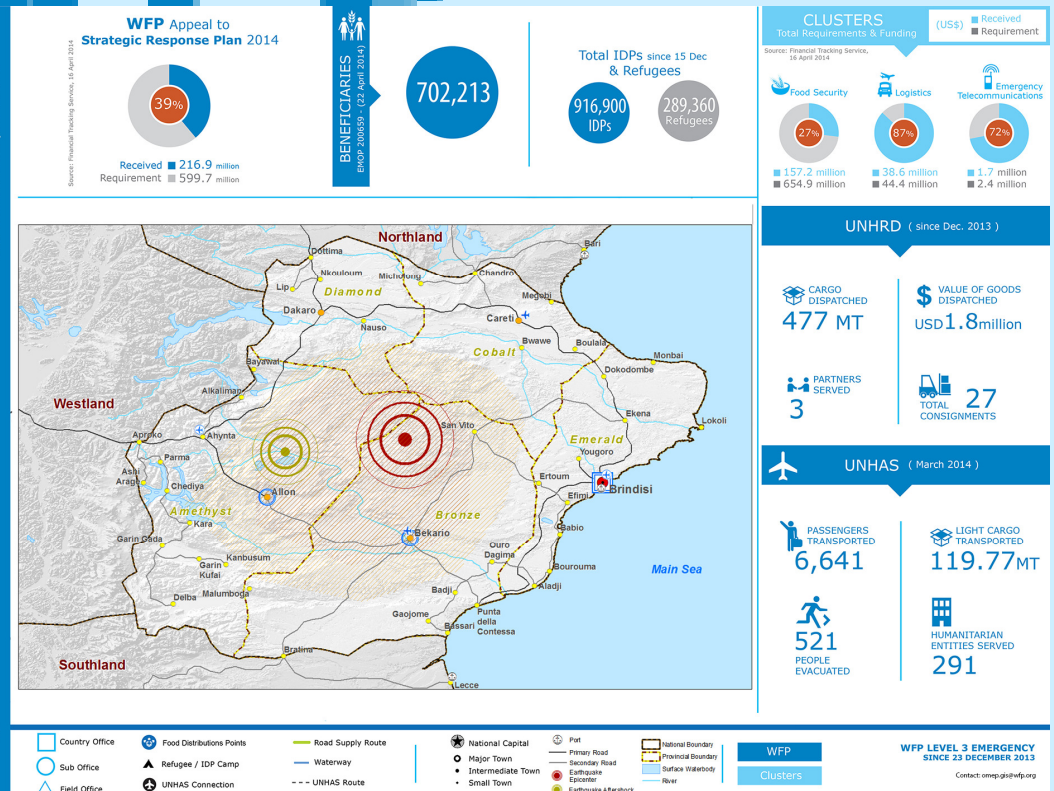


- Server based, no need of human interaction and supervision
- The system is 24/7 operational

Automatic System for Emergency Mapping (ASEM)

- A triggering threshold enables a series of physical, social and vulnerability analysis
- Automatic maps are generated and disseminated, not only reporting the details of the event, but also the economic situation of the area and the activities of WFP or other agencies/NGOs

ASEM - Earthquake Simulation
Date created: 25 April 2014



Magnitude, affected area, population, economic profile,
UN & NGOs presence, weather forecasts...



Analysis and maps ready within 30'
after the shock

WFP

Thank you.



Hunger

The world's greatest
solvable problem