



FIG WORKING WEEK 2017

Surveying the world of tomorrow –
From digitalisation to augmented reality

May 29 - June 2 Helsinki Finland

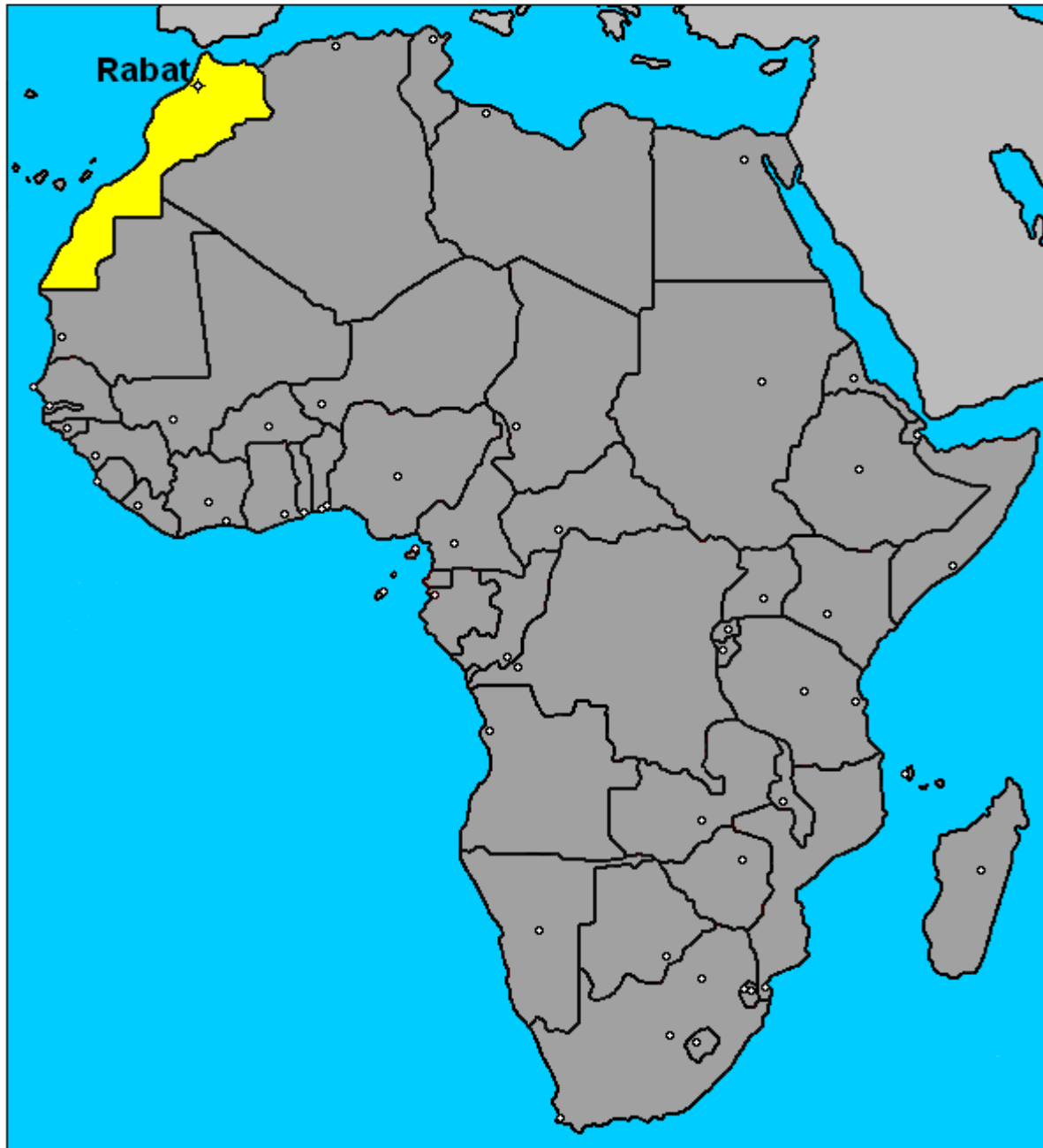


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May 29 - June 2, 2017 in Helsinki, Finland*

THE CONTRIBUTION OF THE CITY PLANNING IN THE URBAN RESILIENCE TO THE HAZARDS OF EARTHQUAKES AND FLOODS: THE CASE OF MOROCCO

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CITY PLANNING AND THE URBAN RESILIENCE



PLAN

1 INTRODUCTION

2 FRAMEWORK AND DISASTER HAZARD MANAGEMENT OPTIONS

3 ROLE OF URBAN PLANNING IN RISK MANAGEMENT

4 CONCLUSION

Disasters, a global phenomenon

Over the world, natural disasters (earthquakes, floods, tsunamis, etc.) are a potential source of major losses in human lives and serious property damage.

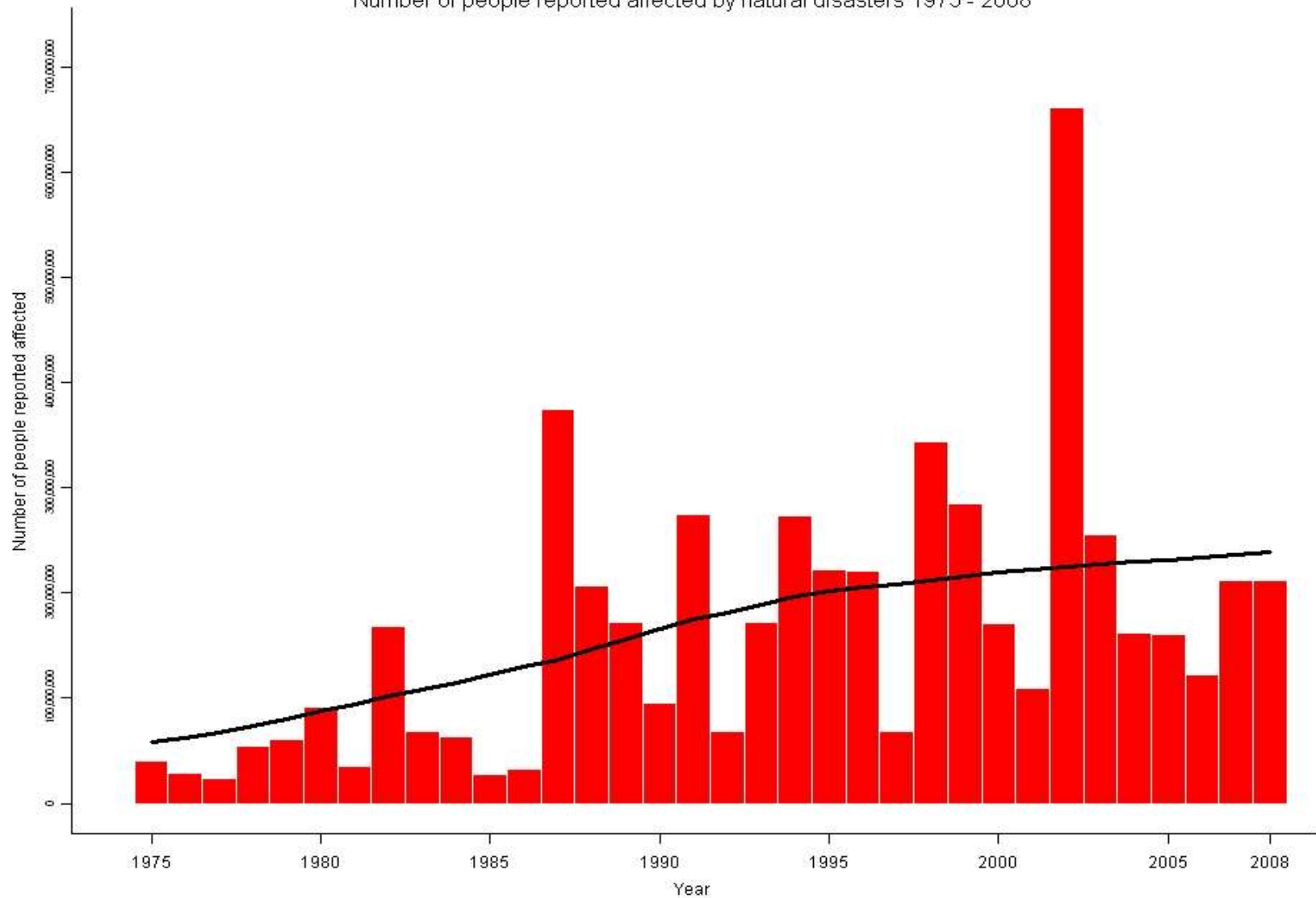
- The earthquake and tsunami in Japan (20,000 deaths, 2011);
- The earthquake in China (80,000 deaths, 2008);
- The earthquake in Turkey (19,000 deaths, 1999),
- The tsunami in the Indian Ocean (250,000 deaths, 2004),



Human suffering and major social,
economic and political upheavals

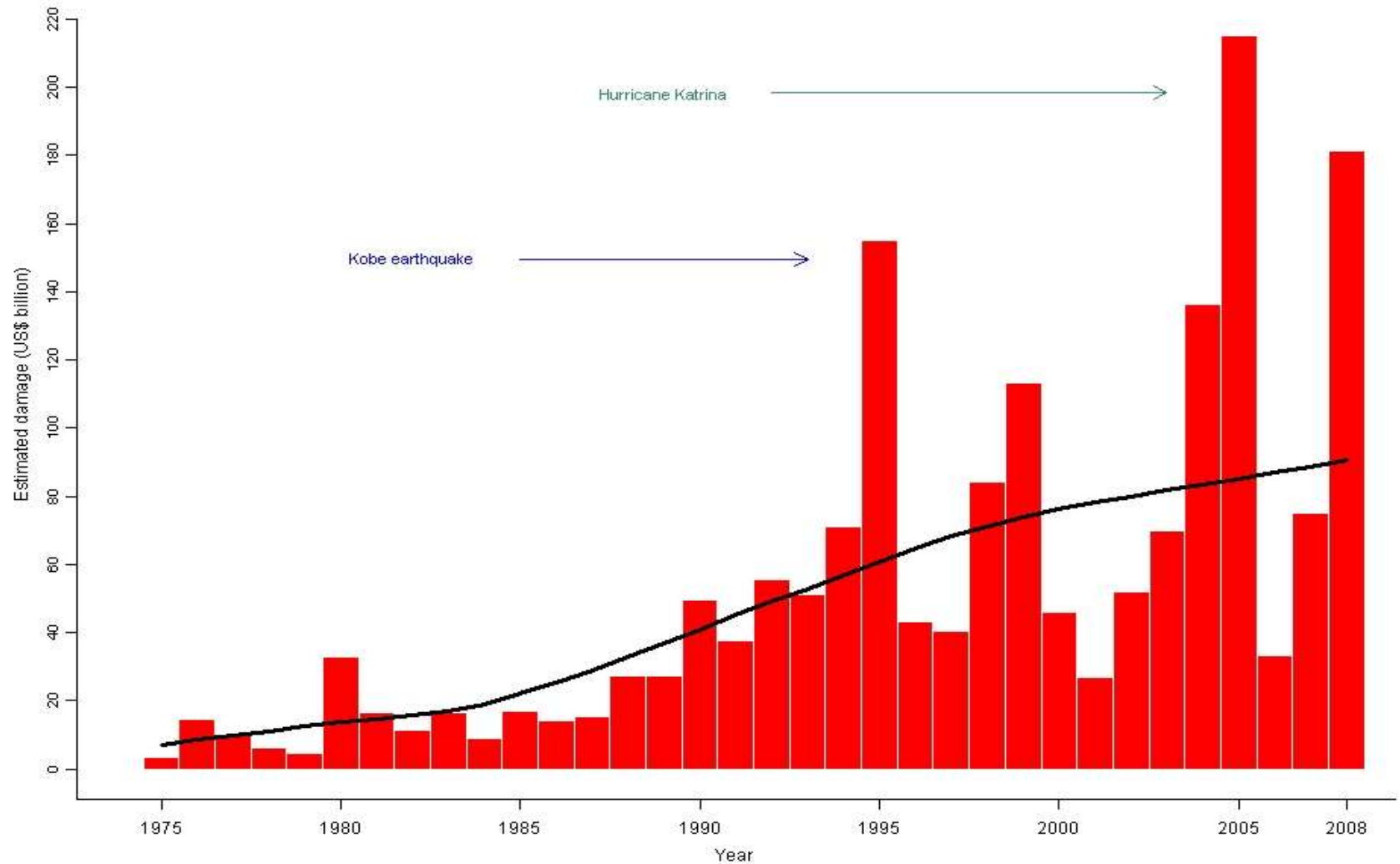
Disasters, a global phenomenon

Number of people reported affected by natural disasters 1975 - 2008



Disasters, a global phenomenon

Estimated damage (US\$ billion) caused by reported natural disasters 1975 - 2008



Morocco is not an exception

Partial summary of major historical disasters in Morocco 1900–2008

	Deaths	Total population affected	Estimated damage (millions of dirhams)
Floods	1,556	531,926	2,400
Earthquakes	12,728	38,465	4,200
Drought/Heat Wave	—	412,000	7,200
Total	14,531	997,549	13,800

These risks cost for Morocco, according to the probabilistic assessments, an average of DH 5.0 billion per year, in which floods constitute the major part.

Hazards management is becoming more strategic

Consequence:

- Hazard management has risen from a technical issue to a strategic consideration.

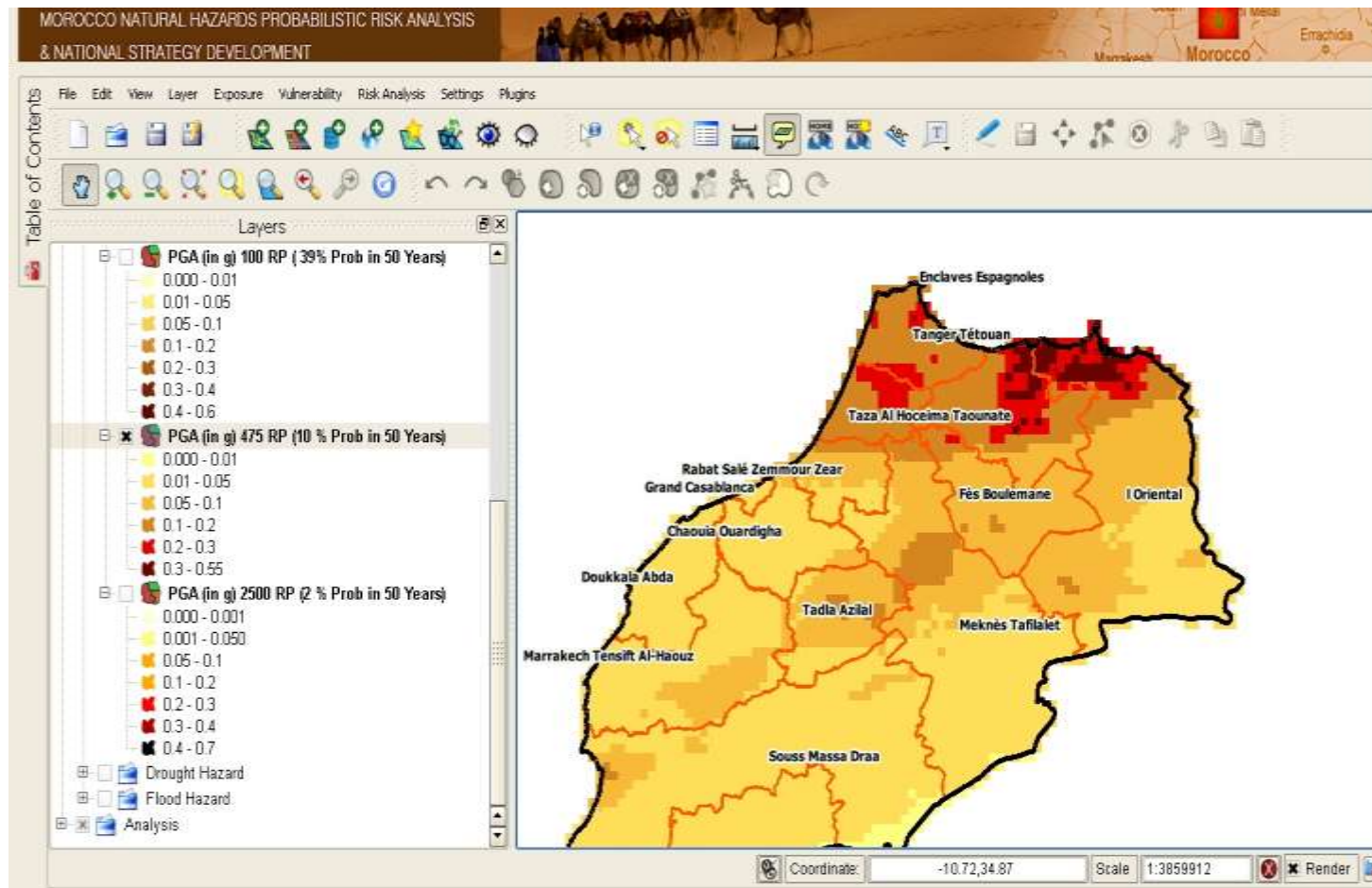
Integrated strategy development Project

- The state has initiated, since 2009, a development process of an integrated hazard management strategy, with the support of :
 - The World Bank,
 - The Global Fund for Disaster Reduction and Recovery (GFDRR)
 - And the Swiss Agency for development and cooperation (SDC).

Key Achievements:

- Development of a new analytical tool on GIS : MnhPRA "Morocco natural hazards Probabilistic Risk Analysis" on natural disaster risks and their impacts,
- Other achievements.

Integrated strategy development Project



This software was used to analyze seismic hazards, floods, tsunamis, droughts and landslides in Morocco using advanced probabilistic assessment of risks (or disasters models).

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Institutional and legal framework for disaster hazard management

SOME INSTITUTIONS :

- The Ministry of Interior
 - *National Coordination Committee
 - *Watch and Coordination Centre ; decree of 1997.
- The Ministry of Water and Environment; No. 2-99-922 set up in 2000.
- The Ministry of Health and the Ministry of Finance.
- Scientific organizations such as the National Institute of Geophysics : building code in 2011 (RPS2011)
- River basin authorities : law 10 – 95 on water

Options to reduce the natural disasters hazard in Morocco

This should go through the following programs:

- Early warning systems are required to earthquakes, floods and tsunamis;
- Mapping and risk analysis for floods and earthquakes should be improved;
- The building compliance code should be improved;
- Structural measures;
- Risk transfer interventions, including in the area of risk financing(insurance).

PUBLIC POLICY OF THE FIGHT AGAINST INSALUBRIOUS HOUSING

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ROLE OF URBAN PLANNING IN RISK MANAGEMENT

Preventive urban planning regulations

Urban planning is crucial in defining the use of soil and achieving the objectives of civil security and environmental safety



Preventive responses by the planning regulations act on two factors of vulnerability:

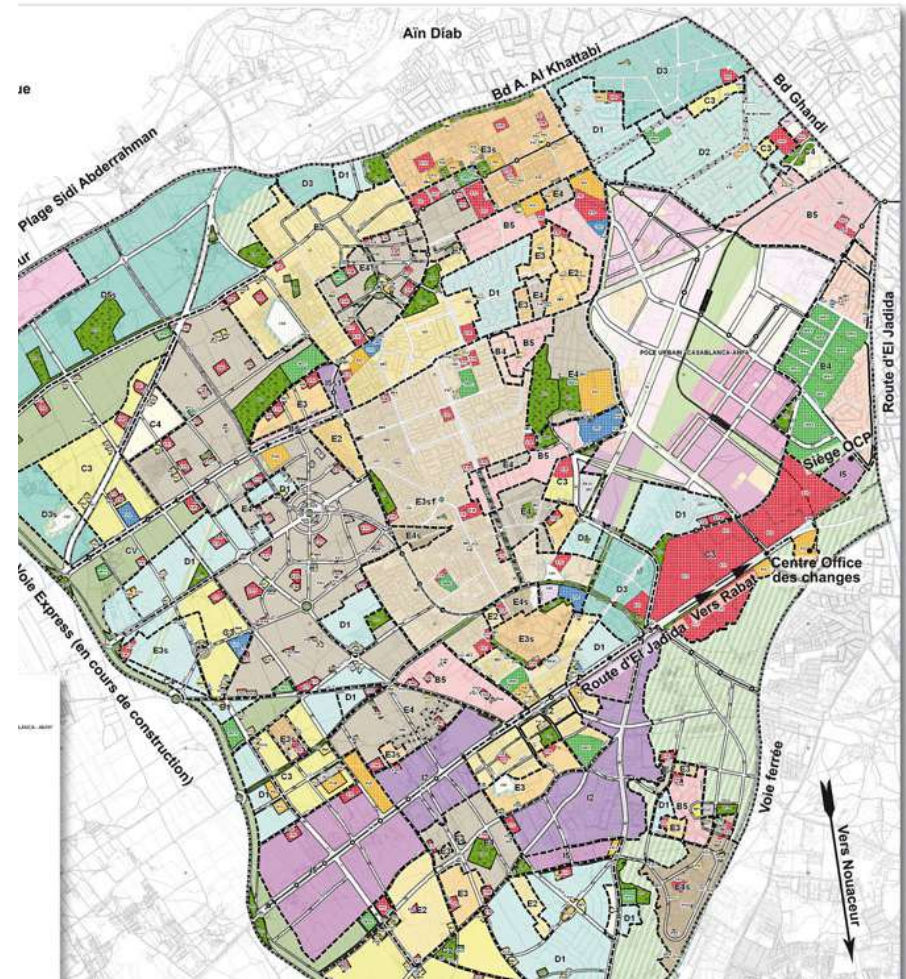
- The forms and types of land use,
- And nature and quality of construction.

The resilience is the community's ability to anticipate hazards, to reduce overall vulnerability, and to respond and recover from hazard events. In addition, resilient communities also need to be able to learn and adapt to changing conditions and risks »

PREVENTIVE URBAN PLANNING REGULATIONS

Forms and types of land use

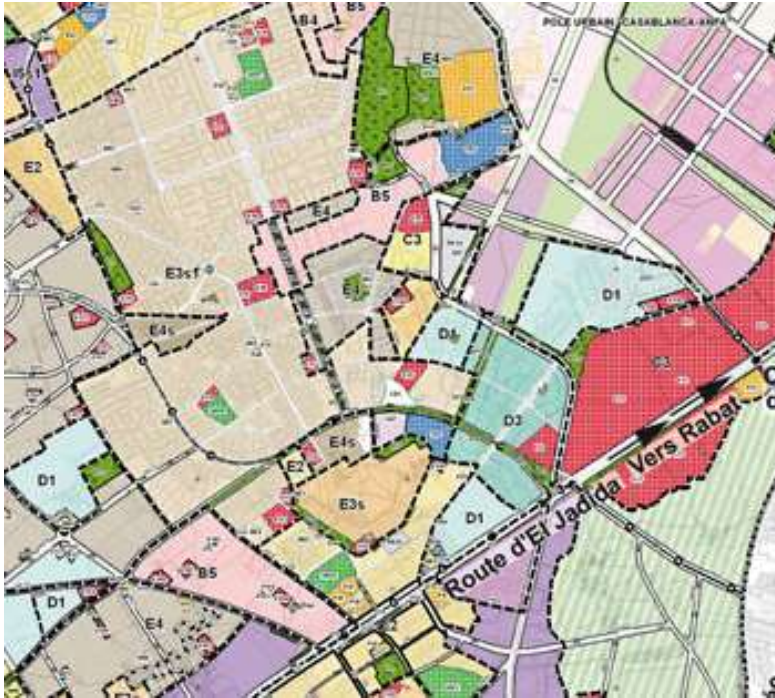
Graphic plans may bring up areas where risk determines a zoning in which may be prohibited or subject to special conditions any kind of buildings or installations



PREVENTIVE URBAN PLANNING REGULATIONS

Forms and types of land use

The initial phase is the inventory of potential hazards



Local memories, archives, scientific studies
knowledge of specialized agencies and
producers of different informative documents

mapped into hazard maps and eventually
integrated into GIS

Studies of the territory soil use are performed
to determine the degrees of vulnerabilities
relating to people, buildings and equipment.

Hazard exposed areas maps

Non aedificandi zone

Areas where construction projects
are subject to prohibition measures
or special requirements

PREVENTIVE URBAN PLANNING REGULATIONS

Forms and types of land use



Combat urban sprawl:

- Smart Growth,
- Residential and commercial concentration, or "clustering" and densification,
- Increasing the density and mixed uses.

Resilience : Living with Water and Natural Hazards

The elevation of buildings as required by city planning regulations



PREVENTIVE URBAN PLANNING REGULATIONS

Nature and quality of construction

We cannot avoid exposure to earthquake risk, but we must try to anticipate it and prepare for it;

The national regulation

- sets the rules for calculation and design of structures to strengthen the buildings resistance to earthquakes.
- enacts civil engineering technical requirements and architectural design allowing buildings to withstand all the shaking intensities

In each earthquake, seismic regulation is enriched and modified depending on several parameters : seismic maps (acceleration and speed of the earthquake), new data, the refined seismic zoning by site, and the improved ranking of constructions

Regarding the seismic hazard, we also wonder about the effects of prevention of this risk on the already urbanized areas and on costs that could result from the compliance with texts concerning the implementation of seismic standards in existing buildings undergoing modifications by change of use or raising the height or extensions