

1 Towards International Cooperation in Managing Forest Fire Disasters in the Mediterranean Region

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1.1 Rationale

Growing concern about the trend of increasing vegetation destruction by fire application and wildfires has led to a number of international cooperative initiatives in wildland fire science, management, and policy development. In the 1990's a number of international and interdisciplinary fire research programmes contributed to a better understanding of the impacts of fire on ecosystems, biogeochemical cycles, atmosphere, and climate. The development and improvement of the utilisation of operational space-borne sensors for wildland fire early warning, detection, monitoring, and impact assessment has resulted in enhanced capabilities to obtain detailed and comprehensive information on the extent of wildland fires occurrence and consequences. A large number of bilateral technical cooperation projects in fire management between the industrial and developing countries have resulted in an increasing expertise in technology transfer and methodologies to address local target groups and approaches in fire management. However, the worldwide fire crisis during the El Niño episode of 1997-98, and a number of large fire disasters in the Mediterranean Region, North America, Europe, Australasia, and Africa between 1998 and 2001 revealed that an international wildland fire network was needed for facilitating information sharing and wildland fire disaster assistance. The Global Fire Monitoring Center (GFMC) was founded in 1998 in the aftermath of the Southeast Asian fire and smoke crisis as an activity of the UN International Decade for Natural Disaster Reduction (IDNDR). The GFMC mobilised an international expert pool that was organised in a "Working Group on Wildland Fire" within the United Nations Interagency-Task Force for Disaster Reduction, UN International Strategy for Disaster Reduction (ISDR).¹ The Working Group, through the GFMC, is facilitating the establishment of a global network of "Regional Wildland

Fire Management Networks". These regional networks will consist of a number of dedicated regional activities or sub-nets, e.g. wildland fire early warning, monitoring, information (data) management, science, fire management, and national to multilateral cooperative policy development. It is intended to activate regional networks or regional precursor initiatives in preparation for the 3rd Global Wildland Fire Conference and Summit (Sydney, Australia, 2003). The countries bordering the Mediterranean Basin are currently involved in setting up multinational to regional cooperation programmes that would be candidate arrangements to build up a Regional Mediterranean Wildland Fire Management Network.

In this chapter, after a brief introduction on fire as a natural hazard in the Mediterranean region (50.2), international cooperative approaches in forest fire management will be reviewed (50.3), and brief conclusions will be offered (50.4).

1.2 Introduction

Fire is the most dangerous natural threat to forests and wooded areas of the Mediterranean Basin. Unlike other parts of the world, where a large percentage of fires are of natural origin (lightning), the Mediterranean basin is marked by a prevalence of human-caused fires. Paradoxically, the fundamental cause of forest fires is linked to increased standards of living among the local populations. Far-reaching social and economic changes in Western Europe have led to a transfer of population from the countryside to the cities, a considerable deceleration of the demographic growth (Zlotnik ch. 33), an abandonment of arable lands, and a disinterest in the forest resource as a source of energy. This has resulted in the expan-

1 See: UN-ISDR Working Group on Wildland Fire website: <<http://www.unisdr.org/unisdr/WGroup4.htm>>.

Table 1.1: Fire statistical data of the Mediterranean countries and its neighbours in SE Europe. Data from Bulgaria may serve as an example for recent changes in wildland fire occurrence during the last 25 years and have been provided in detail. Source: GFMC Wildland Fire Database.

Country	Time period	Average number of fires	Average area burned, ha
Albania	1981-2000	667	21 456
Algeria	1979-1997	812	37 037
Bulgaria	1978-1990	95	572
	1991-1999	444	6 730
	2000	1 710	57 406
	2000-2002	601	13 436
Cyprus	1991-1999	20	777
Croatia	1990-1997	259	10 000
France	1991-2000	5 589	17 832
Greece	1990-2000	4 502	55 988
Israel	1990-1997	959	5 984
Italy	1990-1999	111 163	118 576
Lebanon	1996-1999	147	2 129
Morocco	1960-1999	n.a.	2 856
Portugal	1990-1997	20 019	97 175
Romania	1990-1997	102	355
Slovenia	1991-1996	89	643
Spain	1990-1999	18 105	159 935
Turkey	1990-1997	1 973	11 696

sion of wooded areas, erosion of the financial value of the wooded lands, a loss of inhabitants with a sense of responsibility for the forest and, what is important, an increase in the amount of fuel.²

A recent regional situation analysis published in the framework of the FAO Global Forest Fire Assessment 1990-2000 (Alexandrian/Esnault/Calabri 2000) reveals that the average annual number of forest fires throughout the Mediterranean Basin is close to 50,000, i.e. twice as many as during the 1970's (table 50.1). In those countries where data have been available since the 1950's, a large increase in the number of forest fires can be observed from the beginning of the 1970's: Spain (from 1,900 to 8,000), Italy (from 3,000 to 10,500), Greece (from 700 to 1,100), Mo-

rocco (from 150 to 200), and Turkey (from 600 to 1,400).

The average annual accumulated area burned by wildfires for the Mediterranean countries is approximately 600,000 ha. This number is also almost twice as much as during the 1970's. The trend observed is, however, much less uniform than for fire numbers. A worsening situation is clearly observed in Greece (from 12,000 to 39,000 ha), Italy (from 43,000 to 118,000 ha), Morocco (from 2,000 to 3,100 ha), Spain (from 50,000 to 208,000 ha) and former Yugoslavia (from 5,000 to 13,000 ha). In Portugal, the situation has also worsened, although its statistical series starts later. In Algeria and Cyprus, no apparent trend emerges from the statistics, but some years present a very high maximum (e.g. 1957, 1958, and 1983 in Algeria; 1974 in Cyprus). Finally, the total burnt area has remained relatively stable in Croatia, France, Israel, and Turkey. It is significant to note that no country shows an improved situation, despite all the measures taken. The growth in the area of forest, particularly of unmanaged forest in most of the countries to the north of the Mediterranean, increases the likelihood of larger fires now than in the past. This is the case for some recent fires in Spain (table 50.2).

The policies adopted until recently have given priority to fire-fighting (and the preparations for related activities, i.e. pre-suppression) to the detriment of efforts aimed at prevention or control. Paradoxically, in some areas, successful prevention efforts have resulted in an increase of fuel loads, and therefore an increase of the risk of more severe wildfires that will be difficult to control.

Policies affecting wildland fires are numerous, and many of them are beyond the direct control of the forest sector. National and international politics that influence political changes and create tensions, unrest, and war, and policies that determine rights of ownership and use of land, employment, urbanisation, and agricultural subsidies all have an impact on wildland fires. It is in these areas that a "solution" to the forest fire problem may be found.

1.3 International Cooperative Approaches in Forest Fire Management

On 26 November 1993, a workshop on forest fires was held in the European Parliament, Brussels, organised by the Scientific and Technological Options Assessment (STOA) programme of the European Parlia-

2 FAO: Global Forest Fire Assessment 1990-2000: <http://www.fao.org:80/forestry/fo/fra/docs/Wp55_eng.pdf>.

Table 1.2: Number of forest fires and burnt area in South European EU Member States (1980-2001)

Number of fires	Portugal	Spain	France	Italy	Greece	EU (5)
2001	27,067	19,631	4,103	7,134	2,535	60,470
Average 1980-1989	6,778	9,514	4,910	11,571	1,264	34,036
Average 1990-1999	22,250	18,151	5,489	11,352	1,748	58,991
Average 1980-2001	15,975	14,572	5,168	11,227	1,601	48,544
Total	351,455	320,060	113,690	246,999	35,229	1,067,973

Burnt Area (ha)	Portugal	Spain	France	Italy	Greece	EU (5)
2001	111,165	66,975	17,000	76,427	18,221	288,888
Average 1980-1989	74,486	244,788	39,157	148,485	54,417	559,331
Average 1990-1999	102,203	161,323	23,024	108,890	44,108	442,529
Average 1980-2001	92,621	196,171	39,114	125,674	51,296	497,230
% of total (2001)	38	23	6	26	6	100
Total	2,027,656	4,315,766	662,508	2,764,825	1,128,501	10,939,062

Source: EU, Commission, DG, Environment, Civil Protection and Environmental Accidents, 2002: Forest Fires in Europe. 2001 fire campaign (Brussels: European Communities), S.P.I.02.72 EN; at: <<http://www.>> .

ment (1993). The STOA programme is the official organ for the evaluation of scientific options of the European Parliament. It provides scientific and technical advice to the members and the committees of the European Parliament.³ The project "Forest Fires in Europe" was devoted to a close investigation on a political level of the fire problem of Southern Europe. The meeting revealed that proposals to overcome the deficiencies of cooperation and coordination within and between the Mediterranean nations are abundant. Two main points were raised to highlight the crucial weaknesses of Mediterranean fire protection. First, it was stated that there are the internal problems within the nations. These are largely caused by the splitting of responsibilities in wildfire prevention and control between a variety of agencies involved, resulting in a weakening of the efficiency of national fire management capabilities. Second, there is still a lack of joint, multinational efforts in sharing fire management resources. Thus, it was concluded that in the early 1990's Mediterranean Europe was still suffering in this report as a result of national boundaries and administrative competition (Goldammer 1994: 38). However, during the 1990's, a large number of EU-funded forest fire research projects were launched and successfully implemented, including projects on fundamental fire research, fire moni-

toring, early warning, and definition of a common terminology.⁴

The spirit of cooperation through these multinational European research projects was supported by several initiatives that called for sharing of fire management resources among European countries. These initiatives included the recommendations by the following international expert meetings and conferences:

- Euro-Mediterranean Wildfire Meetings 2000, in Hyères, France, 24-27 October 2000;⁵
- FAO/ITTO, International Expert Meeting on Forest Fire Management in Rome 7-9 March 2001;⁶
- International Conference "Forest Fires 2001: Operational Mechanisms, Firefighting Means and New Technologies" in Athens, Greece, 13-16 March 2001 (Goldammer 2001: 115-118; Greece, Ministry of Public Order 2001).

4 See, e.g. Europe forest fire website on the *Global Fire Monitoring Center* (GFMC) website at: <<http://www.fire.uni-freiburg.de/programmes/eu-comission/Eu-Commission.htm>>, and: European Commission, Research Directorate-General website at: <<http://europa.eu.int/comm/research>>.

5 Euro Mediterranean Wildfire Meetings 2000, Research Special Session (Hyères, France, 24 October 2000). Entente Interdépartementale en vue de la Protection de la Forêt et de l'Environnement contre l'Incendie. Centre d'Essais et de Recherche de l'Entente, Ceren, Valabre, at: <<http://ceren.org/>>.

3 For details see at: <http://www.europarl.eu.int/stoa/default_en.htm>.

A number of several recent processes are highlighted below that demonstrate the willingness of the European Mediterranean countries and their neighbours to improve the cooperation in fire management and mutual fire emergency support.

1.3.1 Management of Forest Fire Emergencies in the Eastern Mediterranean, Balkans, and Adjoining Regions

The Eastern Mediterranean region, including the Balkan countries, ECE, and ESCWA member states of Central Asia and the Near East, and other neighbouring countries of Central Asia, e.g. Mongolia and China, have suffered major forest and other wildland fire problems in the last decade. The causes of an increasing occurrence of wildfires in forests and other wildlands, including the underlying reasons for increasing human-caused fires, vary within the region and are due to:

- transition from centrally planned to market economies;
- national to regional conflicts, creation of new nations, involving political tensions and war;
- increasing population growth and land-use pressure; and
- regional climate change towards an increase in extreme droughts.

It has been recognised that no regional activity is underway to establish cooperation in wildland fire management, including wildland fire science.

Several reasons support the need for such a regional conference. First, the Balkan countries, some of them being in a post-war situation and under reconstruction, as well as the South-Eastern European countries which are still in economic and political transition, have not participated in recent activities of the *ECE/FAO Fire Team of Specialists on Forest Fires* and other international wildland fire research and development projects. Second, the neighbouring countries of Turkey, such as the Caucasus states, Iran, Turkmenistan, Uzbekistan, and Kazakhstan, have been quite isolated from recent scientific and technological developments in fire management. Third, the fire problems in Mongolia and northern China, and

to a limited extent in Afghanistan, call for cooperation with the ECE region.

From the point of view of the ECE/FAO/ILO Team Specialists on Forest Fire⁷ and of the Global Fire Monitoring Center (GFMC)⁸, which coordinates the work of the team in the ECE region and keeps close contacts with non-ECE countries, the countries listed above deserve full attention and support to bring them into the family of the international community of forest fire scientists, managers, and policy-makers.

The regional conference – planned for 2003 in Turkey – will possibly be conducted jointly with a regional exercise on forest fire management entitled: “Eastern European, Near East and Central Asian States Exercise on Wildland Fire Information and Resources Exchange – EASTEX FIRE 2003”. The objectives of the conference are: (a) to provide a forum in the Eastern Mediterranean, Balkan, and adjoining Regions of the Near East and Central Asia, (b) to prepare mechanisms for information and resources exchange in forest and other wildland fire management issues within the region, including the establishment of partnerships for joint activities in fire research, training and policy development, and (c) to prepare proposals to governments and international organisations in the region to establish mechanisms for sharing resources in large fire emergencies in accordance with existing international procedures.

In addition to the regional focus on the Eastern Mediterranean, Balkan and adjoining regions of the Near East and Central Asia, the conference will: a) compile an ECE-wide database on fire management capabilities in order to support the overall objectives of the conference and to facilitate international cooperation in management of fire emergencies; and b) conduct EASTEX FIRE 2003 (planned) – a bi-lateral or multinational fire-fighting exercise in which cooperation of ground and aerial fire fighting forces of two or more countries (to be determined) of the Eastern Mediterranean, Balkan and adjoining regions of the Near East and Central Asia, including participation of commercial wildland fire suppression operators, will be exercised. The conference objectives are

6 See: FAO/ITTO, International Expert Meeting on Forest Fire Management (Rome, Italy, 7-9 March 2001) at: <http://www.fire.uni-freiburg.de/programmes/un/fao/fao_4.htm>.

7 ECE/FAO/ILO Team Specialists on Forest Fire, at: <<http://www.fire.uni-freiburg.de/intro/team.html>>.

8 Global Fire Monitoring Center (GFMC), at: <<http://www.fire.uni-freiburg.de/>> and <www.gfmc.org>.

in line with the scope of work and recommendations of various international organisations, including:

- the Global Fire Monitoring Center (GFMC);⁹
- the ECE/FAO/ILO Team of Specialists on Forest Fire;¹⁰
- the Interagency Task Force for Disaster Reduction of the United Nations Strategy for Disaster Reduction (ISDR) and its Working Group on Wildland Fire (WG-4 under the ISDR Inter-Agency Task Force for Disaster Reduction);¹¹
- the FAO, in accordance with the recommendations of the fire expert consultations on “Public Policies affecting Forest Fires” (1998) and FAO/ITTO International Expert Meeting on Forest Fire Management (2001);¹²
- the United Nations Office for the Coordination of Humanitarian Affairs (UN-OCHA) and its joint UNEP Environment Unit, Emergency Services Branch;¹³
- the United Nations International Search and Rescue Advisory Group (INSARAG);¹⁴
- the European Commission in the frame of the Mediterranean Disaster Information Network (MEDIN) and the overall scope of the Global Disaster Information Network (GDIN) International;¹⁵
- the European Council in the frame of the European Open Partial Agreement (EUR-OPA);
- the International Institute for Disaster Risk Management (DRM) and the World Bank Disaster Management Facility (DMF) with its ProVention Consortium on Technological and Natural Disasters;¹⁶ and
- the World Health Organization (WHO)¹⁷ and the World Meteorological Organization (WMO)¹⁸.

The ECE member states and other countries will be invited to present “Country Profiles” that will be discussed and processed during the meeting to build a database during the conference.

1.3.2 The Europe-Africa Fire Management Initiative of the UN International Search and Rescue Advisory Group (INSARAG)

Until recently the mandate of the International Search and Rescue Advisory Group (INSARAG) of the United Nations has focussed on the “classical” SAR cases such as saving lives after earthquakes.¹⁹ However, experience has shown that secondary effects of natural and technogenic disasters require additional specialist advice in conjunction with SAR response and other humanitarian aid missions. The INSARAG family offers an appropriate structure.

At a regional INSARAG Europe-Africa meeting in December 1999 in Germany, a first proposal was elaborated to establish an INSARAG Fire Group consisting of three elements: a) wildland fire, b) hazardous materials (Hazmat), and c) industrial fire.²⁰ At a meeting at the UN Office for the Coordination of Humanitarian Affairs (UN-OCHA) in January 2000 it was agreed

9 Global Fire Monitoring Center (GFMC), at: <<http://www.fire.uni-freiburg.de/>> and <www.gfmc.org>.

10 ECE/FAO/ILO Team Specialists on Forest Fire, at: <<http://www.fire.uni-freiburg.de/intro/team.html>>.

11 See: UN-ISDR Working Group on Wildland Fire website: <<http://www.unisdr.org/unisdr/WGGroup4.htm>>.

12 See: FAO/ITTO International Expert Meeting on Forest Fire Management (Rome, Italy, 7-9 March 2001) at: <http://www.fire.uni-freiburg.de/programmes/un/fao/fao_4.htm> and FAO fire activities on the GFMC website at: <<http://www.fire.uni-freiburg.de/programmes/un/fao/fao.htm>>.

13 Joint UNEP/OCHA, Environment Unit, Emergency Services Branch at: <http://www.reliefweb.int/ocha_ol/>.

14 International Search and Rescue Advisory Group (INSARAG), at: <<http://www.reliefweb.int/insarag/>> and: International Search and Rescue Advisory Group (INSARAG), Wildland Fire Subgroup, on the GFMC website at: <<http://www.fire.uni-freiburg.de/emergency/insarag.htm>>.

15 Global Disaster Information Network (GDIN-International), at: <<http://www.gdin-international.org/>> and Mediterranean Disaster Information Network (MEDIN), at: <<http://www.gdin-international.org/wg/reg-med.html>>.

16 World Bank: Disaster Management Facility (DMF) and the ProVention Consortium on Technological and Natural Disasters, at: <<http://www.worldbank.org/dmf/>>, and at: <<http://www.proventionconsortium.org/index.htm>>.

17 See: The World Health Organization (WHO) fire activities on the GFMC website, at: <<http://www.uni-freiburg.de/fireglobe/programmes/un/who/who.html>>.

18 See: The World Meteorological Organization (WMO) fire activities on the GFMC website at: <<http://www.uni-freiburg.de/fireglobe/programmes/un/wmo/wmo.htm>>.

19 International Search and Rescue Advisory Group (INSARAG), at: <<http://www.reliefweb.int/insarag/>>.

20 International Search and Rescue Advisory Group (INSARAG), Wildland Fire Subgroup, on the GFMC website, at: <<http://www.fire.uni-freiburg.de/emergency/insarag.htm>>.

that the original mandate of INSARAG, in addition to search and rescue, would also covers wider aspects of disaster and emergency response. This could include a variety of natural and human-made disasters, including wildland fires. INSARAG would assist in strengthening UN-OCHA's role by: a) governmental experts advisory support in case of a major emergency; and b) advisors to be provided by the INSARAG family covering many fields of disaster relief. At the 5th INSARAG Regional Europe-Africa Conference (Hammamet, Tunisia, November 2000) the establishment of the *Working Group Fire* was formally decided. The terms of reference of the group include:

- Implementation of fire and HAZMAT topics into the INSARAG Guidelines as required;
- Establishment of a database of human resources, equipment, information sources and evaluation of missions;
- Facilitation of continuous exchange of information through the Internet, initially utilising the OCHA Relief Web and other homepages and networks such as GFMC; and
- Support for OCHA/UNEP by providing expertise and knowledge of its members.

Between December 1999 and the Hammamet Regional INSARAG Conference, the GFMC facilitated the work of the provisional Fire Group, including its participation at BALTEX FIRE 2000. In February 2001, it was agreed between the joint UNEP-OCHA Environment Unit, Emergency Services Branch, and the GFMC to cooperate in the framework of agreed interface procedures. In future the INSARAG Wildland Fire Subgroup may operate at the interface between the UNEP-OCHA Environment Unit, Emergency Services Branch, the GFMC and INSARAG (the consultation process was ongoing in August 2002).

1.3.3 EUR-OPA Major Hazards Agreement

Within the framework of the European Open Partial Agreement on the Prevention of, Protection Against, and Organization of Relief in Major Natural and Technological Disasters (EUR-OPA Major Hazards Agreement)²¹ the 8th Ministerial Meeting (Athens, February 2000) supported the proposal of Greece to establish a European Centre at the General Secretariat for Civil Protection in Athens for coordination in

the area of preventing and combating forest fires. This would be a focal point of a network bringing together the main participants in the area, at both national and European level.

Using the new communication and information technologies, this focal point will collect useful data in order to facilitate cooperation in the area of preventing and combating fires. On the occasion of a meeting held at the General Secretariat for Civil Protection on 8 March 2002, the participants presented the proposal to create a European structure on Forest Fire Management that will have the coordination function of a network of national structures officially in charge of management of forest fires, ensuring:

- Continuity in the partnership and programmes;
- Strengthening the cooperation between the EU and the other countries of Europe and the Mediterranean Basin;
- Working in a decentralised way using new technologies of information and communication, e.g. Electronic Discussion Groups for Risk Management EDRIM;²²
- Facilitating the setting up and use of specialised databases concerning forest fires purposes;
- Proposing training programmes on forest fires using existing national facilities and distant educational systems; and
- Playing a role of "mediation" in cooperation with the EU Joint Research Centre (JRC) in the system of help for decision-making for risk management in the framework of EUR-OPA Major Hazards Agreement.

The Euro-Mediterranean Fire Network will be created under the umbrella of the General Secretariat for Civil Protection. A Euro-Mediterranean board will be set up representing all national structures participating in the network as well as competent international and European organisations, and an executive secretariat in charge of the implementation of the programme will be appointed by the General Secretariat for Civil Protection. Activities were initiated in 2002. Following a proposal of the Council of Europe, the Global Fire Monitoring Center (GFMC), through its global network of "Regional Wildland Fire Networks", will cooperate with this initiative.

21 EUR-OPA Major Hazards Agreement, at: <<http://www.europarisks.coe.int/>>.

22 Electronic Discussion Group for Risk Management (EDRIM), at: <<http://www.europarisks.coe.int/edrimeng.htm>>.

1.3.4 The Mediterranean Disaster Information Network (EU-MEDIN)

An expression of interest for "integration and networking of natural disasters studies in Europe" within the 6th EU Framework Programme was submitted by a number of European institutions in June 2002. The envisaged project will be the initial core activity to build the Mediterranean Disaster Information Network (EU-MEDIN).²³ EU-MEDIN represents the European contribution to the Global Disaster Information Network (GDIN-International). GDIN International is an initiative of the U.S. State Department to foster rapid and improved emergency assistance in the event of natural and technological disasters.²⁴

The proposed project seeks to make major advances in the development of integrated approaches to disaster mitigation and management. The purpose of EU-MEDIN is to develop, maintain, and sustain a European infrastructure and network for integrated disaster research, and for the dissemination of disaster-related information for research and user communities, in order to improve disaster preparedness, early warning, communication, and the rapid exchange of data and knowledge. A series of integrated risk assessment and risks management research projects, which draw on the multi-disciplinary and multi-hazard character of the proposal, are considered an essential and integrating part of the proposed activities. EU-MEDIN will seek not only to generate new research results, but also to make the body of existing European disaster research available. This will be achieved by developing web services that will provide the "backbone" to the network of researchers and operational users, and a key means of dissemination of results, methods, tools, case studies, dataset, recommendations, etc. The project places emphasis on natural hazards that have significant impact on Europe. Forest fires are a key issue in the proposed structure. The Global Fire Monitoring Center (GFMC) will provide the information and communication tools for fire early warning, monitoring, data collection and distribution, as well as technology and science transfer.

1.3.5 South East European Fire Management Network (SEEFIRE)

Among the areas supported by the EU INTERREG IIIB programme is the Central Adriatic Danubian South-Eastern European Space (CADSES).²⁵ CADSES is a region that has faced a number of natural and human-made disasters with a transnational dimension in recent decades. The fallout of the Chernobyl nuclear power plant, flooding and poisoning of several rivers like the Danube, the eutrophication of the upper Adriatic sea, and border-crossing forest fires have received high transnational public attention. To a large extent, though, concepts for the prevention of disasters are focused at the national level.

Those disasters causing heavy damage and losses of human lives demonstrate that measures for risk prevention are transnational tasks. Large forest fire situations often exceed national response capabilities. Forest fires and other wildland fires are often crossing national borders. Thus, plans of action must be drawn up on a transnational and regional basis for risk management in areas threatened by disasters. Existing risks should be reduced by specific regional development policies and land use measures (e.g. agriculture, forestry, urban planning, recreation, and water supply). Coherent and comprehensive transnational strategies and programmes should be elaborated for the whole functional area defining the instruments required for and the costs arising from the implementation of the proposed measures.

Within the Priority Area 4 "Environment Protection, Resource Management and Risk Prevention" a proposal was submitted by the Global Fire Monitoring Center (GFMC) in June 2002 to promote cooperative transboundary wildland fire risk management and prevention of disasters under the "South East European Fire Management Network" (SEEFIRE). Envisaged participating countries include Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, the Former Yugoslav Republic of Macedonia, Romania, Serbia and Montenegro, and Slovenia.

The SEEFIRE Network will be developed to address the problem of wildland fires (forest fires and fires in other vegetation types) that are increasingly observed in the South-Eastern European transition

23 Mediterranean Disaster Information Network (MEDIN), at: <<http://www.gdin-international.org/wg/regmed.html>>.

24 Global Disaster Information Network (GDIN-International), at: <<http://www.gdin-international.org/>>.

25 INTERREG IIIB: Transnational cooperation between national, regional, and local authorities - Central Adriatic Danubian South-Eastern European Space (CADSES), at: <http://europa.eu.int/comm/regional_policy/interreg3/abc/voletb_en.htm>.

countries. This trend is a consequence of the changing rural and urban space due to economic transition. Unprecedented numbers of catastrophic fires and areas affected by fire have been observed in all South-East European countries for the following reasons:

- Traditional, centrally managed structures for forest fire protection have been replaced by decentralised structures that are not prepared or equipped to manage the fire problem.
- Lack of advanced knowledge and technology support for fire management (due to the creation of new states).
- People are abandoning the agricultural sector (rural exodus), especially as young people move to towns, and this has resulted in an over-aging of rural populations. Thus, there is a sharp decline in people available for fire-fighting in the countryside.
- Economically motivated arson, e.g. for land speculation (construction of buildings) or for obtaining permits to cut and sell fire-damaged timber, and lack of spatial planning of structures, especially in the wildland/urban interface (development of tourism).
- Increasing fire hazard due to a decrease in land-use intensity (less biomass is utilised through agricultural use, pastoralism, and for households, e.g. cooking and heating). As a consequence, wildland fires are more intense and more difficult to control.
- Declining general interest of the urban public in the protection of forests against fire, and a lack of coordination between states in Southeastern Europe.

Within priority 4 on: "Promoting risk management and prevention of disasters", SEEFIRE will establish an interactive network of institutions in all the countries listed below that are involved in the prevention and control of wildland fire. The network will support transnational cooperation by facilitating the exchange of information and data in the field of early warning, monitoring, and management of wildland fires, including transnational cooperation in fire management, and improve the integration of fire protection plans in spatial planning. It will provide the basis for the implementation of spatial development plans. SEEFIRE will take advantage of existing projects that address the fire problem at national levels. SEEFIRE,

logistically supported and coordinated by the Global Fire Monitoring Center (GFMC) as a module, will:

- Improve the prevention of forest and vegetation fire disasters at transnational level by facilitating bilateral and transnational communication (harmonize communication and information flow and procedural matters; e.g., incident command systems);
- Assist the setting-up of early wildland fire warning systems (satellite sensors);
- Address the challenge of spatial dynamics such as rural migration and urbanisation, which increase the fire risk; and
- Provide inputs for the elaboration of transnational programmes on risk management in areas threatened by fire disasters.

The module will rely on experiences from previous initiatives and projects, e.g. the Balkan Federation of Firefighting Services, or the NATO and the Euro-Atlantic Disaster Response Co-ordination Centre (EADRCC) with its regional forest fire exercise in Croatia in May 2002.

1.3.6 Euro-Atlantic Disaster Response Coordination Centre (EADRCC) of the North Atlantic Treaty Organization (NATO)

Since the early 1990's, the Global Fire Monitoring Center (GFMC) and its predecessor institution, the Fire Ecology Research Group, has cooperated with the NATO Scientific Affairs Division.²⁶ The Euro-Atlantic Disaster Response Coordination Centre (EADRCC) was created in 1998 as the focal point for coordinating disaster relief efforts of the 46 Euro-Atlantic Partnership Council (EAPC) nations in case of natural or technological disasters within the EAPC geographical

26 North Atlantic Treaty Organization (NATO) on the GFMC website, at: <<http://www.uni-freiburg.de/fireglobe/programmes/nato/nato.htm>>; NATO's Support in Fire Research, at: <http://www.uni-freiburg.de/fireglobe/programmes/nato/nato_1.htm>; NATO Workshop: Science Policy: New Mechanisms for Scientific Collaboration between East and West, at: http://www.fire.uni-freiburg.de/programmes/nato/nato_2.htm>; NATO Workshop: Sediment Records of Biomass Burning and Global Change; at: <http://www.fire.uni-freiburg.de/programmes/nato/nato_3.htm>; NATO Targeted Program of Cooperative Research, at: <http://www.fire.uni-freiburg.de/programmes/nato/nato_4.htm>.

area.²⁷ The forest fire community linked through the website of the GFMC and the EADRCC.²⁸

For the first time a large multinational forest fire exercise has been conducted in May 2001 under the auspices of EADRCC. The field exercise "Taming the Dragon - Dalmatia 2002" was a Croatian contribution²⁹ to the Partnership Work Programme (PWP), and was primarily conducted as a PWP Euro-Atlantic Disaster Response Coordination Centre (EADRCC) and Euro-Atlantic Disaster Response Unit (EADRU) activity. It also involved other existing networks and organisations such as the Disaster Preparedness and Prevention Initiative (DPPI) of the Stability Pact, the United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA), and the South East Europe Group (SEEGROUP). The GFMC supported the exercise (34).³⁰

emergency management, such as those between Bulgaria and its neighbour countries, or between Greece and Albania.

1.4 Conclusions and Outlook

Within a relatively short period between 1999 and 2002, the countries of the European Union and several international consortia involved in forest fire management, in conjunction with neighbouring regions, have taken the initiative to push the development and, partially, the realisation of concepts for cooperative projects in forest fire management, disaster networking, and research devoted to improve common capabilities in fire disaster response. In view of the increasing hazard and risks of forest fires and other wild land fires in the region, the limited financial capabilities of the countries concerned, as well as the large total length of common borders, this development is overdue. It is hoped that the various initiatives will develop synergistic mechanisms for cooperation and sharing of human, technological, and information resources. In this context the Mediterranean countries are urged to systematically develop bilateral and multilateral cooperation agreements for fire

27 Euro-Atlantic Disaster Response Coordination Centre (EADRCC), at: <<http://www.nato.int/eadrcc/home.htm>>.

28 Euro-Atlantic Disaster Response Coordination Centre (EADRCC) links, at: <<http://www.nato.int/eadrcc/links.htm>>.

29 NATO-EADRCC Forest Fire Exercise "Taming the Dragon - Dalmatia 2002", at: <<http://www.nato.int/eadrcc/tdragon/exercice2002.htm>>.

30 GFMC contribution for "Taming the Dragon-Dalmatia 2002", at: <http://www.fire.uni-freiburg.de/current/archive/hr/2002/hr_05172002.htm>.

