
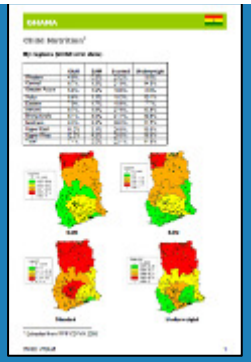




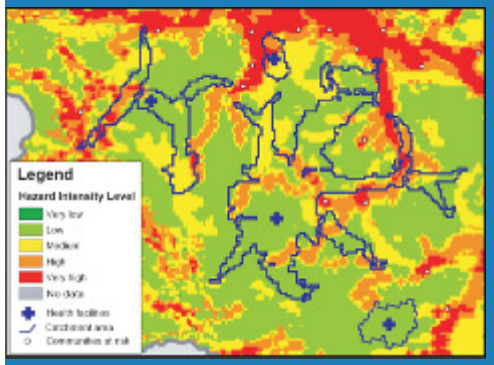

Introduction to Health Vulnerability and Risk Analysis and Mapping (VRAM)

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Disaster Preparedness and Response
World Health Organization Regional Office for Europe

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Dr Steeve Ebener, Acting Chief VRAM

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Outline of the presentation

- **Background and opportunities**
- **The WHO e-atlas of Disaster Risk for the Eastern Mediterranean Region**
- **The Vulnerability and Risk Analysis & Mapping platform (VRAM)**




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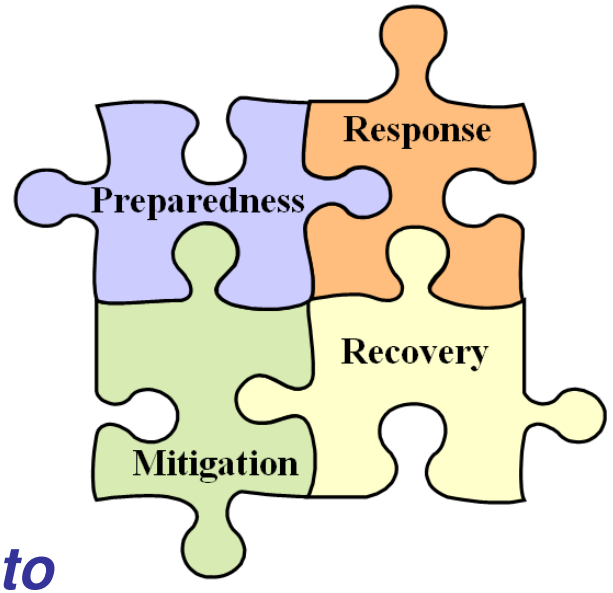
Background ➡ Opportunity

Several resolutions such as the one accepted during the 2005 World Health Assembly (WHA 58.1)

"(4) to formulate, on the basis of risk mapping, national emergency-preparedness plans that give due attention to public health, including health infrastructure, and to the roles of the health sector in crises, in order to improve the effectiveness of responses to crises and of contributions to the recovery of health systems;"



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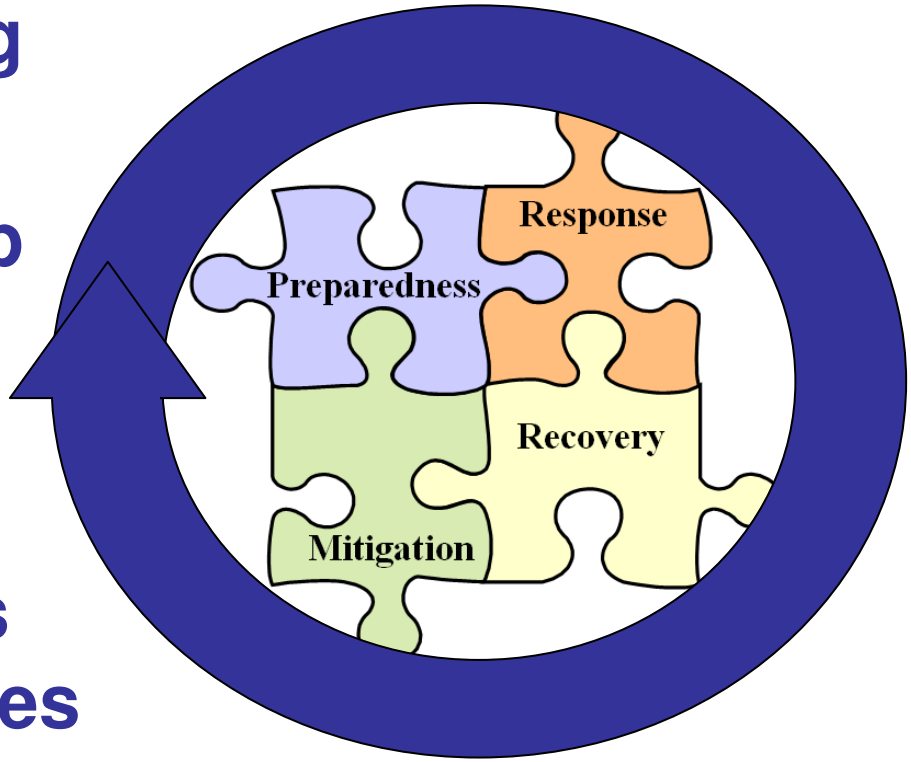
Opportunity for geography and GIS

... to be used as a neutral platform for the integration of data coming from different sources to:

- **assess, analyze and map vulnerabilities and risks**
- **contribute to ensuring the continuity of the decision making process during the different phases of the emergency cycle**



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Opportunity for WHO

... to work with countries and capable research institutions to:

- **Identify the vulnerable populations and their respective locations of risk in countries of the region.**
- **Generate awareness and advocacy for disaster reduction and risk management programs to be established/strengthened in countries**
- **Support decision-makers in allocating the appropriate resources for preparedness and response**
- **Promote tools which facilitate coordination and collaboration of potential partners working on disaster reduction in the region**

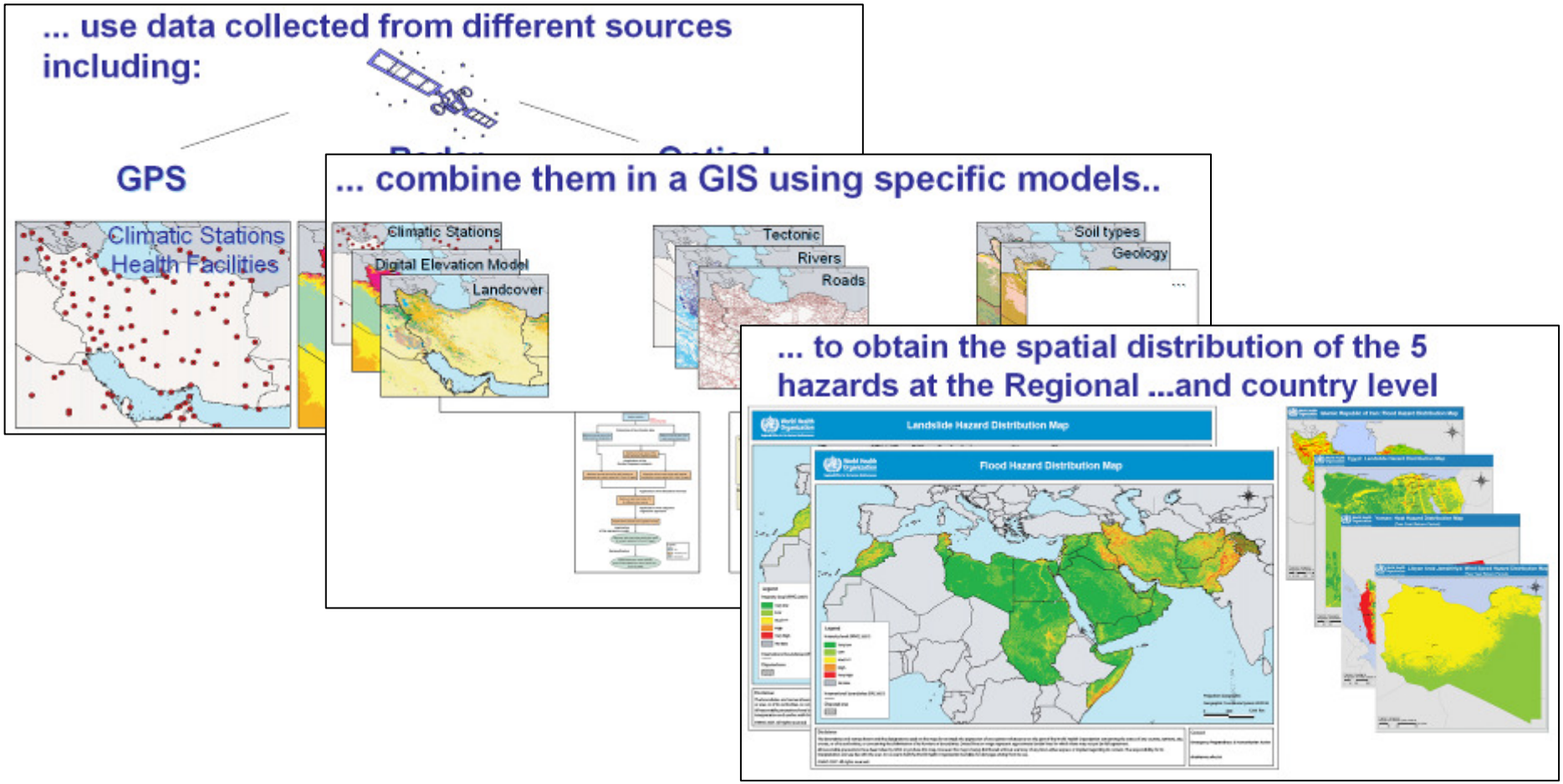
The WHO e-atlas of Disaster Risk for the Eastern Mediterranean Region

Distribution of the risks for five hazards (floods, heat, earthquakes, wind speed and landslides) with the objective of better understanding the health impact and vulnerabilities to such events.

Looking at 3 components:

- **The distribution of each hazard (volume 1)**
- **The distribution of population's and infrastructure (the element at risk) vulnerability**
- **The distribution of health risks**

The first volume of the WHO e-atlas of Disaster Risk



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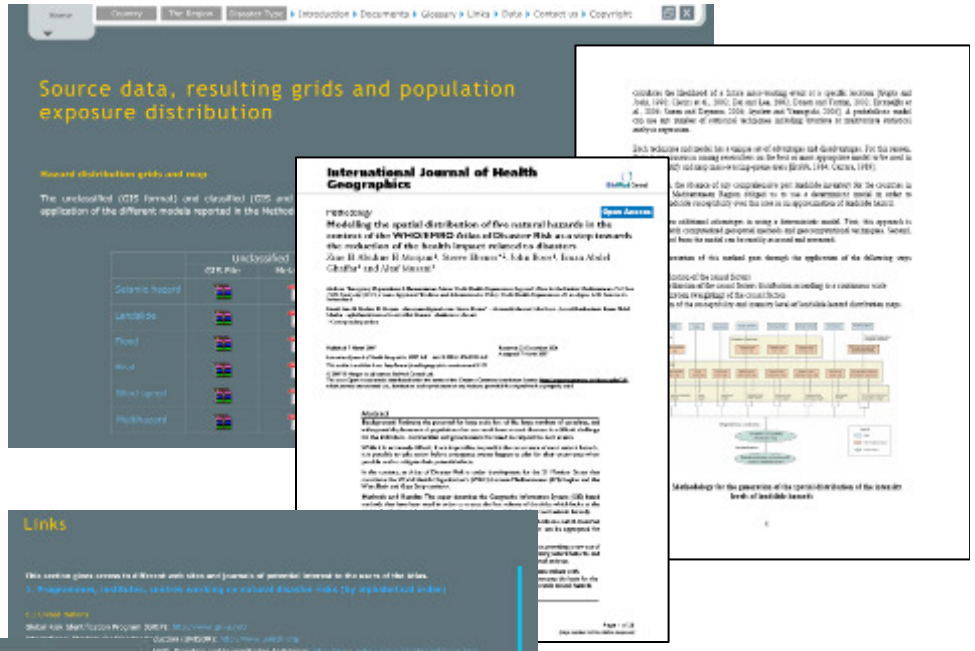
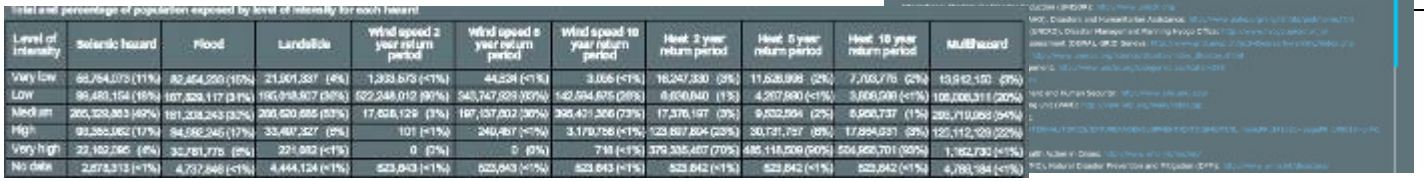
The first volume of the WHO e-atlas of Disaster Risk





Level of intensity	Seismic hazard	Flood	Landslide	Wind speed 2 year return period	Wind speed 5 year return period	Wind speed 10 year return period	Heat: 2 year return period	Heat: 5 year return period	Heat: 10 year return period	Multihazard
Very low	66,764,073 (11%)	82,464,550 (15%)	21,901,337 (4%)	1,303,573 (<1%)	44,224 (<1%)	3,056 (<1%)	16,247,330 (3%)	11,628,998 (2%)	7,705,776 (2%)	13,912,193 (3%)
Low	99,480,154 (18%)	107,329,117 (19%)	195,918,907 (36%)	522,248,012 (90%)	543,747,929 (93%)	142,594,875 (26%)	8,630,640 (1%)	4,207,980 (<1%)	3,606,500 (<1%)	100,006,511 (20%)
Medium	265,329,863 (49%)	181,208,243 (32%)	266,520,685 (53%)	17,536,129 (3%)	197,157,803 (30%)	395,401,366 (73%)	17,376,197 (3%)	9,502,594 (2%)	5,900,737 (1%)	285,719,053 (54%)
High	93,288,062 (17%)	94,592,345 (17%)	33,407,327 (6%)	101 (<1%)	249,487 (<1%)	3,179,766 (<1%)	123,897,804 (23%)	30,731,797 (6%)	17,894,531 (3%)	125,112,109 (23%)
Very high	22,162,095 (4%)	32,761,775 (6%)	221,982 (<1%)	0 (0%)	0 (0%)	716 (<1%)	379,305,407 (70%)	485,118,509 (90%)	504,956,701 (93%)	1,762,732 (<1%)
No data	2,673,313 (<1%)	4,737,446 (<1%)	4,444,124 (<1%)	523,843 (<1%)	523,843 (<1%)	523,843 (<1%)	523,842 (<1%)	523,842 (<1%)	523,842 (<1%)	4,780,184 (<1%)

Soon posted at: http://www.emro.who.int/eha/e-atlas.htm

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The first volume of the WHO e-atlas of Disaster Risk

Only natural hazards for the moment

➡ **Need to add disease outbreaks, communicable diseases,...**

+

$$\text{Risk} \propto \frac{\text{Hazard} \times \text{Vulnerability}}{\text{Capacity}}$$

Vulnerability and Risk Analysis & Mapping platform (VRAM)

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The Vulnerability and Risk Analysis & Mapping platform (VRAM)

Objectives

The primary objective of the VRAM is to support Member States and partners to strengthen their capacity to assess, visualize and analyse health risks and incorporate the results of this analysis in disaster risk reduction, emergency preparedness and response plans

At the same time, the application of the VRAM process allows for the compilation and homogenisation of baseline data, information and maps to help health authorities and partners to take informed decisions in times of crises.

The Vulnerability and Risk Analysis & Mapping platform (VRAM)

Activities

To achieve its objectives, VRAM is building long-term collaborative relationships with government authorities and technically capable research institutions and universities both internationally and within targeted countries in order to:

- **Evaluate countries' capacity to assess and analyse hazards, vulnerabilities and risks;**
- **Support the development of national and local capacity within ministries of health and other partners to enable countries to implement the VRAM process;**
- **Partner with local institutions to conduct and facilitate detailed assessments of potential hazards, associated health vulnerabilities (infrastructures, services, population) and emergency preparedness in countries most at risk;**
- **Develop, document and share methods, protocols and tools for the collection, analysis and mapping of health hazards, vulnerability and risk information taking climate changes into account;**

The Vulnerability and Risk Analysis & Mapping platform (VRAM)

Activities

- Develop and make available tools to **support evidence-based decision-making**;
- **Create and maintain a network of institutions** working in health hazard, vulnerability, capacity and risk assessment and analysis.

➡ Primary data collection reduced to the minimum.

➡ Emphasis on review and use of secondary information

➡ Partnership with the other institutions involved in primary data collection (WFP for example).

➡ **Long term in countries capacity building**

The Vulnerability and Risk Analysis & Mapping platform (VRAM)

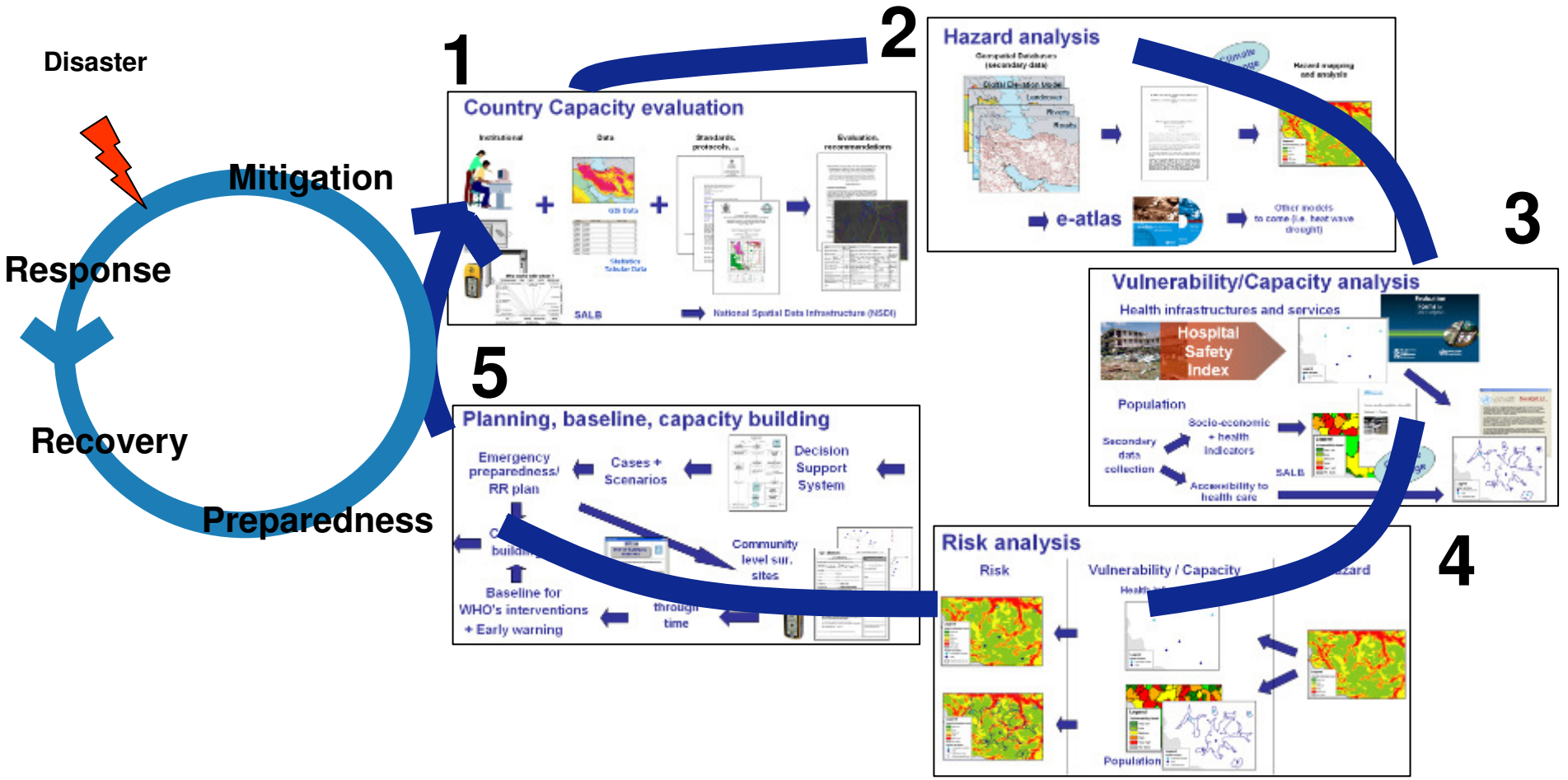
In country process

The VRAM process is to answer the following questions:

1. **What and where are the hazards to which populations are exposed to?**
2. **Where are the most vulnerable populations, health facilities and services exposed to these hazards?**
3. **What and where are the existing local capacities for emergency preparedness and response**

→ Geography as the integrating platform

The VRAM process



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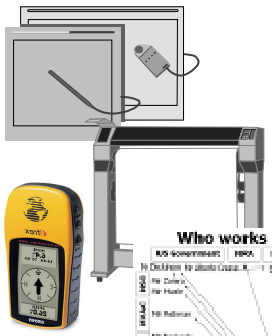
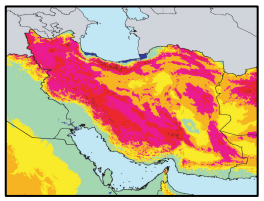
The VRAM process

① Country Capacity evaluation

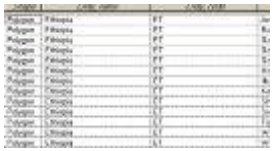
Institutional



Data

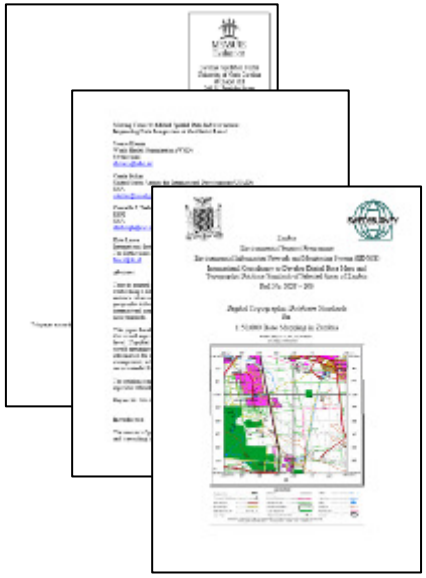


GIS Data

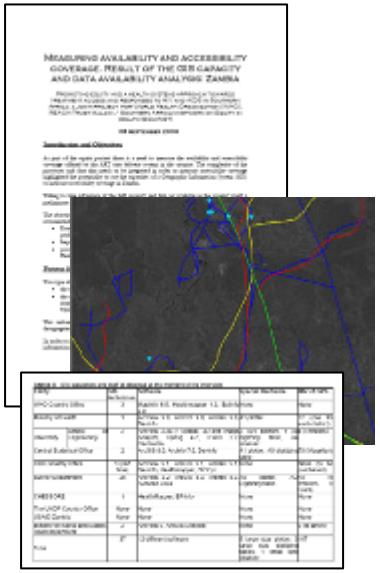


Statistics
Tabular Data

Standards, protocols, ...



Evaluation, recommendations



SALB → National Spatial Data Infrastructure (NSDI)

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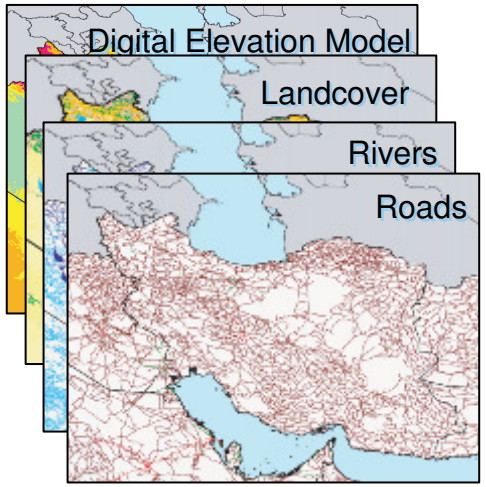
The VRAM process

② Hazard analysis

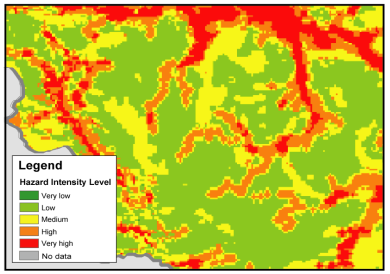
Geospatial Databases (secondary data)



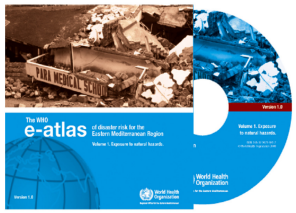
GIS based methods

Climate Change

Hazard mapping and analysis



e-atlas



Other models to come (i.e. heat wave drought)

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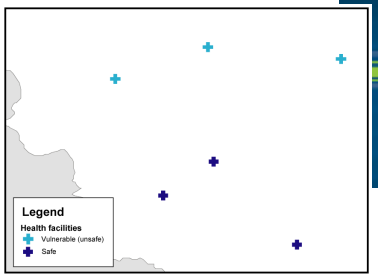
The VRAM process

3 Vulnerability/Capacity analysis

3.1 Health infrastructures and services

Hospital Safety Index



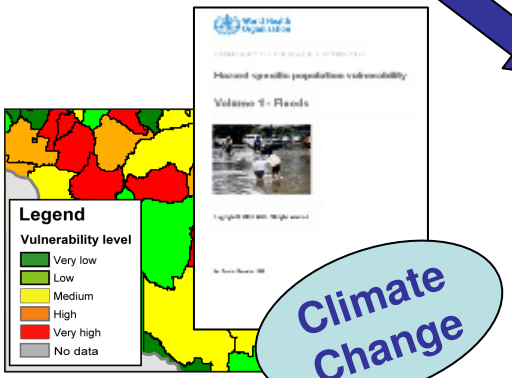
3.2 Population

Secondary data collection

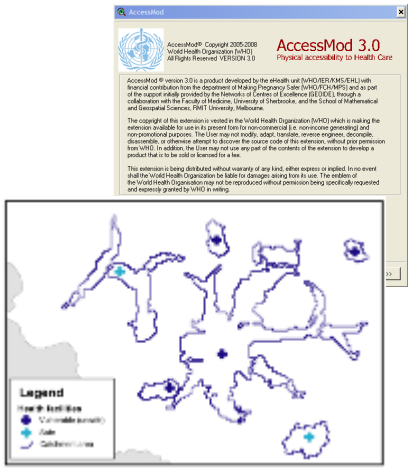
Socio-economic + health indicators

Accessibility to health care

SALB



Climate Change



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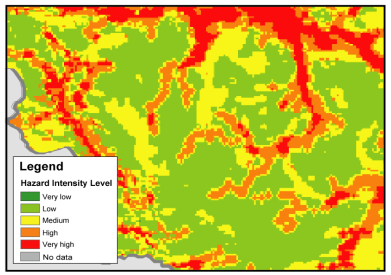
The VRAM process

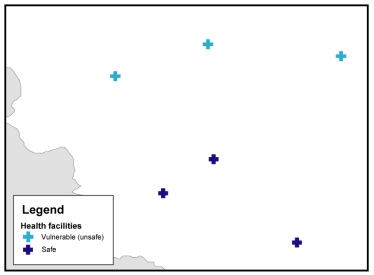
4 Risk analysis

Hazard

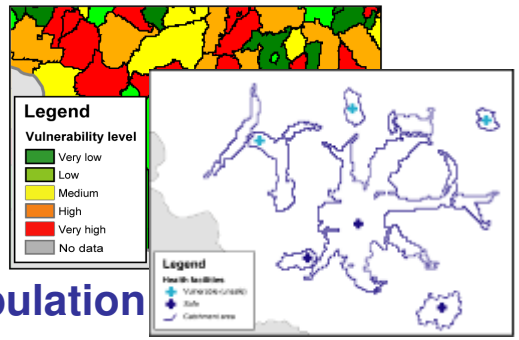


Vulnerability / Capacity

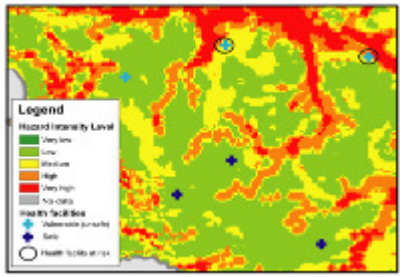
Health infrastructures

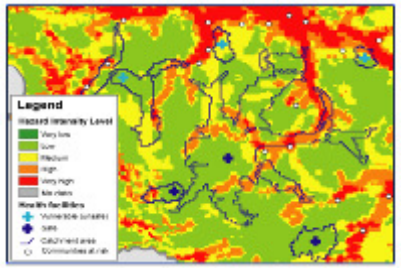


Population



Risk





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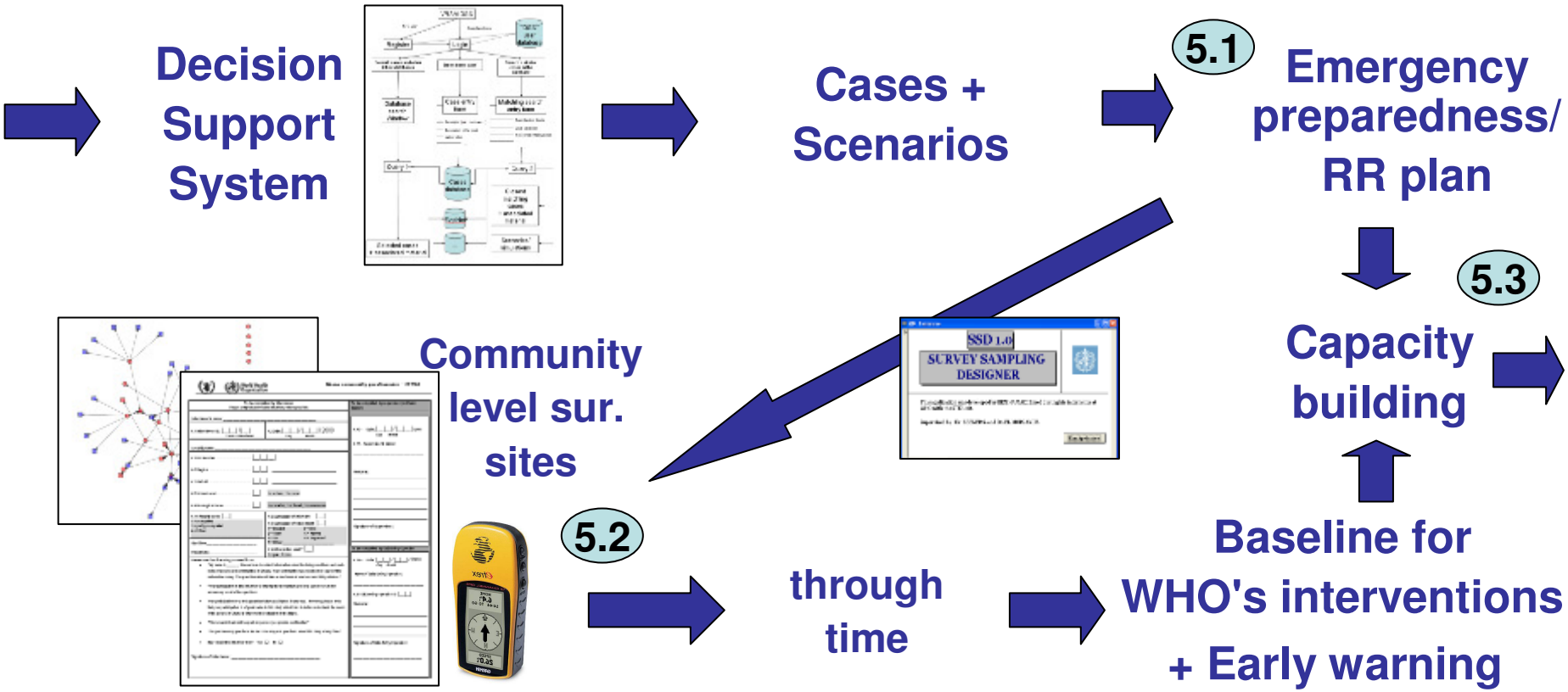
The VRAM process

5 Planning, baseline, capacity building



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VRAM in countries activities

Examples:

- **Ghana: testing of the community level questionnaire developed in collaboration with WFP**
- **Ethiopia: Capacity evaluation visit and recommendations provided to the MOH regarding the implementation of their emergency management plan**
- **Nigeria: Capacity evaluation visit and support to the MOH and National Emergency Management Agency (NEMA) to conduct an hazard, vulnerability and risk pilot study in one of the States and to support the development of their state level policy**
- **Mexico: Strengthening of the technical capacity of the Centro Regional de Investigación en Salud Pública (CRISP), translation of the e-atlas methodology documents in Spanish and support to the hazards, vulnerability and risk assessment conducted over the State of Chiapas**

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