

THE FRENCH WEST INDIES EARTHQUAKE PLAN



Ministry for Ecology, Sustainable
Development, Transport and Housing

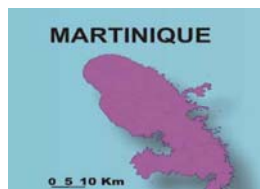
DGALN/DHUP

Quality and Sustainable Development in
Construction Division



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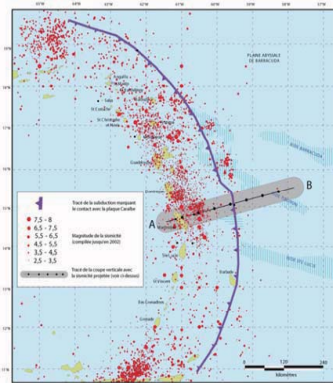
- Implementation of the French West Indies Earthquake Plan
- Objectives and Governance
- Content and projects
- Future plans



Rationale for the French West Indies Earthquake Plan

- Implementation of the French West Indies Earthquake Plan

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- Territories involved: Guadeloupe, Martinique, St. Martin, St. Barts:
 - surface area 2,600 km²
 - 850,000 inhabitants (+ 800,000 tourists per year)

- High earthquake risk in these territories (seismic zone 5)
- High vulnerability: many buildings are not earthquake-resistant, important buildings need to be reinforced (schools, hospitals)
- Factors which make disaster management difficult: insularity, distance from mainland France (7,000 km)
- Projects for prevention, raising awareness, training and improved knowledge have been in place since 1990



Objectives and Governance

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- Dual objective:
 1. **Raising awareness** among the population of the risk of earthquakes and the collapse of housing blocks; preparation for disaster management
 2. **Earthquake-resistant construction** for new buildings and a reduction in the vulnerability of existing buildings through reinforcement measures
- Governance:
 - Strategic leadership by:
 - ministerial representatives
 - representatives of the state in the French West Indies
 - Implementation in each region:
 - prefect + local authorities and administrations
 - Interministerial French West Indies Earthquake Plan Group:
 - guidelines and general implementation
 - Secretariat and overall project coordination



Non-infrastructure projects

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- Essential projects involving:
 - **training**
 - **information**
 - local knowledge and **awareness of risk**
 - ensuring **compliance with regulations**
 - **communication of risk** between stakeholders
 - preparation for **disaster management**
- Examples :
 - projects to raise awareness in schools and businesses, communications projects: Sismik events
 - training for French West Indian professionals, publicity materials on earthquake-resistant construction, Richter exercise (disaster management exercise)
 - implementation of earthquake microzoning in the municipalities affected



Infrastructure projects

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Phase one of the French West Indies Earthquake Plan (2007–2013) targets:

- **educational establishments** (primary, middle and senior schools, higher education)
- **medical establishments**
- **social housing**
- **disaster management buildings** (especially fire stations) and **category III earthquake risk buildings** (public access buildings, offices, buildings >28m, >300 people)
- **transport infrastructures, essential networks**, including communications networks

Total present cost: 1,377 million euros



Reconstruction or reinforcement of existing buildings

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Priority is being given to reinforcement work on:

Disaster management buildings: fire stations, state buildings

Educational establishments: diagnosis of the earthquake vulnerability of all 550 primary schools:

- earthquake-resistance reinforcement work on 320 schools
- reconstruction of 230 schools



Medical establishments: 2 main hospitals in the French West Indies + clinics



Housing:

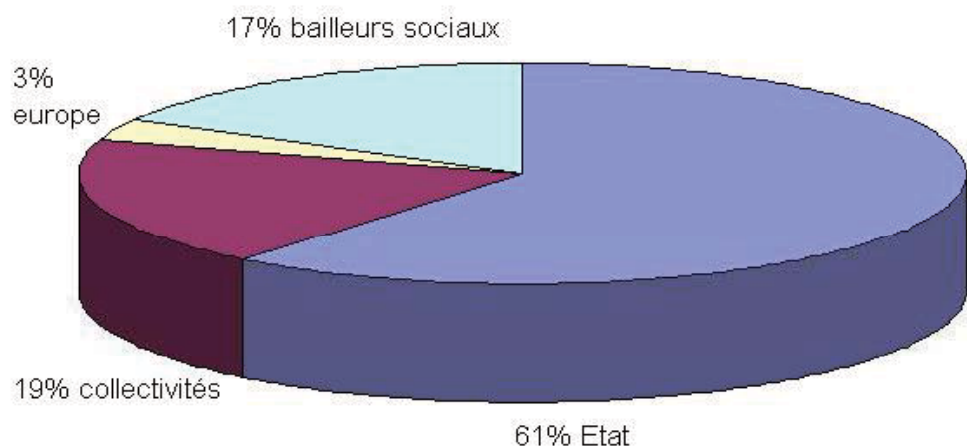
- social: urban renovation projects, demolition and reconstruction of 3,000 homes (12,000 inhabitants made safe)
- private: tax mechanisms for building works and increased monitoring of compliance with regulations.



Funding of the Plan

Phase one of the plan is funded as follows:

- 61% by the state
- 19% by local authorities
- 17% by social landlords
- 3% by Europe



Future plans

- Implementation of the French West Indies Earthquake Plan
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- **Future plans**

- Comprehensive programme for public buildings:
5 billion euros over 25 years
- An increase in the amount of earthquake resistance building work in public buildings between now and 2012:
 - collaborative projects between the state and local authorities
 - diagnosis of earthquake vulnerability of all the state assets of the French West Indies + scheduling of works
- Significant reduction in vulnerability to earthquakes for populations in these buildings (living accommodation or businesses, shops, hotels, etc.): 5 billion euros for private housing stock

THE FRENCH WEST INDIES EARTHQUAKE PLAN

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I. Context and implementation of a plan:

The French West Indies (Guadeloupe, Martinique, St. Martin and St. Barts) are four archipelagos situated in the Caribbean Basin with a total surface area of approximately 2,600km² and 850,000 inhabitants. These are the French regions with the highest seismic risk (expected acceleration on rock in excess of 3m/s²). Scientists predict that if a major earthquake occurred today in the French West Indies it could kill several thousand people, taking into account the current vulnerable state of buildings.

A. Background:

Since the 1990s, projects to improve knowledge of seismology (geological, geotechnical and seismological studies), to raise awareness among the population and to provide training have been carried out in the French West Indies. In parallel, a certain number of reports have drawn attention to the particularly high earthquake risk in these territories and to the need for urgent action to reduce this risk.

This led the French government to create the “French West Indies Earthquake Plan” in 2007 with governance, organisation, a scope of ambition and facilities commensurate with the challenge. The French West Indies Earthquake Plan is a national plan whose main objective is to reduce the number of casualties in the event of a major earthquake. This plan also contributes to reducing death and serious injury in less severe earthquakes. Furthermore, construction and earthquake-resistance work on buildings included in the plan will help to limit damage and hence the cost of post-earthquake reconstruction.

A first phase of approximately 1 billion euros covering the period 2007-2013 has been defined with the main aim of carrying out work to reduce the vulnerability of an initial large group of buildings - schools, disaster management buildings and social housing - whilst carrying out works to bring government buildings and medical establishments up to standard. During this phase, projects to raise awareness among the population, to prepare them for an emergency and to train professionals will be stepped up and programmes to improve knowledge in the form of geological, geotechnical and seismological studies will also be pursued.

B. Governance and organisation:

Governance of the French West Indies Earthquake Plan is provided by a Committee of Directors responsible for the strategic leadership of the plan which brings together the different French ministries involved, as well as state representatives in the French West Indies.

The implementation of the French West Indies Earthquake Plan is coordinated at a local level in each region by the Prefect representing the state, who consults a Regional Committee created in 2008, which is made up notably of local authorities and administrations.

A specific interministerial unit provides secretarial services for the Committee of Directors of the French West Indies Earthquake Plan, prepares and coordinates projects and suggests avenues to promote the implementation of the French West Indies Earthquake Plan.

II. The Content of the French West Indies Earthquake Plan and its progress:

The French West Indies Earthquake Plan activities can be listed under the following six headings:

- A. To consolidate or rebuild buildings for use in disaster management and networks
- B. To consolidate or rebuild educational establishments
- C. To consolidate or rebuild medical establishments
- D. To consolidate social housing and to stimulate thinking about private housing
- E. To reduce the risk to industrial plants
- F. To pursue projects to improve knowledge, raise awareness and to provide information and disaster management training

A. Disaster management buildings:

These are a critical element of the French West Indies Earthquake Plan. Buildings, whether they belong to the government, or to local authorities, such as fire stations for example, must be able to become operational after a major earthquake. The first phase of the programme at a cost of approximately 165 million euros will enable all fire stations to be made earthquake-resistant (65 million euros) and also all important government buildings (100 million euros).

50% of this programme is completed or under way and 50% is in the planning or scheduling stage.

Also part of this group are radio and TV communications buildings at a cost of 18 million euros and road networks (notably engineering structures) at a cost of 44 million euros.

B. Educational establishments:

One of the priorities of the French West Indies Earthquake Plan which is the focus of considerable activity is educational institutions belonging to local authorities. It has been decided that the government will provide substantive aid to municipalities. The plan is to carry out urgent consolidation or reconstruction work on school buildings which are vulnerable to earthquakes as a national responsibility.

The global cost of the programme is in excess of one billion euros and the first phase comprises work costing 170 million euros. The vulnerability to earthquakes of all government school buildings has been assessed and proposals have been made for earthquake-resistant consolidation work. For government primary schools, some 25 projects worth approximately 60 million euros are in the planning stage. The challenge facing the whole of the French West Indies consists of 550 state primary schools to be tackled at a cost of 850 million euros: 320 requiring earthquake-resistance work and 230 schools to be demolished and rebuilt.

C. Medical establishments:

Renovation and reconstruction of hospitals is being carried out in the French West Indies within the framework of national plans monitored by the Ministry of Health and bringing Hospitals in Guadeloupe and Martinique up to earthquake-resistant standards is a national priority.

Two important projects are the two main hospitals in the French West Indies. These two projects will cost in the region of 850 million euros. Once the cost of investment required for other establishments is added, more than one billion euros will need to be mobilised.

Bringing all hospitals and clinics up to earthquake-resistant standards in the next few years means that in the event of an earthquake they can on the one hand protect their occupants (patients and medical staff) and admit casualties provided that they are relatively small in number. This would not be the case in the event of a major earthquake, in which case significant assistance in addition to that provided by the region would be required from neighbouring French regions, mainland France and undoubtedly international aid too.

D. Housing:

The vulnerability of housing obviously lies at the heart of the issue of seismic risk in these sensitive territories. As far as social housing is concerned, urban renovation projects undertaken in the two regions of Guadeloupe and Martinique, and in particular in the towns of Pointe-à-Pitre and Les Abymes, will bring a large number of houses up to standard. In Guadeloupe alone, a global programme plans to demolish 2,560 houses at high or very high risk of seismic damage and to build 3,910 new homes, thus making nearly 12,000 inhabitants safe. These extremely complex projects entered the works phase proper in 2009 with several construction projects in the centre of Pointe à Pitre.

The dynamic policy of offering more social housing for rent in the French West Indies contributes to making a large number of families safe every year. These are families on modest incomes currently living out of necessity in inappropriate or even insalubrious housing which is vulnerable to seismic risk. The overall funding required for social housing is of the order of more than one billion euros.

Private, individual or small complexes often seem to be very vulnerable to seismic risk and studies are being carried out to see what approach can be taken. Studies have been undertaken to define the possibility of reinforcing or adapting houses to reduce their seismic vulnerability. Tax mechanisms are already in place offering a reduction in tax for “work to consolidate homes against the risk of earthquake”. In parallel, the authorities are exercising greater control over building regulations on private building sites.

E. Industrial plants:

There are over 200 installations listed in the French West Indies, 12 of which are SEVESO listed.

Departments of the Ministry for Sustainable Development monitor these industrial plants and all the SEVESO installations have been assessed for earthquake regulation compliance. The schedules for work have been submitted to the authorities and work has started on some sites and will be rolled out across 2010 and 2011.

F. Study projects for knowledge, training, information and preparation for disaster management:

Projects which have been in progress for several years concerning acquisition of knowledge about seismic hazards, raising awareness, information and training have been stepped up since 2007.

Training building and public works professionals in earthquake-resistant construction remains a priority project to be continued and reinforced in years to come. Training seminars for civil servants (government and local authority) were organised in 2009 and have led to the production of “educational toolkits” to help municipalities to take the overall risk of earthquakes into account.

In terms of raising awareness, the initial projects are based in the voluntary sector and help to proliferate the effects of a variety of schemes.

III. Future prospects:

The global programme for public buildings is estimated to be worth five million euros (in September 2010) over a period of about 25 years.

The pace of work to consolidate public buildings will increase in 2010 and 2011 and will plateau in 2012. In order to achieve this, close partnerships have been formed between the state and local authorities. Similarly, the state, which is keen to set an example with its own buildings, has launched inventories and diagnostic surveys in the first quarter of 2010 of the vulnerability of the entirety of its assets in the French West Indies to seismic risk and will implement programmes as soon as the results are available.

Proposals concerning privately-owned housing and buildings are currently being studied to allow the vulnerability to seismic risk of the population within these buildings (houses, businesses, shops, hotels, etc.) to be significantly reduced. Estimates, which are still quite crude at this stage, suggest that 5 billion euros of building work is required in privately-owned buildings.

