

# NATIONAL REPORT OF PORTUGAL

*Prepared for the IDNDR mid-term Review and the 1994 World Conference on Natural Disaster Reduction*

## I. OVERVIEW AND EXECUTIVE SUMMARY

1. Portuguese Government decision upon National Committee for IDNDR nomination remains to be taken. The Serviço Nacional de Protecção Civil (SNPC) - National Service for Civil Protection - has been the Focal Point for activities related to the International Decade's objectives.

2. Despite its own limitations the SNPC has been programming and developing some actions towards the fulfillment of the three main IDNDR's objectives.

## II. RISK ASSESSMENT

3. Earthquakes, Tsunamis and Volcanic Eruption. PORTUGAL is located in a world area of medium seismic activity. The maximum seismic intensity has been recorded in AÇORES Islands, western continental coast down to south of LISBOA, TEJO river valley, and ALGARVE (IX and X degrees in the modified Mercalli scale).

The most vulnerable area in the continental part of PORTUGAL is the TEJO river valley, because of the high demographic density, the big deal of infrastructures and buildings, and the high concentration of economic activities located on the river banks.

It is estimated a 200 years' period of recurrence for the continent, and around 20 years for AÇORES.

When the earthquake's epicenter comes about Gorringe Fault (Atlantic Ocean), the coastal areas of LISBOA down to south, and ALGARVE, are mostly affected by tsunamis.

There are several historical records of such disasters, namely associated to the 1775 Nov. 1 earthquake.

At present, the only region with volcanic activity is AÇORES. The last eruption took place in 1957.

### Annex A - Seismic Activity Map

4. Floods and Storms. The type of floods is linked to the prevailing weather and geomorphologic features of water basins.

In the rivers DOURO, TEJO, and SADO major basins, inundation causes serious damage and people's dislocation during several days' periods.

In minor hydrological basins of LEIRIA, LISBOA, SETÚBAL, and ALGARVE, the basic cause for river flooding is the incidence of heavy rainfall over big urban areas containing many man-made obstructions in the flood path. Local inhabitants are seriously affected either in terms of casualties or economic damage.

Scientific and technical knowledge on this field does allow the forecasting of disasters and the management and control of their effects and evolution.

Strong storms against mountainous features in the northern and central coast are associated to weather fronts crossing from Atlantic Ocean to Central Europe that cause heavy rainfall and high winds.

#### **Annex B - Flood - prone Land Map**

5. Landslides. Landslides don't happen very often in PORTUGAL, though, this type of hazard is not very well investigated. Normally landslides are related to heavy rainfall, seismic activity or ecological disruption caused by man-made engineering infrastructures.

Areas located north of LISBOA, and DOURO river valley are particularly vulnerable to such hazard.

#### **Annex C - Landslide - prone Land Map**

6. Forest Fires. PORTUGAL does have a large forest area. The Mediterranean weather prevailing conditions do favor forest fire's propagation, mainly from July to September.

Northern and central interior tier of PORTUGAL, TEJO river valley, and ALGARVE are particularly damaged by this hazard.

Every year there are around 20, 000 forest fires that cause severe economic damage (around 2, 0 billion Portuguese Escudos), and some casualties.

#### **Annex D - Forest Fire Hazard Map**

7. Drought. Central and southern interior tier of PORTUGAL is periodically under drought conditions that damages agriculture crops and disrupts public supply of water and other staples.

Unbalanced rainfall and deficient water management are the main background for such event.

1992/93 was the last drought's period in PORTUGAL. In 1993, the cultivated area with selected crops was less 25, 704 acre than in a normal agriculture year.

#### **Annex E - 1993 Drought Map**

### III. MITIGATION ACTIVITIES

8. Disaster Mitigation Plans, Projects and Studies. The following activities were accomplished, or are underway, conducted by various scientific and research organizations, and/or by governmental departments:

- \* Centers for prevention and detection of forest fires, linked to a national net of observation posts covering the whole country (100% accomplished);
- \* Centers for prediction and prevention of floods - DOURO, TEJO, and SADO rivers - (100% accomplished);
- \* Study on major flooding basins (90% accomplished);
- \* Laboratory for collection and processing seismic information (25% accomplished);
- \* Engineering project to regulate the TEJO flood plain, and other minor basins in LISBOA, SETÚBAL, and ALGARVE (25% accomplished);
- \* Municipal directory plans for urbanization (10% accomplished);
- \* Geologic study on seismic-tectonic soils, and types of engineering construction in TEJO river valley, SETÚBAL, and ALGARVE (initial status);
- \* Study on anti-seismic behavior of vial accesses to LISBOA (initial status);
- \* Study on drought/desertification of ALENTEJO, and its effects on agriculture performance (initial status).

9. Population Awareness Campaign and Public Education and Information. Through the distribution to the population of around 20. 0 million (from 1992 Jan. till now) leaflets containing security procedures and self-protective measures upon earthquakes, floods, home and forest fires, saving water resources, using domestic gas, etc., as well as other educational publications (e.g., "The Hearth is an Alive Planet" - 1. 0 million -, "Urgent Evacuation Plan for Schools" - 10, 000 -, "Booklets on Earthquake, and Home Fire Protective Measures", to be colored by youngsters - 700, 000 -), and technical publications (e.g., "Mitigation Measures for Seismic Hazard on Old Urban Buildings" - 500 -).

10. Training. Every year since the IDNDR's beginning, several exercises were planned and organized to drill emergency plans, either at national, or regional and local levels.

These exercises have been based on flood, earthquake, and fire natural hazards' scenarios. For instance, last year took place an emergency training exercise, based on a seismic scenery. Around 920 schools, and 265, 000 pupils and teachers, prepared and activated their own plans for urgent evacuation from their schools, under the coordination of regional and local civil protection agents and crisis managers, complemented with an "ad hoc" public information campaign supported by national, regional and local mass media.

11. Emergency Planning. National Emergency Plan was worked out through 1992, and approved by Portuguese Cabinet's decision on 1993 Apr. 8. This was the first step to push forward the emergency planning at regional (district), and local (municipality) levels, that are increasing now.

#### IV. WARNING

12. Weather Forecast and Control System. Managed by Meteorological Institute (MI), that is direct and permanently linked to SNPC; 3 (three) days in advance upon the detection of a weather' situation able to generate heavy rainfall and/or strong winds, the MI tracks down the situation's evolution and disseminates special weather reports to inform the population.

13. Seismic Control System. An automated seismic sensor's net covers the more vulnerable areas.

14. Flood Plain Management System. In accordance with the new Dam Safety Regulations, an electronic warning and alert system for floods and dam failures, covering all major water basins, will be settled and activated in the near future.

15. Warning Dissemination System. National system is based on national, regional and local radio and TV broadcasting stations, complemented with acoustic and direct warnings through civil protection agents (Police, National Guards, Firemen).

#### V. INTERNATIONAL COOPERATION

16. Despite some constraints on scientific and technological fields, and limited resources, PORTUGAL is capable to provide assistance to other countries in all types of natural disasters. Relief units can be organized for assistance, however, without casualties' detection cells. Preparedness - 2 to 3 days.

17. Bilateral agreements for cooperation and mutual aid with SPAIN and MOROCCO are already in force.

18. PORTUGAL is a member state of EUR OPA (Open Partial Agreement).

19. Also in the field of humanitarian assistance to other countries, PORTUGAL is cooperating with international "fora", namely, UN/DHA and EU/ECHO, either through governmental agencies or NGOs. Special aid programs were established in support to Portuguese expression African countries' development, education and technical achievements (namely ANGOLA and MOZAMBIQUE). All of them are developed and implemented under the aegis of Secretary of State for Cooperation/Foreign Affairs Ministry.

## VI. OVERALL EVALUATION AND FUTURE PROGRAM OF IDNDR ACTIVITIES

20. Goals and Achievements. Portuguese Government decision on National Committee for IDNDR remains to be taken, though, disaster mitigation plans and other activities have been met only through SNPC current activities, that seems unsatisfactory to accomplish IDNDR's objectives.

Anyway a comprehensive national assessment of risks from natural hazards was established and taken into account in the National Emergency Plan.

Mitigation plans at national, regional and local levels, involving long-term prevention and preparedness and community awareness, were also upgraded.

Ready accesses to European, national, regional and local warning systems and broad dissemination of warnings, although being considered reasonable, require future effective improvements.

21. Expectations and Plans for the Second Half of the Decade. It is expected that Portuguese Government takes the decision to nominate the National Committee to IDNDR as a way to improve the research program and close the gaps in knowledge in disaster related research areas as described previously. Coordination and cooperation are intended with other ongoing national activities, such as the disaster research at universities and other technical and scientific institutions.

It is desirable that chains from causes to consequences, inherent to all types of disasters should be investigated through interdisciplinary research.

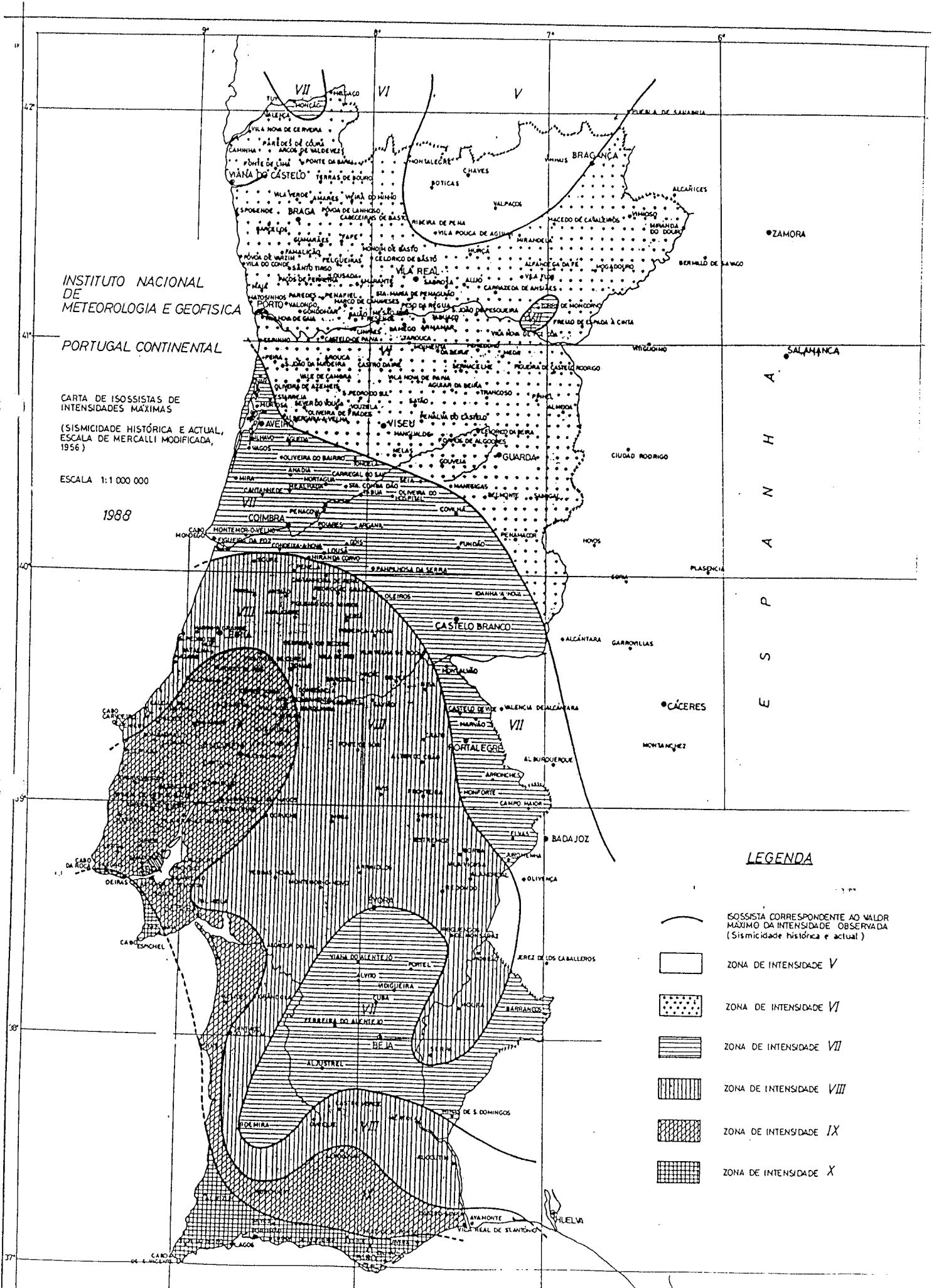
It is required a better control on research projects, which scientists conduct within their current research activities, and which are sponsored by regular grants of PORTUGAL or by the European Community.

**It is expected the reinforcement of emergency planning at regional and local levels. The population awareness campaign and public education and information will be carried on forthcoming years.**

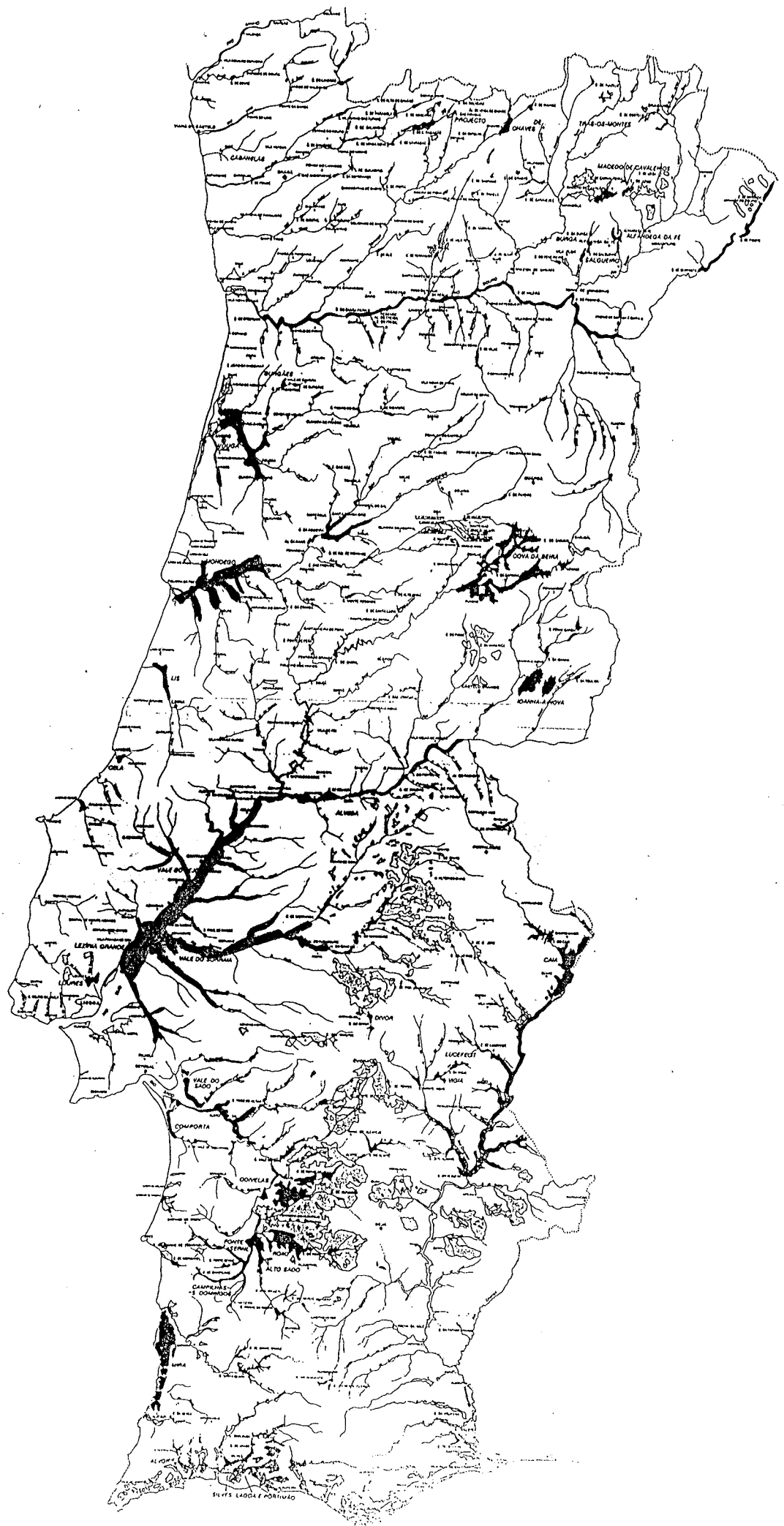
**ANNEXES:**

- A - Seismic Activity Map**
- B - Flood-prone Land Map**
- C - Landslide-prone Land Map**
- D - Forest Fire Hazard Map**
- E - 1993 Drought Map**

# ANNEX A (to NR PO) - Seismic Activity Map




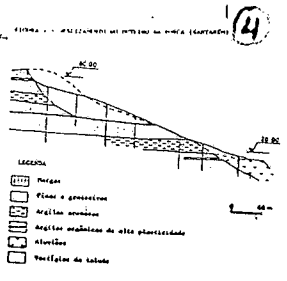
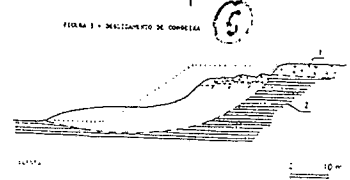
# ANNEX B (to NR PO) - Flood-prone Land Map





# ANNEX C (to NR PO) - Landslide - prone Land Map

  
**PORTUGAL**  
**ATLAS DO AMBIENTE**  
**CARTA GEOLÓGICA**

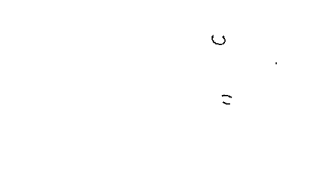
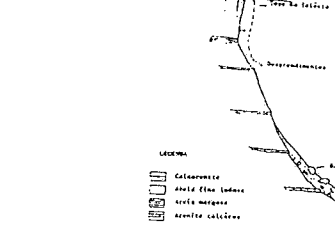
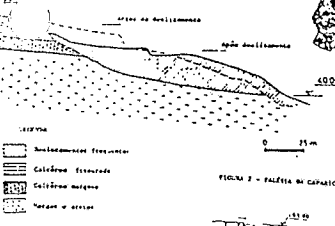
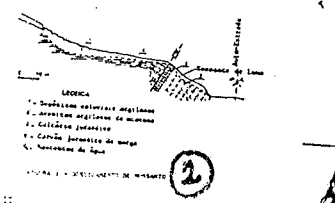
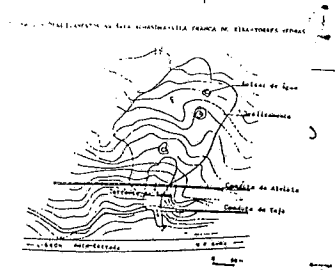


**ESTRATIGRAFIA E OROGENIA**

PERÍODO	ERA	PERÍODO
ALPINO	CENOZOICO	QUATERNÁRIO
		TERCIÁRIO
		ALBUQUERQUE
MESOZOICO	CENOZOICO	ALBUQUERQUE
		ALBUQUERQUE
HERCÍNICO	PALÉOZOICO	PERMIANO
		TRIASICO e base do JURASSICO
ANTE-HERCÍNICO	PALÉOZOICO	DEVONIANO
		ORDOVIZIANO
PRÉ-CAMBRIANO	PRÉ-CAMBRIANO	PRÉ-CAMBRIANO
		PRÉ-CAMBRIANO

**ROCHAS ERUPTIVAS**

ALPINAS	BASALTO DIABÁSIO GRANITO GNEISSO MAFÍCA
HERCÍNICAS	GRANITO DIABÁSIO MAFÍCA E ULTRAMAFÍCA PORTLANDO ACIDICO E INTERMEDIÁRIO
ANTE-HERCÍNICAS	GRANITO DIABÁSIO MAFÍCA E ULTRAMAFÍCA

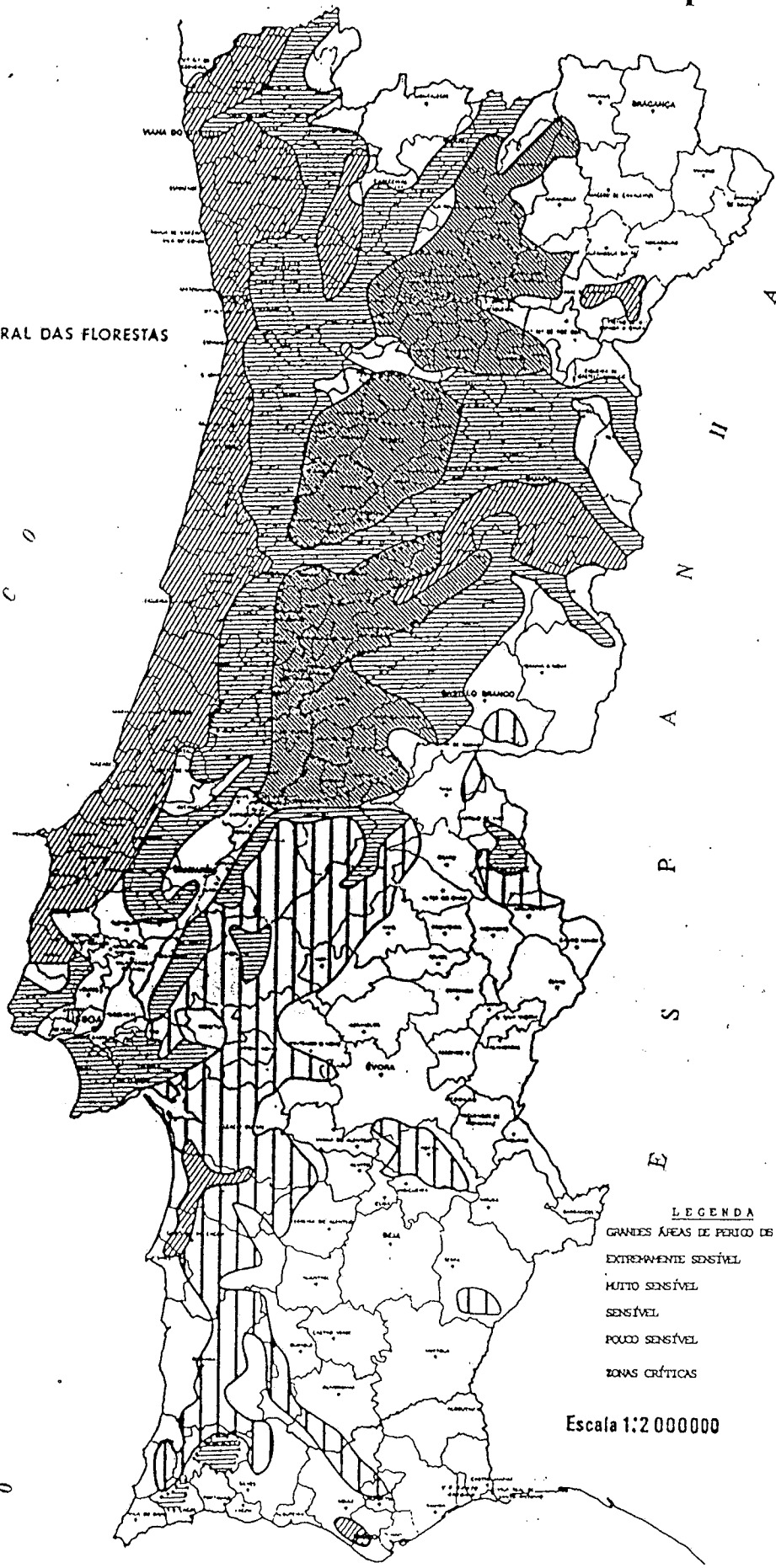







# ANNEX D (to NR PO) - Forest Fire Hazard Map

DIRECÇÃO GERAL DAS FLORESTAS

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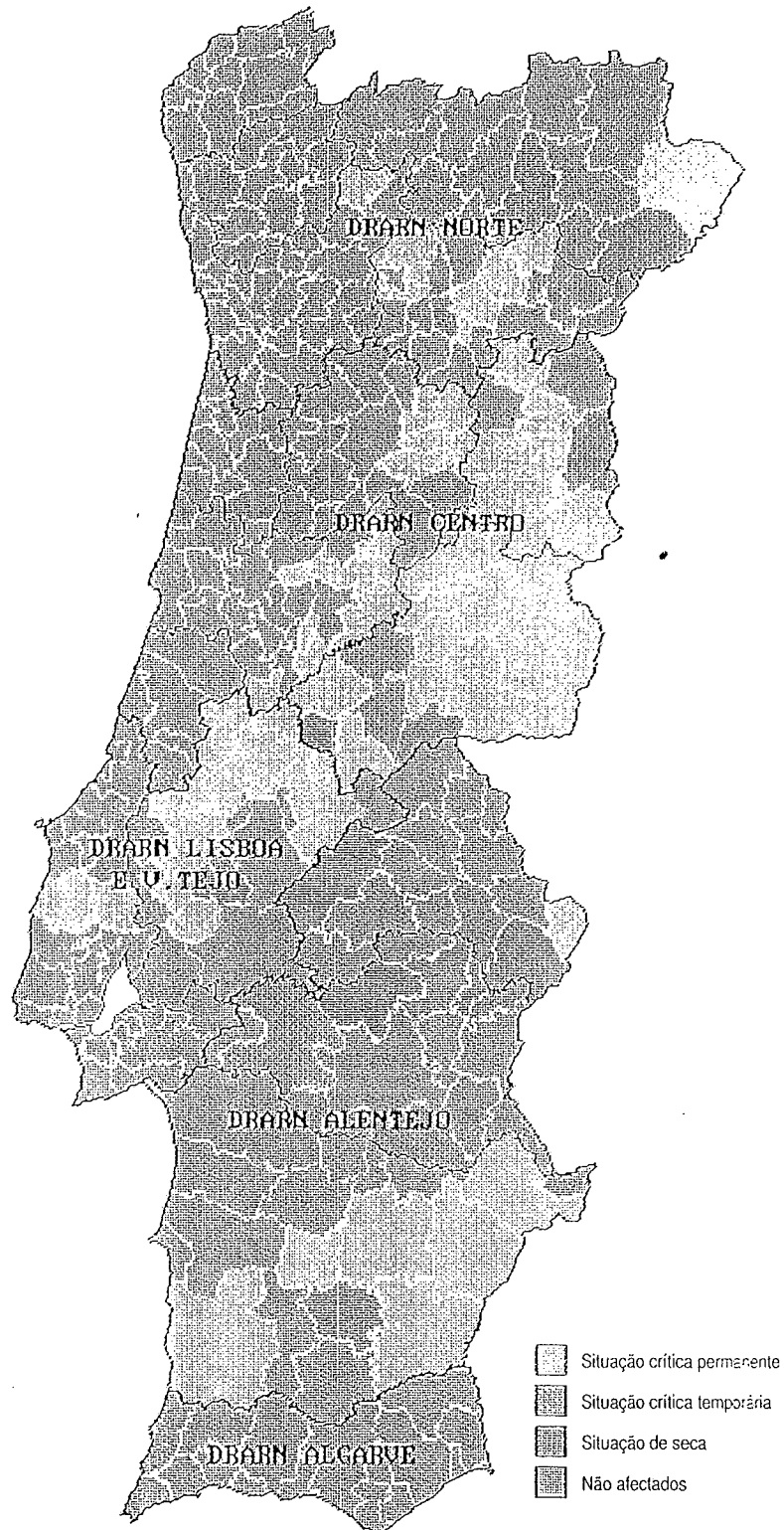
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  - EXTREMAMENTE SENSÍVEL 
  - MUITO SENSÍVEL 
  - SENSÍVEL 
  - POUCO SENSÍVEL 
  - ZONAS CRÍTICAS 

Escala 1:2 000 000

# ANNEX E (to NR PO) - 1993 Drought Map



Situação crítica correspondente a interrupções, no abastecimento, superiores a 12 horas diárias ou abastecimento assegurado por autotanques.

PORTUGAL  
NATIONAL SUMMARY REPORT  
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<b>Contact:</b>	Focal Point for IDNDR Servico Nacional de Proteccao Civil Att.: Dr. J. Afonso S. Nicolau Rua da Bela Vista à Lapa Nr. 57 1200 Lisboa (Portugal)	<b>Phone:</b> (351.1) 522202 <b>Fax:</b> (351.1) 521809 <b>Telex:</b> 14395 SNPC P
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**SECTION A: PROFILE**

(This section contains relevant basic information about your country.  
Please complete and check the information already included.)

**1. Composition of National Committee (Focal Point): N/A (See Annex)**

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(Please list the names of the institutions represented and indicate in the brackets the number of members for each group)

Ministries		Non-Governmental Organizations	
-		-	
-		-	
-	[ ]	-	[ ]
Academic & Research Institutions		Media	
-		-	
-	[ ]	-	[ ]
Private Sector		Insurance	
-	[ ]	-	[ ]
Public Services (e.g. meteorological, etc)		Others	
-		-	
-	[ ]	-	[ ]

## 2. Internal organization of the National Committee

(Please describe hierarchy, responsibilities, coordination and cooperation mechanisms in natural disaster reduction activities.)

N/A

## 3. Prevailing hazards See Annex

Type	Location	Affected Population
- Fire - Flood - Storm - Accident		

(Please attach additional information if necessary)

## 4. Recent natural disasters

Type	Location	Affected Population	Losses
Storm	Madeira	10,000	8 dead 4 missing 27 injured 70 houses destroyed

## 5. National socio-economic conditions

- Population: 9,345,000
- Gross-National Product (GNP): 84,629 million US\$ (1992)
- Per-Capita Income: 8,991.2 US\$ (1992)

**6. Availability of assistance to other countries in the field of natural disaster reduction.**

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(Please list potential resources, scientific expertise, technology, etc.)

See Annex

**7. International assistance required for natural disaster reduction**

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(Please indicate requirements for scientific expertise, technology, resources etc.)

See Annex

## SECTION B: STRATEGIES AND ACTIVITIES

(This section deals with current or planned strategies and activities.)

### 1. Steps towards achieving the 3 main Decade targets

- (a) Comprehensive national assessments of risks from natural hazards, with these assessments taken into account in development plans;

See Annex

- (b) Mitigation plans at national and/or local levels, involving long-term prevention and preparedness and community awareness; and

- Raising awareness in the population with the help of regional examples (Douro river)

See Annex

- (c) Ready access to global, regional, national and local warning systems and broad dissemination of warnings.

See Annex

## 2. Present national plan for natural disaster reduction

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a) Time span covered: 3 years (1992/94)

b) Agencies, institutions and organizations involved:

SNPC

c) Implementing agencies:

SNPC

d) Funds available for implementation:

SNPC Budget

## 3. Legislation introduced and enacted in relation to natural disaster reduction

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- \* Civil Protection Basic Law (91AUG29)
- \* SNPC, Organic Law (93JUN03)
- \* Organization of Emergency Operations Centers, at National, Regional and Local Levels (93JUN18)
- \* Civil Protection support by Armed Forces (93JUN28)
- \* Cooperation of Scientific and Technological Institutions and Organizations with SNPC (93JUL13)
- \* National Committee for Civil Protection (93JUL19)



4. Disaster mitigation activities completed or underway: See Annex

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a) *Identification of hazard zones: hazard assessment*

Title of project: **Laboratory for collection and processing seismic information**

Status:

**25% accomplished**

Participating institutions in the country and/or on the international level:

**Laboratório Nacional de Engenharia Civil (LNEC)**

**Instituto de Meteorologia (IM)**

**Instituto Superior Técnico (IST)**

Costs of project:

**N/A**

Sources of funding:

**Comission of European Communities**

**National Budget**

Implementing agencies:

Address (telephone and fax-number) of the agency in charge:

**Instituto Superior Técnico (IST)**

**Av. Rovisco Pais, 1 - 1096 LISBOA CODEX**

**Tel. 351 - 1 - 847 34 21**

**Fax: 351 - 1 - 849 92 42**

b) *Monitoring, prediction and warning*

Title of project: **Centers for prediction and prevention of floods  
(Douro, Tejo and Sado rivers)**

Status: **Tejo 100% accomplished  
Douro and Sado - 5% accomplished**

Participating institutions in the country and/or on the international level:  
**Instituto Nacional da Água (INAG)  
Capitania do Porto de Leixões  
Instituto de Estruturas Agrárias e Desenvolvimento Rural**

Costs of project:

**N/A**

Sources of funding:

**National Budget**

Implementing agencies:

Address (telephone and fax-number) of the agency in charge:

**Instituto Nacional da Água (INAG)**

**Av. Almirante Gago Coutinho, 30 - 1000 LISBOA**

**Tel: 351 - 1 - 847 00 96**

**Fax: 351 - 1 - 849 47 87**

c) *Short-term protective measures and preparedness*

Title of project:

**Main flooding basins**

Status:

**90% accomplished**

Participating institutions in the country and/or on the international level:

**SNPC and LNEC**

Costs of project:

**N/A**

Sources of funding:

**SNPC Budget**

Implementing agencies:

**SNPC**

Address (telephone and fax-number) of the agency in charge:

**Serviço Nacional de Protecção Civil (SNPC)**

**Rua da Bela Vista à Lapa, 57 - 1200 LISBOA**

**Tel: 351 - 1 - 396 05 30 / 396 44 00**

**Fax: 351 - 1 - 396 87 01**

d) *Long-term preventive measures*

Title of project: **Engineering projects to normalize the Tejo river bed  
and other small basins in Lisboa, Setúbal and Algarve**

Status:

**25% accomplished**

Participating institutions in the country and/or on the international level:

**INAG**

Costs of project:

**N/A**

Sources of funding:

**National Budget**

Implementing agencies:

Address (telephone and fax-number) of the agency in charge:

**Instituto Nacional da Água (INAG)**

**Av. Almirante Gago Coutinho, 30 - 1000 LISBOA**

**Tel: 351 - 1 - 847 00 86**

**Fax: 351 - 1 - 849 47 87**

e) *Land-use and risk management*

Title of project:

**Municipal directory plans for urbanization**

Status:

**5% accomplished**

Participating institutions in the country and/or on the international level:

**All major municipalities**

Costs of project:

**N/A**

Sources of funding:

**National and Municipal Budget**

Implementing agencies:

Address (telephone and fax-number) of the agency in charge:

**Ministério do Planeamento e da Administração do Território**

**Praça do Comércio - 1100 LISBOA**

**Tel: 351 - 1 - 342 05 93**

**Fax: 351 - 1 - 342 56 95**

*f) Public education and information*

Title of project: See Section B. 1. (b)

Status:

Participating institutions in the country and/or on the international level:

Costs of project:

Sources of funding:

Implementing agencies:

Address (telephone and fax-number) of the agency in charge:

**5. Plans to fully achieve Decade targets by the end of 1999**

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(As in 4 above, for each area of activity [i.e., hazard zoning/assessment, monitoring, preparedness, etc] please indicate as applicable, the project title, the participating institutions in the country and/or on the international level, the costs of projects, the sources of funding and the implementing agencies.)

To be issued as soon as the National Committee be appointed by Portuguese Cabinet's decision.

## SECTION C: INTERACTIONS

(This section focuses on international involvement in the IDNDR.)

### 1. Publications on IDNDR-related subjects:

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(E.g. manuals, brochures, bulletins and other publications of relevance to IDNDR. Please mention title, author/institution, place and year of publication)

See Annex

### 2. IDNDR meetings and conferences held or planned:

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(Please indicate, date, location, organizing agency, national and international participation.)

See Annex

### 3. Current or planned partnerships and cooperation related to IDNDR with other countries

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(Please indicate Governments, National Committees, Institutions or Organizations involved.)

Nothing to report.



## SECTION D: EVALUATION

(This section analyses national progress and outlines possible improvement.)

### 1. Overall evaluation of national disaster mitigation programmes including, but not limited to, those initiated after IDNDR and achievements up to now

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(Please elaborate on whether the targets set by the National Committee, if any, the national disaster mitigation plans or other IDNDR activities have been met. If not, please indicate reasons.)

Portuguese Government decision upon National Committee for IDNDR nomination remains to be taken, so, disaster mitigation plans and other activities have been met only through SNPC normal activities, that seems unsatisfactory to accomplish IDNDR targets.

### 2. Review of the IDNDR

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(Critique of the Decade to date and suggestions for improvement/modifications in the second half.)

Nothing to comment.

# ANNEX (TO NATIONAL SUMMARY REPORT - IDNDR)

## SECTION A: PROFILE

### 1. Composition of National Committee (Focal Point)

Portuguese Government decision upon National Committee for IDNDR nomination remains to be taken.

The Serviço Nacional de Protecção Civil (SNPC) - National Service for Civil Protection - has been the focal point for activities related to International Decade objectives.

### 3. Prevailing hazards

*Type; Location; Affected Population*

Forest fire; North and Central interior tier, Tejo river valley, Algarve; 30, 000

Flood; Douro, Tejo and Sado rivers; 37, 000

Storm; Western coast, Madeira, Açores; 23, 000

Earthquake; Açores, Western coast south of Lisboa, Tejo river valley, Algarve;  
100, 000

### 6. Availability of assistance to other countries in the field of NDR

Despite some constraints on scientific and technological fields, and limited resources, Portugal is capable to provide assistance to all types of natural disasters.

Relief units can be organized for assistance, however, without casualties detection cells. Preparedness - 2 to 3 days.

Bilateral agreements for cooperation and mutual aid with Spain and Morocco are already in force.

### 7. International assistance required for NDR

Eventually:

\* Fire - fighting aircrafts for major forest fires;

\* General assistance, in case of high magnitude (> 7) earthquake in Lisboa.

## **SECTION B: STRATEGIES AND ACTIVITIES**

### **1. Steps towards achieving the 3 main Decade targets**

a. The National Emergency Plan was worked out through 1992 and approved by Portuguese Cabinet's decision, on 1993 Apr. 8.

A national assessment on risks from natural hazards is included on its "Situation Chapter", however, it is an initial attempt that requires much more research and investigation efforts to come out with a complete comprehensive assessment.

#### **b. Population awareness campaign and public education and information**

Through the distribution to the population of around 20. 0 million (from 1992 Jan. till now) leaflets with security procedures and self - protective measures upon earthquakes, floods, home and forest fires, saving water resources, using domestic gas, etc., as well as other educational publications (e. g., "The Earth is an Alive Planet" - 1. 0 million -, "Urgent Evacuation Plan for Schools" -40, 000 -, "Booklet on Earthquake Protective Measures", to be colored by youngsters - 350, 000 -), and technical publications (e. g., "Mitigation Measures for Seismic Risk on Old Urban Buildings" - 500 -).

The campaign will be carried on forthcoming years.

#### **Other major programs**

\* 1990 Emergency Plan for Tejo River Floods, was revised and drilled by civil protection agents, at regional level (District of Santarém), complemented with a display of material and special equipment employed on the drill, and an "ad hoc" public information campaign supported by national, regional and local mass media.

\* 1991 Emergency Plan for Douro River Floods, was settled and drilled, at local level (Municipality of Régua), complemented with similar actions as mentioned above.

\* 1992 Emergency Training Exercise, based on a seismic scenery to test civil protection agents and relief forces capabilities, at regional level (Districts of Lisboa and Santarém), complemented with similar actions as mentioned above.

\* 1993      Emergency Training Exercise, based on a seismic scenery, around 920 schools, and 265, 000 pupils and teachers, prepared and activated their own plans for urgent evacuation, under the coordination of regional and local civil agents, complemented with an "ad hoc" public information campaign supported by national, regional and local mass media.

c.      Warning systems are based on national, regional and local radio and TV broadcasting stations complemented with acoustic and direct warnings through civil protection agents (Police, National Guards, Firemen).

In accordance with the new Dam Safety Regulations, an electronic warning and alert system for floods and dam failures, covering all major water basins, will be settled down and activated in the future.

#### 4. Disaster mitigation activities completed or under way

*Other projects underway:*

\*      Geological study on seismic-tectonic soils and types of construction in Tejo river valley, Setúbal and Algarve

\*      Study on anti-seismic behavior of vial accesses to Lisboa

\*      Seismic control system

\*      Weather forecast and control system

## SECTION C: INTERACTIONS

### 1. Publications on IDNDR - related subjects

Since the very beginning of the Decade, a big amount of texts about IDNDR have been published by Portuguese press (papers and magazines), based on background papers and interviews provided by SNPC.

Also the " Civil Protection " magazine, edited by SNPC, inserted a detailed text on the subject, in 1993 Oct. (Ano V, II Série, N°.1). Another text will be published in the forthcoming magazine's number, to be issued by 1994 Feb..

## **2. IDNDR meetings and conferences held or planned**

**National Conference on Natural Risks, was held in Lisboa ( 1993 Nov. 8/10), organized by Laboratório Nacional de Engenharia Civil (LNEC) - National Laboratory for Engineering Systems -, and supported by several institutions including SNPC.**