



Mitigating the Adverse Financial Effects of Natural Hazards on the Economies of South Eastern Europe

A Study of Disaster Risk Financing Options

South Eastern Europe Disaster Risk Mitigation and Adaptation Programme



THE WORLD BANK



International Strategy for
Disaster Reduction



Mitigating the Adverse Financial Effects of Natural Hazards on the Economies of South Eastern Europe

A Study of Disaster Risk Financing Options

South Eastern Europe Disaster Risk Mitigation and Adaptation Programme

Eugene N. Gurenko
Wael Zakout

The World Bank, Sustainable Development Department Europe and
Central Asia Region and UN/ISDR secretariat Europe
February 2008



THE WORLD BANK



International Strategy for
Disaster Reduction

Preface

South Eastern Europe (SEE) nations have a history of devastating earthquakes, floods, landslides, drought, extreme temperature, wildfires and windstorms that have caused economic and human losses across the region. Often these disasters, which transcend borders, overwhelm the management capacity of a single country. Also, the level of preparedness and prevention varies from country to country, and regional cooperation does not exist to the extent necessary. Because of this high vulnerability, and the relatively small size of the countries in the SEE region, as well as the historical links between them, the SEE countries would benefit from a closer cooperation in the areas of disaster risk prevention, preparedness and civil protection, both from an organizational and risk financing perspective.

Bearing in mind these challenges, but also the opportunities presented by SEE's historical and persisting area of strength, the World Bank and the UN/ISDR secretariat, in collaboration with other international partners, initiated work on the programme now known as the South Eastern Europe Disaster Risk Mitigation and Adaptation Programme (SEEDRMAP), which proposes activities that are aimed at closing SEE's capacity gaps to reduce vulnerability to disasters in the region and that promote rapid introduction of both global good practices and closer regional cooperation. SEEDRMAP incorporates three focus areas: (i) hydrometeorological forecasting, data sharing and early warning; (ii) coordination of disaster mitigation (including vulnerability resulting from climate change), preparedness and response; (iii) and financing of disaster losses, reconstruction and recovery, and disaster risk transfer (disaster insurance). The programme will build on the existing cooperation in the region, and will complement and consolidate the activities promoted by the European Union, the Council of Europe, the United Nations (the World Meteorological Organization and the United Nations Office for the Coordination of Humanitarian Affairs), the Stability Pact for South Eastern Europe, the Preparedness Council and others to promote more effective disaster mitigation, preparedness and response.

This study was developed as part of the SEEDRMAP focus area iii: financing for disaster losses, reconstruction and recovery, and disaster risk transfer (disaster insurance). The report concludes with policy recommendations.

Acknowledgements

The principal authors of this report are Eugene Gurenko (World Bank, FPD) and Wael Zakout (World Bank, ECSSD). Mr. Zakout has also been the Task Team Leader of the project.

Preparation of the study was initiated and managed by the Europe and Central Asia Region Vice-Presidency of the World Bank in collaboration with the UN/ISDR secretariat.

The technical background work for this report was carried out by Denisa Dumitru (UN/ISDR secretariat, Consultant).

Sergej Anagnosti (UN/ISDR secretariat, Consultant) helped to organize the key meetings with relevant government authorities in the South Eastern European countries.

We also would like to acknowledge the study peer reviewers John Pollner (World Bank) and Paola Albrito (UN/ISDR secretariat), whose comments have helped improve the quality of the final report.

The selective risk assessments cited in the UN/ISDR secretariat-WB report have been carried out by RMSI and AIR. Munich Re has kindly provided detailed information on economic losses from natural hazards in South Eastern European countries.

The study review was developed through funding by the Global Facility for Disaster Reduction and Recovery (GFDRR), a partnership of Australia, Canada, Denmark, the European Commission, Finland, France, Germany, Italy, Japan, Luxembourg, Norway, Spain, Sweden, Switzerland, the United Kingdom, the United Nations International Strategy for Disaster Reduction, the USAID Office of U.S. Foreign Disaster Assistance, and the World Bank. GFDRR's mandate is to help developing countries reduce their vulnerability to natural hazards.

Table of Contents

Preface	iii
Acknowledgements	iv
Executive summary	vi
Chapter I: Introduction	1
The effect of disasters caused by the impact of natural hazards on South Eastern Europe.....	2
Objectives, scope and methodology of the study	2
Chapter II: Review of EU-funded social safety nets	5
European Union exposure to natural hazards	6
Existing risk financing instruments.....	6
Chapter III: Post-disaster government assistance mechanisms in SEE countries.....	9
Chapter IV: A survey of disaster insurance in selected EU countries	13
France.....	14
Spain.....	16
Germany	17
Chapter V: A survey of disaster insurance in SEE countries	19
SEE countries' risk exposure to natural hazards	20
Risk policy coverage	20
Chapter VI: Conclusions and policy recommendations.....	25

Executive summary

The EU community, and particularly the countries of South Eastern Europe (SEE), is prone to natural hazards such as earthquakes, floods and forest fires. The devastating 1999 Marmara earthquake in Turkey and the 2002/2005 floods in Central and Southern Europe are among the most recent manifestations of severe loss potentials from such large disasters. Due to the growing volatility of climate, smaller but more frequent events are also becoming a major reason for concern.

In the SEE countries, the adverse effects of natural calamities, most of which can be assigned to climate change, are already being felt in many sectors of economy and at the macro level. While these adverse impacts on national economies are multi-faceted and complex, one can distinguish the following key manifestations:

- *Adverse impacts of natural hazards on countries' fiscal stability and macroeconomic performance.* Disasters caused by the impact of natural hazards are increasingly affecting the ability of countries to satisfactorily implement national fiscal programmes. With the growing frequency and severity of such disaster events, it is becoming increasingly difficult to cover their economic costs from country budgets. Besides adversely affecting their fiscal stability, large disasters caused by the impact of natural hazards may also have profound implications for the SEE countries' macroeconomic performance and overall global economic competitiveness¹.
- *Socio-economic implications of natural hazards on households.* The growing frequency and severity of weather-related events is likely to translate into increased financial vulnerability for many households in SEE countries. In the future, due to weather extremes, households are likely to experience more frequent and potentially severe damages to residential properties as well as loss of employment income due to business interruption. Given the current very low level of disaster insurance penetration in SEE countries (of the order of 1-3 per cent), natural hazards are likely to take a considerable additional financial toll on the population of the region.
- *Adverse economic effects of natural hazards on business.* Disasters caused by the impact of natural hazards in general, and weather in particular, are becoming a major operational risk for many businesses. Marked increases in losses from property damage and lost revenue due to business interruption caused by extreme weather events translate into the increased volatility of earnings in the sectors exposed to weather. These include utilities, tourism, agriculture, transportation, aviation and forestry. In turn, the increased volatility of earnings means a higher cost of capital for businesses operating in the region.

Interregional disaster risk financing mechanisms

Given the sheer magnitude of potential losses, the adverse social and economic consequences of large disasters caused by the impact of natural hazards can easily overwhelm the coping capacity of a single country, and hence are very likely to transcend the borders of affected countries. However, today the regional cooperation in the area of disaster risk management, particularly risk financing, remains rather weak. Providing a pragmatic disaster risk management framework that would seamlessly combine risk reduction/mitigation with disaster risk transfer to the global reinsurance and capital markets is imperative to ensure the European Union (EU)'s adequate capacity to respond to the growing risk of climate change and increasing concentration of economic activities in disaster-prone areas.

¹ In a major regional study on the economic vulnerability of Latin American countries to natural disasters, Friedman (2003), for instance, finds that besides the direct costs associated with physical damage, natural disasters typically lead to (i) a worsening of the fiscal position, as governments pay for reconstruction and sources of revenue are disrupted; (ii) a worsening of the trade balance, as the exporting capacity is hampered and imports for reconstruction surge; (iii) downward pressure on the exchange rate due to the worsening of the trade balance and concerns about the repayment capacity of the government by international investors; and (iv) inflationary pressures. Therefore, the total impact on the budget widely exceeds the direct costs of relief and reconstruction from natural disasters.

To date, the EU Solidarity Fund (EUSF) has been the main financial vehicle used by the EU Member States for the purposes of obtaining disaster-related financial support in the aftermath of disaster events. Established in 2002, following major floods in Europe, EUSF partially compensates central government budgets for damage suffered as a result of disasters. It does not provide compensation for private losses.

Despite the existence of EUSF, there appears to be a genuine lack of an integrated approach to disaster risk management at the EU level that would encompass elements of risk reduction and risk financing. In the absence of such an integrated disaster risk management strategy, the European Commission will find it difficult to provide incentives to EU Member States for reducing their vulnerability to natural and man-made disasters over time.

In addition, EUSF has the following major drawbacks:

- 1) The EUSF financial capacity is not sufficient to deal with large disaster events. It would have to be supplemented with additional allocations of financial resources from individual EU members in the case of a major disaster caused by the impact of natural hazards.
- 2) The current EUSF design disproportionately benefits the countries with large risk exposures relative to the size of their economies (SEE countries), due to a major cross-subsidy they receive from larger countries with relatively low disaster risk exposures (such as Germany and France) in the case of a major disaster.
- 3) The EUSF approach to funding is inappropriate for its purpose. Despite a rather unpredictable and highly volatile pattern of future outlays, EUSF relies on fixed annual budget allocations, which in case of large disasters is likely to result in a major mismatch between the revenue available to EUSF annually and the potential expenditures it may incur.
- 4) EUSF does not employ any market-based risk transfer mechanisms such as insurance/reinsurance to supplement the existing budgetary commitments.
- 5) Financial compensation provided by EUSF in the aftermath of disasters caused by the impact of natural hazards is not linked to any risk reduction/mitigation requirements for disaster-affected countries.

Fiscal disaster risk financing mechanisms at the country level

In all surveyed SEE countries, national annual budgetary allocations for emergencies by and large account for the largest share of fiscal resources available to deal with the consequences of natural hazards. In addition, countries often have some additional off-budgetary resources, which can be released in the case of a disaster. In cases of emergencies, most countries can increase their budgetary allocations for emergencies by passing special emergency legislation.

National disaster funds are typically very small compared to the potential economic and fiscal damages that may be caused by large disaster events in these countries. Moreover, if more severe disaster events with longer return periods are taken as a benchmark for the national disaster risk funding capacity, the countries' financial preparedness for such events is suspect. Due to rather limited financial resources, disaster funds can only reimburse a small fraction of total losses sustained by people affected by disasters. Some funds reduce the amount of assistance to be given by the amount of insurance coverage received in the aftermath of a disaster, which provides a major disincentive for homeowners to buy insurance.

The administrative process involved in mobilizing additional resources in cases of major disasters caused by the impact of natural hazards appears to be administratively cumbersome, lengthy and complex, and as a result rather time-consuming. Finally, it is worth mentioning that due to the small and fixed size of annual budgetary appropriations, as in the case of EUSF, SEE countries find it difficult to match their available budgetary resources in case of an emergency with potential disaster-related fiscal outlays. This introduces major uncertainty into the countries' fiscal planning process. This problem can only be addressed by changing the current system of disaster risk funding.

The role of public-private partnerships in disaster insurance

So far, only two of the EU Member States - France and Spain - have created special disaster insurance programmes to reduce the extent of government fiscal exposure to disasters caused by the impact of natural hazards and to provide incentives for disaster risk reduction for businesses and homeowners².

² Of all SEE countries, Turkey is the only country which also created a special disaster insurance pool - the Turkish Catastrophe Insurance Pool - which operates as a national disaster risk aggregating mechanism. For more details on TCIP, see Earthquake Insurance in Turkey by Eugene Gurenko, et al., World Bank, 2006.

The role of private disaster insurance in disaster risk financing in SEE countries

In spite of their severe exposure to natural hazards, disaster insurance coverage of assets belonging to individuals and small businesses in SEE countries is virtually non-existent - of the order of 1-5 per cent. The structure of the insurance offered may limit demand for such coverage. There are also potential limiting factors on the supply side.

Conclusions and policy recommendations

Despite considerable risk exposure to disasters caused by the impact of natural hazards, the existing risk financing mechanisms, at both the regional and SEE country level, do not have the capacity to address the consequences of large disaster events. Therefore, reducing the adverse financial impact of disasters caused by the impact of natural hazards on governments, businesses and households in the SEE countries must be regarded as an important economic and social priority at the national and regional level.

Several recommendations emerge from this study. They are intended to guide government policymakers in developing and applying national and regional disaster risk financing strategies, to suggest ways in which World Bank staff and managers can better address disaster risk financing in their dialogue with clients, to support the International Strategy on Disaster Reduction system in promoting partnerships to reduce disaster risk, and to provide information and ideas that may be of value to other stakeholders, such as international donor organizations, non-governmental organizations, academics and the general public.

Investing in the development of integrated disaster risk financing capabilities at the national and regional levels. One of the key findings of the study is that disaster risk management functions at the country and the EU levels tend to be fragmented and dispersed across different agencies. This suggests that SEE countries will benefit from building an integrated disaster risk management function at the national level that comprises disaster risk reduction and risk financing. Following the best business practices in large private companies, countries may also consider instituting a position of Chief Country Risk Officer, whose main responsibility would be to identify, assess and manage country disaster risk through a combination of ex ante activities in disaster risk reduction and disaster risk financing at the country level, including risk transfer.

Lessening the impact of disasters on government budgets. The SEE countries should consider instituting a regional disaster insurance pool that would act as a regional aggregator of disaster risk and help governments access the global reinsurance market on better pricing terms. The risk pooling arrangement for the SEE countries can be modeled after the regional disaster insurance facility - the Caribbean Catastrophe Insurance Regional Facility - that was successfully launched by the World Bank in May 2007. The insurance premium payments for disaster risk coverage can be made out of the annual budgetary allocations for emergencies, which effectively would enable countries to limit their annual budgetary exposures to natural hazards by the amount of premiums paid to the regional catastrophe insurance pool.

Reducing the financial vulnerability of homeowners and small-and-medium enterprises to natural hazards. It may be advisable for many countries of the region, particularly larger-size economies exposed to the combination of severe geological and meteorological risks, to consider creating national disaster insurance pools which can provide efficiently priced stand-alone disaster insurance to homeowners and small business owners. As has been demonstrated by international experience, such programmes can provide highly affordable coverage by realizing the benefits of countrywide risk diversification, economies of scale and the ability to obtain better pricing terms from the global reinsurance market.

Mitigating the negative impacts of disasters on businesses. The growing frequency and severity of disasters caused by the impact of natural hazards, particularly of weather-related events, is becoming a major operational risk for many businesses in the SEE region. To take advantage of the latest financial technologies in the area of weather risk hedging, the countries of the region, and possibly of the EU, should consider joining forces to create a regional (and possibly pan-European) market in weather risk hedging instruments - a "weather risk market." Creation of such a market will allow companies whose bottom lines are affected by the weather to hedge their weather risk by buying weather derivatives such as Heating Degree Days (HDD) and Cooling Degree Days (CDD) for major cities of the region. Tradable indices may also be developed for precipitation.

The creation of a weather risk market would require regional investments in meteorological data generation and storage capabilities, installation of additional weather radars and weather monitoring stations, the creation of a regional weather risk trading platform, and development of weather market regulations. All these investments must be well coordinated from the start to achieve desired outcomes. In this context, a World Bank-supported regional weather risk market development programme can serve as an effective regional coordination mechanism.

I

Introduction

The effect of disasters caused by the impact of natural hazards on South Eastern Europe

Over the last few decades, the frequency of major disasters caused by the impact of natural hazards has increased significantly, causing an increase in losses, both total economic and insured. This considerable increase can be fully attributed to weather-related events, which are inherently linked to climate change.

Europe has witnessed a major growth in the scale and frequency of extreme weather events. Between 1980 and 2006, extreme weather-related events represented 89 per cent (€238 billion) out of the €366 billion of overall losses from disasters caused by the impact of natural hazards³. On average, Europe is facing an annual economic loss burden of €12 billion as a result of extreme weather events, of which 28 per cent has been compensated by insurers, mainly in the original EU Member States⁴.

The current projections suggest⁵ that South Eastern, Mediterranean and Central European regions are among the most vulnerable to climate change. Considerable adverse impacts are expected to occur to natural and human systems that are already under pressure from changes in land use and settlement patterns. The expected rise in temperature will have an impact on snow cover, glaciers and permafrost, causing an increased risk of hazards. Coastal areas along the Mediterranean and Black Seas, in particular, are at high risk due to an expected sea level rise and changes in frequency and/or intensity of storms. Southern Europe is consistently projected to become much drier and warmer, with higher risk of drought and negative consequences for agriculture and water supply.

The adverse impact of climate change extends far beyond the SEE region. Recent studies indicate that over much of Europe, one-in-100-year floods will occur every couple of decades⁶, and will have damage potential of about 19-40 per cent higher than today. The number of people affected by such events is estimated to grow by 6-11 per cent.

A recent UN/ISDR-WB hazard risk assessment, carried out by the consulting firm RMSI for 11 SEE countries⁷, indicates that over the last 30 years, flood and drought have become the most common hazards accounting for most economic damages from natural hazards in all but three countries. During 1974-2006, all countries in the region,

except for Moldova and Slovenia, have recorded seven or more large floods. All countries, except Slovenia, face a high risk of flood. Over the last few years, floods severely impacted Romania, Moldova, Bulgaria, Serbia and Montenegro.

Drought events have been most frequent in Bosnia and Herzegovina. Considerable economic losses due to drought have been recorded in Albania, Bosnia and Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia and Romania. With expected temperature rises of 2°C globally, the frequency of droughts in SEE countries and economic damages caused by them are likely to become only more pronounced.

In addition, the SEE region is one of the major seismically active zones in Europe - the Mediterranean/Trans-Asian seismic belt in the Balkan region and the Vrancea seismic belt extend beyond any single country. Almost one earthquake event occurs every year in Turkey and one event occurs every eight years in Romania and Bulgaria. Not a single SEE country remained immune to earthquakes over the last century, while several of them, including Montenegro, Serbia, Romania and Turkey, incurred very severe earthquakes, which caused multi-billion dollar damages and heavy loss of life. Yet despite the growing economic losses from disasters caused by the impact of natural hazards in the region, so far most households and businesses remain uninsured against natural hazards, while governments remain fiscally ill-prepared to face economic losses from large disaster events.

Objectives, scope and methodology of the study

The main objectives of this study have been two-fold. On the one hand, the study has attempted to establish the extent of financial vulnerability of governments and households to natural hazards in ten countries of South Eastern Europe⁸ by examining:

- The financial capacity of the EU to assist SEE countries in the case of a major disaster caused by the impact of natural hazards.
- The ability of individual SEE countries to cover the costs of relief, reconstruction and recovery efforts from their own fiscal resources.

³ NatCatService, GeoRisksResearch, Munich Re, December 2006 - the figures are cited in 2005 values.

⁴ CEA Report "Reducing the Social and Economic Impact of Climate Change and Natural Catastrophes," July 2007.

⁵ Vulnerability and Adaptation to Climate Change; European Environment Agency; 2005

⁶ Climatic Change; Lehrer et al., 2006

⁷ UN/ISDR and the World Bank (2008). South Eastern Europe Disaster Risk Mitigation and Adaptation Initiative: Risk Assessment of South Eastern Europe Desk Study Review. UN/ISDR.

⁸ These countries include Moldova, Romania, Bulgaria, Slovenia, the Former Yugoslav Republic of Macedonia, Croatia, Serbia and Montenegro, Bosnia and Herzegovina, and Albania.

- The extent of disaster insurance coverage provided by the private insurance industry in the region.

On the other hand, the study aims to outline a range of practical solutions and policy recommendations for the problem of the growing financial exposure from disasters caused by the impact of natural hazards for governments, businesses and individuals.

The study is intended for four principal audiences: government officials in SEE countries; World Bank staff involved in disaster risk financing and reconstruction projects; the international development community; and the private insurance and reinsurance industry.

This report was prepared based on a series of written surveys that were followed by interviews with key government officials, government experts and insurers in SEE and EU

countries, as well as technical staff and management in the European Commission. The field work was supplemented by an extensive survey of the literature on disaster risk financing in EU Member States.

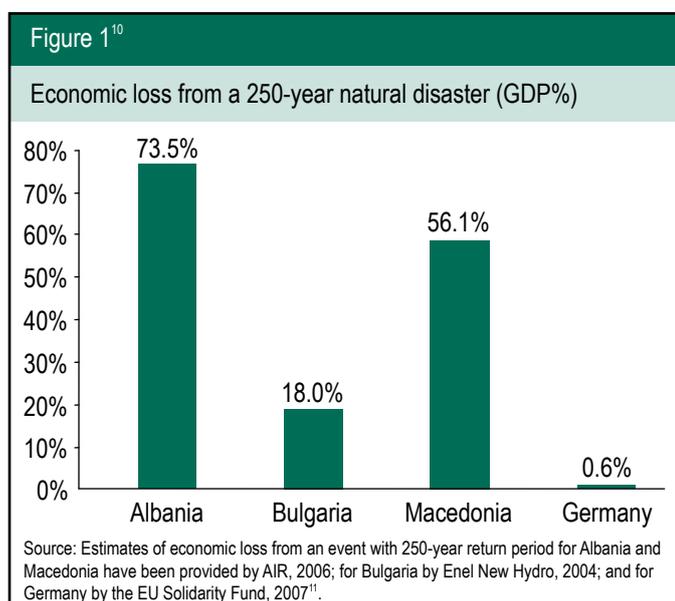
The structure of the report is as follows. Chapter I is an Introduction. Chapter II reviews the EU regional financial safety net mechanisms that can be mobilized in case of major disasters caused by the impact of natural hazards, focusing mainly on the EU Solidarity Fund. Chapter III examines the fiscal capacity of SEE countries to cope on their own with large disaster events. Chapter IV reviews the existing diverse experience in covering the losses from disasters caused by the impact of natural hazards in disaster risk insurance in France, Spain and Germany. Chapter V presents an overview of the state of disaster insurance markets in SEE countries. Chapter VI presents the main findings and policy recommendations.



Review of EU-funded social safety nets

European Union exposure to natural hazards

The EU community and the EU accession countries are prone to natural hazards, with the main threats coming from earthquakes, floods, winds and forest fires. Risk profiles of individual country members vary considerably depending upon their proneness and proximity to hazards, the vulnerability of national building stock and infrastructure to disaster events, the size of the economies, and the level of concentration of economic activities in disaster-prone areas. A comparison of loss potentials from disasters caused by the impact of natural hazards with 250-year return periods⁹, with losses given as a percentage of national GDPs in selected SEE countries and Germany, clearly demonstrates a higher level of vulnerability among smaller-size economies to major disasters caused by the impact of natural hazards.



Given the sheer magnitude of the potential loss, the adverse social and economic consequences of large disasters caused by the impact of natural hazards may easily overwhelm the coping capacity of a single country, and hence they are very likely to become regional phenomena. However, today regional cooperation in the area of disaster risk management, particularly risk financing, remains rather weak. To ensure that the EU has adequate capacity to respond to the growing risk of disasters caused by the impact of natural hazards, and to the increasing concentration of economic activities in disaster-prone areas, it is imperative to have a comprehensive disaster risk management framework that combines risk reduction with disaster risk transfer to the global reinsurance and capital markets.

Existing risk financing instruments

To provide financial assistance to its members as well as to the EU accession countries affected by natural hazards, the EU utilizes a variety of financial instruments. These include the EU Solidarity Fund (EUSF), the EU Structural Funds, the European Investment Bank and the Council of Europe Development Bank. EUSF, however, is the main designated disaster risk financing vehicle of the EU - and the main subject of this chapter.

EUSF was established in November 2002, in the aftermath of the major European floods, under the General Directorate for Regional Policy. Since then, it has become the main financial vehicle used by the EU Member States for the purposes of obtaining disaster-related financial support in the aftermath of disaster events.

EUSF partially compensates public budgets for damage suffered as a result of disasters caused by the impact of natural hazards. It does not provide compensation for private losses.

Eligibility for assistance. EUSF responds to disasters caused by the impact of natural hazards within the EU Member and accession countries. However, currently the EUSF is mainly limited to major disasters caused by the impact of natural hazards, although losses in cases of major industrial accidents or terrorist attacks may be covered as well under special circumstances.

To be eligible for assistance from EUSF, damages caused by natural hazards and the intervention costs to which these give rise to must be in excess of an absolute or a relative threshold, whichever is lower. Currently, these thresholds are €3 billion or 0.6 per cent of the Gross National Income of the affected country, respectively. Nevertheless, in exceptional circumstances, EUSF can grant assistance to countries in cases of smaller regional disasters that fall below the above-mentioned thresholds. Decisions on providing assistance in these cases involve extensive political consultations.

Use of grants. The funds allocated to countries can only be used for restoration of public assets, e.g. government-owned buildings and infrastructure, covering the costs of emergency operations, first aid and rescue services, and removal of debris and restoration for important cultural heritage sites adversely affected by natural hazards.

EUSF aid has to be used within one year from the date of arrival of the grant at the first account in the beneficiary

⁹ A return period is a way of expressing the probability of events that occur infrequently. Events like the ones described here, with 250-year return periods, are likely to occur once every 250 years.

¹⁰ Note: German flood losses (2005), slightly under 0.6% of GDP, the highest loss from disasters caused by the impact of natural hazards ever, is assumed to be a 250-year loss.

¹¹ Preliminary loss estimates reported by AIR for Albania and Former Yugoslav Republic of Macedonia and Enel Hydro were provided to the World Bank in two separate unpublished papers that were made available for the purposes of this research.

country. No later than six months after the expiry of the one-year period, the beneficiary country has to present an implementation report with a statement of validity.

Grant amounts. To arrive at the amount of aid to be granted to a country affected by a disaster, typically EUSF takes 2.5 per cent of losses falling under the €3 billion threshold and adds this amount to six per cent of losses in excess of the threshold. In determining the final size of a grant, EUSF also takes into account the size of damages versus the size of the economy to ensure that payouts are equitable.

EUSF paying capacity. The average size of EUSF grants has been of the order of €20-30 million, with the largest amount paid so far to Germany in the case of the 2005 floods - €440 million. EUSF may grant financial assistance to eligible States totaling up to €1 billion per year, although in practice, the largest amount EUSF can pay at once without breaching its annual budget is €750 million, as EUSF must keep at least one-quarter of its budget available till the end of the third quarter. EUSF can also borrow up to €2 billion from future-year budgets. In case of truly large-scale emergencies, Member States may agree to allocate an extra amount to the budget, if needed.

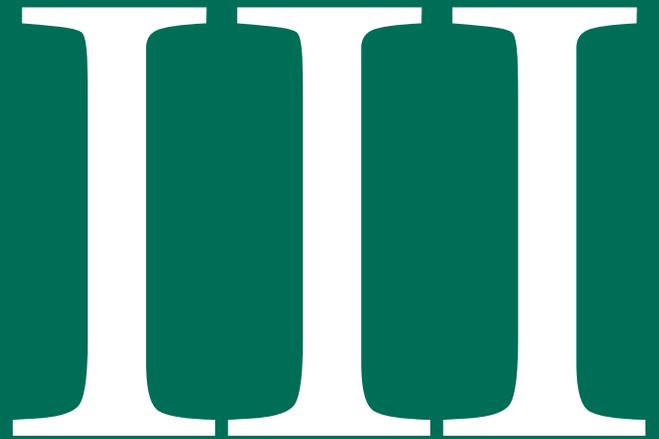
Since its inception, EUSF has received 44 applications for assistance from EU Members. About half of these applications were funded. All applications received from countries that suffered major damages from natural hazards were funded.

EUSF financing. EUSF does not have a pre-funded annual budget. Instead, it has contingent calls on the EU Members (up to €1 billion). To mobilize funding for disaster aid, EUSF needs a valid country application that meets the

minimum loss threshold requirement (0.6 per cent of Gross National Income, or €3 billion). Once the application has been accepted, it has to go through the extensive budgetary procedure necessary for amending the EU budget. Following the European Commission's assessment, and a subsequent proposal to the Budget Committee on Natural Disasters for an amount of financial assistance to be granted, the latter adopts a corresponding supplementary budget. The Commission will then adopt a grant decision, followed by the conclusion of an implementation agreement that leads to the disbursement of the grant.

Pending legislative amendments. In 2006, the European Commission prepared a package of amendments to the existing EUSF regulations aimed primarily at increasing the scope of hazards to be eligible for compensation by EUSF and reducing the level of political discretion currently involved in compensation decisions for smaller-scale regional disasters. So far, despite the support of the EU Parliament, the European Council has been reluctant to approve the amendments, due to the perceived increased cost of the facility under the modified approach.

Speed of disbursement. EUSF has been designed and operates as a disaster-related loss refinancing facility. It is not an immediate liquidity facility. On average, it takes up to one year from the time the application is received to the time when it has been granted. To be eligible, countries must apply within 10 weeks from the moment of a disaster. EUSF administration will then carry out an independent damage assessment (often based on satellite imagery of areas affected by a disaster), to be followed by the preparation of a proposal for a budgetary amendment.



Post-disaster government
assistance mechanisms in
SEE countries

Major findings. In SEE countries, national budgets are by far the largest and the most prevalent way of providing financial assistance in the aftermath of disasters caused by the impact of natural hazards. However, annual budgetary allocations to special emergency reserve funds are invariably small. Even in Bulgaria and Slovenia, the countries with the largest emergency reserve funds, the amounts allocated are grossly inadequate for funding a major disaster event. The administrative process involved in mobilizing additional resources in cases of major disasters (e.g. when the size of damages by far exceeds the financial resources available) appears to be administratively cumbersome, lengthy and complex, and as a result rather time-consuming.

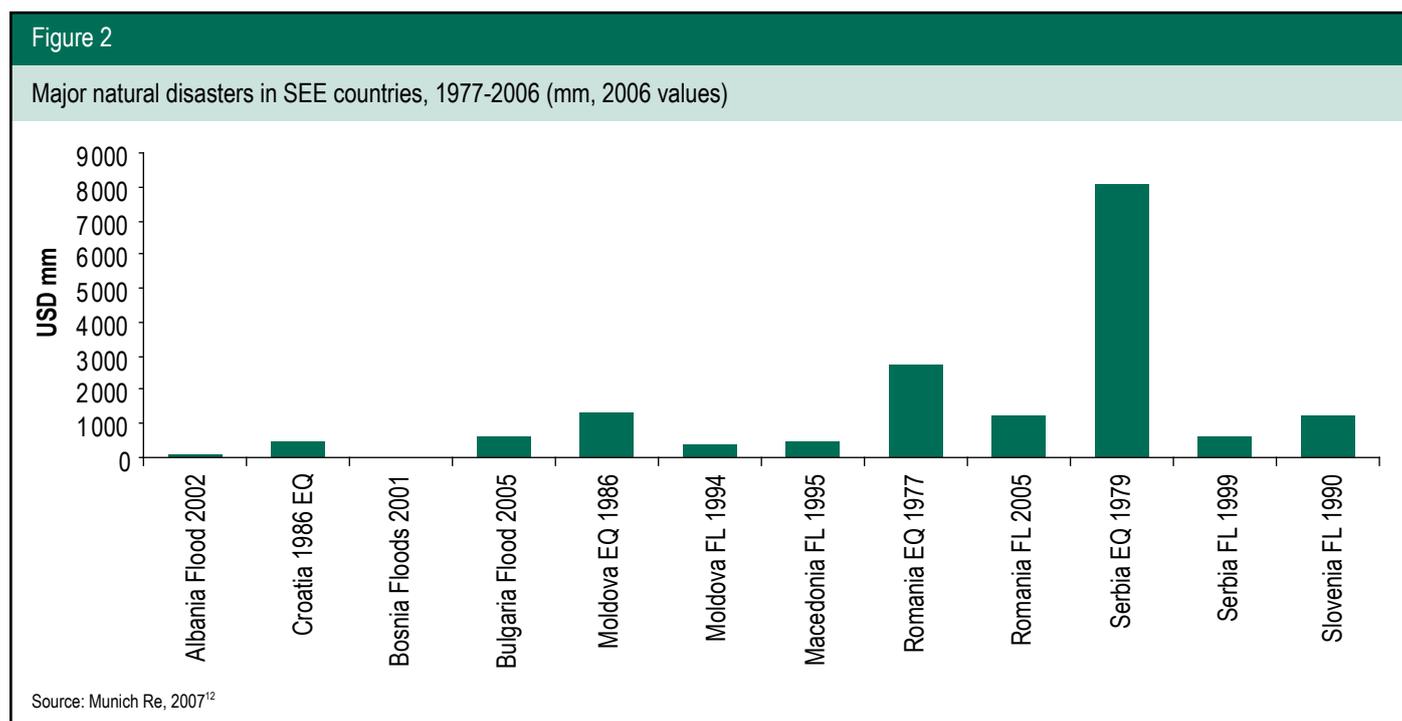
In none of the surveyed countries, except Bosnia and Herzegovina, is there a clear distinction between public and private liabilities, as shown by the eligibility for government disaster aid of individuals and private companies. Only one of the surveyed countries uses income means-testing to allocate disaster aid. Many countries create strong disincentives for their residents and businesses to buy disaster insurance by reducing government post-disaster assistance to homeowners entitled to insurance indemnification. Below we provide a brief summary of these major findings.

National post-disaster funding. Planning for emergencies is an integral part of the government budgetary process. Annual budgetary allocations for emergencies are typically mandated by existing national legislation on disasters caused by the impact of natural hazards and on other emergency situations. Table 1 below shows that every surveyed SEE country makes

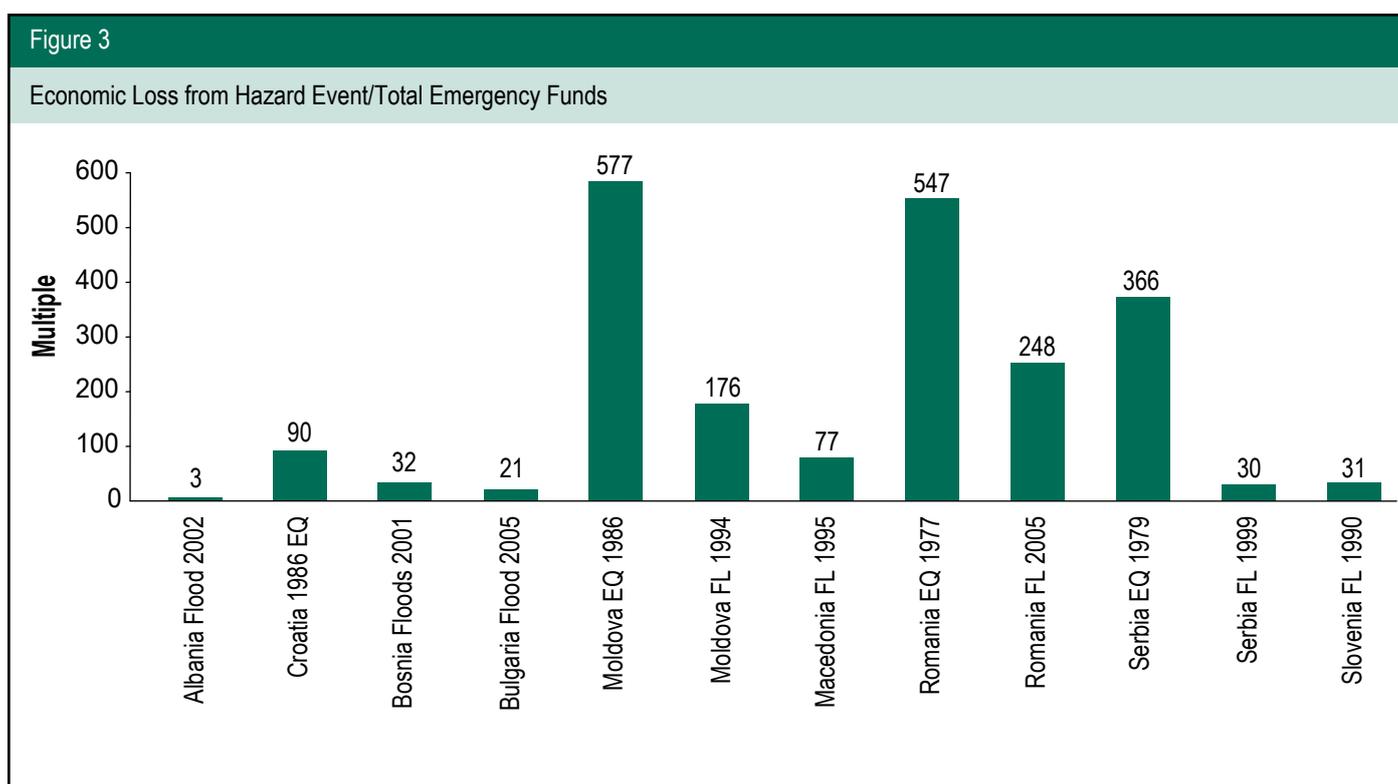
regular annual appropriations for emergencies in the central and often local budgets. In addition, countries often have additional budgetary resources at the level of government agencies, which can be released in the case of a disaster. In cases of emergencies, countries can also increase their originally planned budgetary appropriations for disasters by passing special emergency legislation. Most disaster funds set up by governments are non-accruing budgetary funds, meaning that they maintain the same statutory size, and that in years when there are no losses they do not receive additional financial allocations from national budgets.

Size of disaster funds. As can be seen from figure 2, which shows damages from major disaster events in SEE countries over the last 30 years, national disaster funds are very small compared to the potential economic and fiscal damages that may be caused by large disaster events in these countries. Moreover, if more severe disaster events with longer return periods are taken as a benchmark for setting national disaster risk funding capacity, the countries' financial preparedness for disasters caused by the impact of natural hazards is suspect. For instance, the Republican disaster fund in Bulgaria (USD 31 million) - the second largest of all in SEE countries (after Slovenia) - can cover only 0.6 per cent of damages from an earthquake with a return period of 250 years. In Albania, the Council of Ministers Reserve Fund of USD 17 million would be enough to cover only 0.3 per cent of damages from a similar size earthquake.

To further indicate the magnitude of the problem, figure 3 presents a ratio of economic losses from the recent large



¹² The original loss data for this graph was received from Munich Re. Original estimates were then adjusted for inflation by the authors of the report.



disaster events in SEE countries to the amount of annual budgetary appropriations for emergencies in 2007. As can be seen, the mismatch between the planned annual budgetary appropriations and the size of actual economic losses caused by large disaster events is rather striking. For instance, in the case of the recent 2005 floods in Bulgaria, it would have taken 21 annual planned emergency budgetary allocations to cover the economic losses from the flood.

Disbursements. Most of surveyed disaster emergency funds can be disbursed rather quickly, within a few weeks or even days, after all the needed government decisions have been made. The completion of these prerequisites, however, can be quite time-consuming. The disbursements typically are triggered by passage of a special government decree. Most of the surveyed SEE countries do not require a declaration of national emergency as a precondition for fund disbursement.

Eligibility. In most countries, emergency assistance aid can be made available to households, businesses and local governments. In several countries, however, households were considered a preferred group for emergency assistance. Most countries do not have a means-testing requirement as a precondition of emergency assistance. Overall, there appears to be no clear delineation of government and private sector

liabilities when it comes to allocation of emergency assistance in the aftermath of a disaster.

Prevention. National and local budgetary allocations for emergencies can also be used for funding risk prevention and mitigation projects. However, due to the limited size of national budgetary allocations for emergencies, very few prevention projects ever get funded.

Size of emergency assistance. While most SEE countries do not regulate the maximum amount of aid per person or legal entity, in the case of large disasters, the emergency assistance typically covers only a small fraction of total damages, as the overall amount of aid is mainly limited to government budget reserves for emergencies. These amounts vary from 10 per cent in Montenegro to 40–60 per cent of damages in Slovenia. Some countries link the amount of assistance to insurance coverage at the time of a disaster, e.g. those benefiting from insurance indemnification receive less government aid. This creates strong disincentives for homeowners to buy property insurance. For instance, in Slovenia, owners of insured buildings destroyed by natural hazards are eligible to receive 40 per cent of total loss while, in the case of uninsured buildings, the assistance can reach 60 per cent.

Table 1. National disaster funds in SEE countries

Country	National Disaster Fund	Size (in millions of USD)	Annual appropriations (in millions of USD)	Local disaster funding
Albania	Civil emergency fund	0.4	0.4 annually if needed, plus additional budgetary appropriations in case of an emergency	Local government reserve funds
	Council of Ministers reserve fund (can be used for emergencies)	17		
	Ministries' reserve funds			
Croatia	Budget reserve	5.5	Annual allocations	Municipal budget funds
Bosnia and Herzegovina	Budget reserves	0.5	0.5 payroll tax	
	Fund for special reimbursement for protection and rescue			
Republika Srpska	Budgetary reserve		Annual appropriations	
Bulgaria	Republican fund*	31.25	Depends on annual budgetary appropriations	Municipal budgets
FYR Macedonia	State budget reserve	6.0	Annual appropriations	
	The Solidarity fund		Donations	
Moldova	Reserve fund	2.3	Annual budgetary replenishments	2% of local budgets
	Agencies' reserve funds			
Montenegro	Disaster assistance fund	0.52	0.52	
Romania	Intervention fund	5.0	Annual appropriations	5% of local budgets
	Reserve budgetary fund		Annual local budget appropriations	
Serbia	Disaster Emergency Fund	1	1	
	Reserve Fund	21	1	
Slovenia	Budget reserve fund	40	Annual budget appropriations	

Notes: *The full name of the fund is "The Republican fund for liquidation, management and overcoming of disaster consequences."

IV

A survey of disaster
insurance in selected
EU countries

In Western Europe, coverage for disasters caused by the impact of natural hazards by both the insurance industry and the government varies from one country to another. One can, however, distinguish four main categories¹³:

- 1) In countries like the Netherlands or Denmark, insurers play a minimal role in the provision of coverage against natural hazards. The State organizes the insurance scheme through the government annual budget or through a tax levied on fire insurance policies (which are managed by a specific fund).
- 2) In Switzerland, the State does not intervene in the provision of insurance but makes the insurance of certain risks compulsory, most of the time by means of fire insurance contracts.
- 3) In countries like France, Norway and Spain, the solution is compulsory insurance provided by State-backed insurance entities. Similar schemes are currently being considered by the Governments of Italy and Romania. The compulsory requirement is typically enforced through the inclusion of disaster insurance coverage in the fire policy, which is the most common product in the market.
- 4) Finally, the most common solution is the case in which the State's intervention is totally absent and most of the coverage relating to natural hazards is optional.

This chapter presents three country case studies, France, Spain and Germany, representing the last two approaches, which are the most common in the EU.

France¹⁴

Risk exposure

Although France is threatened by different types of hazards, loss potentials from all of them are rather moderate (under one per cent) if expressed in terms of the size of the country's Gross Domestic Product (GDP). Windstorms and hurricanes are among the top risk exposures, as has been demonstrated by the windstorms Lothar and Martin in 1999. The market cost of these windstorms for the whole of Europe was approximately €7-€8 billion. Flood is yet another risk exposure. According to the estimates by the Caisse Centrale de Réassurance (CCR), a French national reinsurer, a 100-year return period flood has been estimated to cost around €15 billion. About 200 towns and 250,000 people would be affected. There is also a moderate earthquake risk. The last earthquake - the Annecy earthquake - happened in 1996 and

cost €61 million. A very sizeable earthquake could happen in the South of France. The last one was in the early 1900s in Lambesc, and its repeat could be costly.

To make up for the lack of coverage for uninsurable risks, the government has implemented several different solutions. The largest and the most well-known is the French "Nat Cat" insurance system, which was established by the State as a public-private partnership on 13 July 1982. The programme benefits from the expertise and experience of the insurance industry in handling claims and from the solvency of the State.

All compensation provided by the Nat Cat is subject to two prior conditions:

- A state of disaster must have been declared by an inter-ministerial decree.
- The damaged property must be covered by a "property damage" insurance policy.

The "property damage" policy insures buildings and movable property (including motor vehicles) that are insured against fire or any other type of damage (such as theft and water damage). Since the Nat Cat guarantee is obligatory, every insured is entitled to benefit from the coverage through the extended guarantee on their basic insurance policy.

The system covers property located in France and certain French overseas territories. The risk of anti-selection is checked by the obligatory nature of this extended guarantee.

Preconditions of indemnification

Four essential factors are fixed by the State: the declaration of the state of disaster; the definition of the hazards covered; the deductibles; and the price of the coverage. These are described in more detail below.

Declaration of an event

The petition to declare a state of disaster is filed by mayors, who forward it to the prefect of the relevant government department. The latter then has one month to put together a detailed report on the nature and intensity of the disaster.

This file is then examined by an inter-ministerial commission, which expresses an opinion on the presence or absence of a disaster as defined by the law. The CCR acts as a secretariat.

¹³ The four-group classification of disaster coverage has been developed by CEA, the European insurance and reinsurance federation. See "Reducing the Social and Economic Impact of Climate Change and Natural Catastrophes", July 2007.

¹⁴ The following description of the French system draws heavily on Suzanne Vallet, "Insuring the Uninsurable: The French Natural Catastrophe Insurance System", in *Catastrophe Risk and Reinsurance* edited by Eugene Gurenko, Risk Books, London, 2004.

Table 2. Distribution of accepted petitions according to type of phenomenon (1982-2002)

Type of disaster petition	Percentage accepted
Floods	52.2%
Subsidence	29.5%
Landslides (without subsidence)	11.4%
Upwelling of ground water tables	4.8%
Avalanches	0.5%
Earthquakes	0.5%
Wave actions	0.5%
Windstorms	0.5%
Miscellaneous	0.1%

When the commission agrees to declare a disaster, it issues an inter-ministerial decree announcing a national disaster in the official journal.

Hazards insured

The 1982 law did not list the hazards eligible for coverage under the scheme. Instead, it introduced the concept of “uninsurable damage”, which was then clarified by the laws of 25 June 1990 and 16 July 1992. The damage must be “direct”, or arising solely as a result of the action of a natural element of abnormal intensity to the property insured. Table 2 below lists the most typical hazards covered by the scheme over the last 20 years.

Deductibles and the price of coverage

The existing rules forbid the insurer to calculate the price of the guarantee as a function of the real exposure, and impose mutuality between the insured located in the high-risk zones and those in the low-risk zones. Thanks to this solidarity, every insured benefits from a comprehensive coverage at a moderate price (approximately €20 per year for the average homeowner). As of 1 January 2002, the deductibles and rates of premium were structured as shown in table 3.

Furthermore, since 1 January 2001, a sliding scale has been introduced to vary these deductibles so as to encourage loss prevention measures. This scale applies to those towns which do not yet have a prevention plan for foreseeable natural risks. Specifically, when a state of disaster is declared in such a town by means of an inter-ministerial decree for a given hazard, a coefficient is applied to the deductible based on the number of decrees already issued in respect to this same hazard over the past five years. The multiplicative coefficients are as follows:

- One to two decrees: normal application of the deductibles set out above.

- Three decrees: doubling of these deductibles.
- Four decrees: tripling of these deductibles.
- Five or more decrees: quadrupling of these deductibles

The sliding scale ceases to apply as soon as a prevention plan is set up for the hazard in question, but will be reapplied if the prevention plan has not been approved within four years. These deductibles apply to each and every occurrence and each and every policy. In the case of motor vehicles, they apply to each and every vehicle, even if several vehicles are covered under the same policy. The deductibles are compulsory, that is to say they apply even when the basic policy does not include them.

Terms and conditions

Apart from the premium rate and deductibles, disaster coverage does not have its own specific conditions. Instead, it follows those of the main insurance policy (in most cases fire insurance). The authorizing legislation states, “the policy covers the cost of direct material damage suffered by the property up to the value stated in the policy and subject to the terms and conditions of the said policy at the time the risk first occurs” (Decree of 10 August 1982 - Standard Clauses).

The disaster coverage is also extended to include “business interruption”. In this case, it covers loss of gross profit and additional operating costs during the indemnity period specified in the policy.

Reinsurance of disasters by CCR

The 1982 law forced private insurers to cover nearly unlimited exposure. To counter this obligation, France allows CCR to offer unlimited reinsurance coverage with a government guarantee for those risks falling within the scope of the 1982 law, thus providing a guarantee of solvency and security for the insured within the disaster compensation scheme.

Due to a wide spread of property insurance in France, almost 97 per cent of households have disaster coverage underwritten by the Nat Cat scheme.

Table 3. Nat Cat deductibles and rates by line of business

Business line	General deductibles	Deductibles for subsidence (in Euros)	Premium rates
Residential property	€380	1,520	12% of fire premium
Commercial/industrial	Least of 10% or €1,140	3,050	12% of fire premium
Business interruption	3 working days min €1,140	3,050	12% of fire premium
Automobile	€380	380	6% of fire premium

Source: Vallet 2004.

Spain¹⁵

ConSORCIO de Compensación de Seguros is the main disaster risk financing vehicle of the Spanish government and the private insurance market. It was established in 1954 as a State-backed compensation and insurance system providing extraordinary risk coverage for hazards of nature (such as flood, earthquake, volcanic eruption and storms) and socio-political risks such as war and terrorism. Since 1986, the Consorcio stopped being a State institution and became a public business entity reporting to the Ministry of Finance and Economy. The institution has its own legal identity and own assets independent from the State. Its insurance activities are subject to insurance regulations. The Consorcio is managed by the Administration Board, which includes equal numbers of representatives from the State and from the private insurance market. The Board is chaired by the Director General of Insurance and Pension Funds. The institution has 18 regional offices.

The system is based on the principles of solidarity, compensation, diversification and subsidiarity.

Solidarity is achieved among the insured through mutualizing the risks faced. Diversification is achieved through inter-temporal risk transfer between accounting years, territorial diversity of the insured pool, and ability to diversify risk by insuring different uncorrelated hazards. Cooperation is realized through a partnership between the public and private sectors. Subsidiarity is achieved because the Consorcio intervenes only when and where the insurance market fails to provide coverage.

Similar to the French Nat Cat, the risk coverage provided by the Consorcio is compulsorily included in the policies of certain lines of business, such as fire, auto, damage to goods, business interruption and personal accident policies. Insurance policies are underwritten and distributed by private

insurance companies, while the Consorcio acts as a reinsurer. For its coverage, the Consorcio levies a surcharge on the sum insured under primary property insurance policies, which varies with the class of business. The surcharge is collected and passed annually to the Consorcio, minus the distribution charge.

All property damage claims are subject to a deductible of seven per cent of the amount payable, although this does not apply to vehicles, residential premises and residents' associations (comunidades de propietarios). For business interruption, the deductible is the same as any that appears in the basic consequential loss policy.

There is a waiting period of seven days from the inception of the policy before the extraordinary coverage becomes effective. This does not apply, however, to personal accident insurances.

Unlike the French system, compensation under the Consorcio's policies does not depend on a declaration of national emergency by the government. For the indemnification to take place, all that is needed is the timely payment of the premium by the insured and the occurrence of loss from hazards included in the Consorcio's coverage.

The overall claims-paying capacity of the Consorcio consists of the annual premium, the solvency margin, an equalization reserve (benefiting from a special tax treatment), and the financial guarantee of the State.

From 1971 to 2003, the average loss ratio (a ratio of claims paid to premium collected) was about 68 per cent, which means that the Consorcio has been financially sustainable. This figure, however, conceals several major spikes in losses during this time: in 1971 and 1983, the loss ratio reached 667 and 655 per cent, respectively.

¹⁵ The discussion of the Spanish disaster risk financing experience provided in this chapter draws on an article by Ignacio Machetti, "The Spanish Experience in the Management of Extraordinary Risks, Including Terrorism" in *Catastrophic Risks and Insurance*, OECD 2005.

The pool's ability to provide useful service to society also came to light in the aftermath of the March 11 terrorist attacks in Madrid. Over €20 million was paid by the Consorcio to the people injured by the attacks, and to relatives of the deceased. An additional provision of €15 million has been made to complete the outstanding claims.

Germany

Risk exposure

Compared to France and Spain, Germany does not have a national disaster insurance programme. Instead, in cases of national disasters, the private insurance market and the ad hoc post-disaster federal and regional government disaster compensation programmes provide financial compensation to owners of damaged private assets. Below we provide an illustration of the country's financial response to the August 2002 flood, which is considered the most costly and devastating disaster caused by the impact of natural hazards in German history.

The August 2002 flood affected vast areas of the country, killing 21 people and causing substantial damages to the infrastructure. The most strongly affected German state was Saxony, where the total flood damage reached €8.7 billion (Stachsische Staatskanzlei 2004)¹⁶. Saxony was followed by Saxony-Anhalt, with €1.2 billion in damages (IKSE 2004)¹⁷. The overall flood losses in Germany were estimated to have been €11.6 billion, of which about €5.2 billion, or 45 per

cent of total losses, were sustained in the private sector (Kron 2004)¹⁸.

Immediately after the flood, the German government launched an emergency relief fund of €500 million and a reconstruction aid fund of €7.1 billion (Sonderfond Aufbauhilfe). Furthermore, money from EUSF (€444 million), and public donations (€350 million) were available for loss compensation (Schwarze and Wagner 2004)¹⁹. Insured losses from the flood were only about 15 per cent, or €1.8 billion.

The government emergency assistance programme was financed by postponing the second phase of a tax reduction for one year and by reallocating funds from the transport budget and the EU Structural Fund for Germany.

In comparison to disasters caused by the impact of natural hazards in other industrialized countries, such as the Kobe earthquake in 1995, as well as other flood events in Germany, government financial assistance amounted to about 85 per cent of all losses, which is high by any standard. For example, during the severe flood in the catchment area of the Rhine River in 1993 (total losses of €530 million, of which €160 million were insured losses) only 10 per cent of the losses were compensated by governmental assistance and about 60 per cent of the losses remain uncompensated (Linneroth-Bayer et. al 2001)²⁰.

Governmental disaster assistance programmes in Germany have been often criticized as an ineffective and insecure way

Table 4. Government emergency assistance programmes for the August 2002 floods in Germany

Type of aid	Amount (in billions of Euros)
Emergency relief	0.5
"Reconstruction aid" fund – federal contribution	3.6
"Reconstruction aid" fund – regional/local authorities contribution	3.5
Reallocation from the federal transport budget	1.0
EU Structural Fund for Germany	1.2
EU Solidarity Fund	0.44
Total	10.24

Source: Federal Ministry of Finance, Monthly Report, September 2002, (in Schwarze and Wagner 2004)

¹⁶ Sächsische Staatskanzlei, (2004). Der Stand des Wiederaufbaus. Materialien zur Kabinetts-Presskonferenz am 3 February 2004, Dresden.

¹⁷ IKSE (International Commission for the Protection of the Elbe), 2004. Dokumentation des Hochwassers vom August 2002 im Einzugsgebiet der Elbe [Documentation of the flood in August 2002 in the Elbe catchment]. Magdeburg.

¹⁸ Kron, W. (2004). Zunehmende Überschwemmungsschäden: Eine Gefahr für die Versicherungswirtschaft?. In ATV-DWVK (Ed.), Proceedings of the Bundestagung (pp. 47-63). 15/16 September 2004, Würzburg.

¹⁹ Schwarze, R. and Wagner, G.G. (2004). In the aftermath of Dresden: New directions in German flood insurance. Geneva Papers on Risk and Insurance—Issues and Practice, 29(2), 154-168.

²⁰ Linneroth-Bayer, J., et al. (2001). The Uninsured Elements of Natural Catastrophic Losses.

of dealing with flood losses²¹. Since government aid is not based on formal legislation, it depends on many other factors such as, for instance, media coverage, which makes it difficult for affected persons to rely on this kind of compensation.

Due to broad media coverage of disasters and media-driven politics, the extent of damages is often overestimated in the immediate aftermath of a disaster caused by the impact of

natural hazards. Government ad hoc relief programmes often reduce the incentive to keep the risk of damage to infrastructure and private property low through private and collective preventive measures. There are many cases where local authorities do not step up their efforts in risk prevention and development planning, because they expect the federal Government to cover the cost of any necessary repairs to public assets.

²¹ See Schwarze and Wagner 2004



A survey of disaster insurance in SEE countries

SEE countries' risk exposure to natural hazards

South Eastern Europe is highly prone to natural hazards. Over the last 20 years, due to climate change, the frequency and severity of weather-related disasters (such as floods and droughts) have been on the rise in every SEE country. The recent UN/ISDR-WB study *South Eastern Europe Disaster Risk Mitigation and Adaptation Initiative: Risk Assessment of South Eastern Europe Desk Study Review*, indicates that, over the last 30 years, flood and drought have become the most common hazards, accounting for most economic damages from natural hazards in all but three countries (table 4). During 1974-2006, all countries of the region, except Moldova and Slovenia, recorded seven or more large floods. And all but one, Slovenia, face a high risk of flood. Considerable economic losses due to drought have also been recorded in Albania, Bosnia and Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia and Romania.

In addition, the SEE region is one of the major seismically active zones in Europe - the Mediterranean/Trans-Asian seismic belt in the Balkan region and the Vrancea seismic belt extend beyond any single country. Almost one earthquake event occurs every year in Turkey and one event occurs every eight years in Romania and Bulgaria. As can be seen from table 5, not a single SEE country remained immune to earthquakes over the last century, while several of them, including Montenegro/Serbia, Romania and Turkey, incurred numerous severe earthquakes which caused multi-billion dollar damages and extensive loss of life.

In addition, many countries in the region are highly vulnerable to landslides. The geology and topography in many of the mountainous regions favor mass movements triggered by rainfall, earthquakes, or both. The countries most vulnerable to landslides are Bosnia and Herzegovina and Slovenia, where 12 per cent of population lives in slide-prone areas²².

Risk policy coverage

The non-life insurance industry in SEE countries is still rather small and relatively undeveloped. Currently, a very small percentage of population regularly buys insurance products. Property insurance in general and disaster insurance in particular are no exception. Despite the fact that the cost of disaster insurance coverage is not high (around €20-40), few homeowners buy it. The survey demonstrated that, on average, the number of households with homeowners insurance rarely exceeds five per cent, and that only a small fraction of homeowners insured against conventional hazards also have disaster insurance protection.

Natural hazards covered

In all SEE countries, property damage to private dwellings is covered by homeowners' policies. Small businesses, industrial and commercial customers are covered by the fire and allied hazards policy. In both cases, the scope of basic property coverage is primarily limited to the FLEXA hazards, e.g. fire, lightning, explosion and aviation. In certain SEE markets, it also includes limited damages from storm, hail, landslide and even flood. Earthquake and, in most cases, flood are universally excluded and are covered under a special endorsement to the homeowner's policy, but never on a stand-alone basis. The scope of coverage of a special endorsement for disaster hazards includes damages to buildings and contents. Large businesses can also obtain a business interruption policy covering natural hazards.

Disaster insurance penetration

Despite the fact that disaster insurance is available from local insurers in most SEE markets, very few businesses and homeowners buy it. The situation is not helped by the fact that commercial lenders do not require disaster insurance coverage as a loan condition. Most of disaster insurance sold in these markets is purchased by large industrial and commercial companies with foreign equity participation.

Such a limited demand for disaster insurance coverage can be explained by the great variability in the occurrence of disasters caused by the impact of natural hazards, which in turn tends to lead to low risk awareness. Expectation of government assistance in case of a disaster, and inherent distrust of insurance companies (which is often reinforced by the limited scope of disaster insurance coverage available), are among other possible explanations of the low demand for disaster coverage.

One other possible explanation may be that disaster coverage cannot be bought separately in any SEE market, but has to be bundled with a homeowners policy. Once combined, the total cost of both types of coverage can be well in excess of €100 per year, which may create an affordability barrier for many households.

Due to the small size of disaster insurance premiums collected by insurers, some companies find it difficult to find reinsurance protection, while retaining more of disaster risk is not a preferred option. This may be a limiting factor on the supply side that prevents insurers from marketing disaster insurance coverage more aggressively.

²² See Christoph Pusch, "Preventable Losses: Saving Lives and Property through Hazard Risk Management", World Bank, 2004.

Table 5. Economic losses from disasters caused by the impact of natural hazards in SEE countries, 1974-2006

Years used to calculate the average	Country	GDP per capita [USD/ in-habitants] in 2005	Annual average economic loss due to all hazards (in millions of USD)	Percentage of GDP	Economic loss (in millions of USD)			
					Drought	Earthquake	Flood	Tropical cyclone
1974-2006	Albania	2,755.3	68.67	2.49	2238	2 to 5	24.673	0
1989-2006	Bosnia and Herzegovina	2,384.0	22.94	0.96	408	> 5*	0	0
1974-2006	Bulgaria	4,733.9	14.76	0.31	0	5*	260.23	0
1989-2006	Croatia	6,376.2	33.76	0.53	330	> 5*	0	0
1989-2006	FYR Macedonia	4,467.7	24.59	0.55	0	5*	353.6	0
1984-2006	Moldova	2,876.1	61.40	2.13	0	0	152.584	31.6
1974-2006	Romania	5,954.9	292.76	4.92	500	2,756*	3,269.3	0
1989-2006	Serbia and Montenegro	4,936.0	82.0	1.66		2,705	0	0
1984-2006	Slovenia	13,611.4	7.31	0.05	0	10	5	0
1974-2006	Turkey	4,680.8	560.56	11.98	0	15,988	2,511	0

Source: UN/ISDR and the World Bank 2008.

Notes: Economic loss from other hazards is also included for calculating annual average economic loss.

Limits

Insured policy limits for natural hazards are typically slightly lower than the sum insured under the underlying basic property coverage. The limits of coverage, however, may vary significantly from one country to another. On average, they range from €50,000-150,000 for personal dwellings and up to €500,000 for small-to-medium enterprises.

Deductibles

As deductibles are not very popular with individuals and corporations in SEE countries, they rarely exceed two per cent of sums insured for earthquake coverage and one per cent for atmospheric hazards. Many companies do not have any deductibles for disaster hazards in their policies. In some markets, insurers do require minimum deductibles of €100-500 for earthquake and offer a 20 per cent premium discount for a voluntary deductible of two per cent of the sum insured and a 30 per cent discount for a deductible of five per cent.

Premium rates

The pricing of coverage for natural hazards varies significantly throughout the region, based on the risk factors and the pricing sophistication of insurers. For earthquake risk, for instance, the pricing takes into account the earthquake zone, soil conditions, building structure and year

of construction, whereas for atmospheric hazards, the rates are based on the type of building structure and the location of the property. In some markets, buildings built before the introduction of more stringent building codes receive a premium surcharge of 30 per cent. Rates for earthquake coverage mainly range from a minimum of 0.05 per cent to a maximum of 0.35 per cent of the sum insured, with an average cost of a disaster endorsement being of the order of €20-30 for a property with a €50,000 limit.

Contents rates are the same as buildings rates for high-risk occupations such as chemicals, pulp and paper, telecommunications and hospitals. For all other occupations, contents rates are 60 per cent of buildings rates. Business interruption rates are 130 per cent of applicable buildings rates. The tariffs for other natural hazards are flat, but some companies use premium loadings, depending on flood maps or proximity to rivers and other water basins. As most of disaster risk is transferred to reinsurers, in pricing the risk, primary insurers tend to rely on the ratings suggested by the lead European reinsurers such as Munich Re and Swiss Re.

Terms of coverage

The terms of coverage for disaster hazards offered by the local market are often rather limited, which leaves a holder of the policy with a considerable basis risk. For instance, in Bosnia and Herzegovina, to be eligible for indemnification of damages caused by a storm, damages must be caused by a storm with a minimum speed of 17.2 metres per second,

Table 6. Recent seismic history in SEE countries

Country	Date	Magnitude	Number of deaths	Number of victims	Economic loss (in millions of USD)
Albania	Nov.30,1967	6.0	11	134	na
	Nov.16,1982	5.2	1	5,005	na
	Jan.09, 1988	5.5	na	690	na
	Sep.30, 1988	5.0	na	2,100	na
Bosnia & Herzegovina	Oct. 27,1969	6.6	15	1,132	na
Bulgaria	Apr.14,1928	6.8	107		na
	Mar.04,1977	7.2	20	185	na
	Dec.06,1986	5.7	3	3,060	50
	May 30,1990	6.7	1	na	na
Croatia	Sept.05,1996	6.0	na	2,000	na
	Oct.08,1909	6.0	na	na	na
	Jan.11,1962	6.1	na	na	na
	Apr.06,1667	7.3	5000	na	na
	Mar.29, 2003	5.5	na	na	na
FYR Macedonia	July 26,1963	6.1	1,070	4,400	300
	Apr.04,1904	7.8	na	na	na
	Mar.08,1931	6.7	na	na	na
Moldova	Nov. 10, 1940	7.4	78	1,078	na
	Mar.04,1977	7.2	na	na	na
	Aug.30, 1986	7.0	2	15,020	680
Montenegro	Apr.15, 1979	6.9	35	100,418	na
Romania	Nov.10, 1940	7.4	2,000	na	10
	Mar.04,1977	7.2	1,578	12,699	2,050
	Aug.30, 1986	7.0	2	560	na
	May 31, 1990	6.7	8	304	24
	Oct. 27, 2004	5.8	na	na	1
Serbia	Apr.24, 2002	5.4	1	100	na
Slovenia	Jul.12, 2004	5.0	1	605	10
	Apr.12,1998	5.5	0	700	na

Turkey	Apr.29,1903	6.3	6,000	na	na
	Aug.09,1912	7.8	923	1,575	na
	Dec.26,1939	8.0	32,962	na	20
	Nov.26,1942	7.6	4,000	na	na
	Dec.20,1942	7.3	3,000	na	na
	Nov.26,1943	7.6	2,824	5,000	na
	Aug 19,1966	6.9	2,394	109,500	20
	Mar.28,1970	7.2	1,086	83,448	55.6
	May 22,1971	6.8	878	88,665	5
	Sep.06,1975	6.6	2,385	53,372	17
	Nov.24,1976	7.6	3,840	216,000	60
	Oct. 30,1983	7.1	1,346	834,137	25
	Mar. 13,1992	6.8	653	348,850	750
	Oct.01,1995	6.1	94	160,240	100
	Jun.28,1998	6.3	145	1,589,600	500
	Aug.17,1999	7.4	17,127	1,358,953	8,500
	Oct.05,1999	5.2	0	103	4,776
	Nov.12,1999	7.2	845	224,948	1,000
	Feb.03,2002	6.2	42	252,327	95
	May 01,2003	6.4	177	290,520	135
Jul.02, 2004	5.4	18	356	na	

Source: UN/ISDR and the World Bank 2008

or 62 kilometres per hour; whereas earthquake insurance becomes valid only if the intensity of shaking exceeds Mercalli V. This policy condition effectively denies coverage to buildings which were not built in conformity with the earthquake code.

In Romania, earthquake policy coverage excludes damages caused by waves, tap water, and dams' breakage that occurs as a result of a quake. Exclusions of a homeowners policy applying to atmospheric hazards include inundation due to storms, water/ice particles seepage, tap water, backwater, landslide, land collapsing, sea water level increasing, and ocean tides.

In Serbia, many companies limit their maximum payout for one event to only 10 per cent of their own surplus capital.

When total losses exceed that amount, individual indemnities (money paid as compensation) are reduced accordingly.

Indemnification basis

In covering disaster hazards, insurers are often faced with the problem of underinsurance, which arises when policyholders buy less coverage than the replacement cost of their property. To deal with this problem, insurers include underinsurance penalties in the terms and conditions of the policy, which have the effect of reducing the amount of indemnity paid in the aftermath of a disaster proportionately to the rate of underinsurance²³. In some instances²⁴, however, insurers may choose to replace the underinsurance penalty with coverage that offers the insured a lower coverage limit (e.g.

²³ In the insurance industry, this approach is often described as the rule of averaging.

²⁴ These instances arise when there is a possibility for an insurer to end up with excessive risk accumulations that may be difficult to fully reinsure or diversify.

below the replacement value of the property) but at a higher premium rate²⁵.

Both indemnification approaches are common in the SEE markets. For instance, in Romania, underinsurance penalties are included in all forms of coverage for legal persons. In Bulgaria, in the absence of an explicit agreement to the contrary, underinsurance penalty must be applied by law. The first loss approach to indemnification is more prevalent in the case of flood coverage, where the flood policy limits rarely exceed 10 per cent of the replacement value of the property.

Claims settlement

In SEE countries, loss adjustment is typically carried out by experts from insurance companies, although for complex losses, external professional loss adjusters may be engaged as well. Reinsurers may also be involved if losses exceed a pre-agreed value.

In most markets, claim settlement is typically done either on the replacement, market value or book value basis. Under the last approach, loss adjusters typically will estimate the real damage and compare it with the sum insured. The starting value is the book value of the damaged property, from which they would deduct the accrued depreciation to arrive at the remaining reimbursable value.

Risk management

In most SEE markets, insurance companies are quite selective in providing earthquake coverage, and offer it only for selected buildings. Disaster risk retentions of local companies are quite small, of the order of 1-3 per cent of gross premium written, with the rest of risk (and premium) ceded to international reinsurers. By and large, local insurers cede disaster risk to reinsurers under quota share treaties, which enables them to transfer risk to reinsurers on the same pricing terms that prevail in the local market and generate sizeable reinsurance commissions. Only foreign companies like AIG, Allianz and QBE have disaster excess-of-loss protection. Other companies have found that the minimum deposit premiums quoted for X/L (excess of loss) contracts exceed their direct earthquake premium income.

Insurers and reinsurers typically follow a simple accumulation control procedure, which is fostered by the reporting requirements of foreign reinsurers. Ceding companies have to report to reinsurers their insurance policies with flood and earthquake exposure by creta zone, and in some cases even by zip code, which enables the reinsurers to monitor

and manage their aggregate risk accumulations. The return periods used for accumulation control purposes vary from 250 to 450 years, depending on the company. Due to the small size of the market, insurance companies in SEE countries do not have their own probabilistic risk models for accumulation control and pricing. Instead, they rely on those provided by large reinsurance companies and reinsurance brokers.

Insurance regulations

In most SEE markets there are no specific requirements for pricing, reserving or reporting disaster risk underwritten by local insurers. However, in the Former Yugoslav Republic of Macedonia, Montenegro, Romania and Serbia, companies are allowed to form equalization or other reserves, but only after a formal approval by the Insurance Regulator. Until recently, this practice was also followed by Slovenia, but after the introduction of the IFRS 4 on 1 January 2007, local companies are now required to release the equalization reserve into their own capital. In Romania, in addition to equalization reserves, the Supervisory Commission also requires insurers to set disaster reserves by allocating, on a monthly basis, a minimum of five per cent of the gross written premium income generated by policies covering disaster hazards²⁶. The Romanian Insurance Regulator also collects market data from all companies on their aggregated disaster risk exposure and on the probable maximum loss calculations for each line of business covering disaster hazards.

In Serbia, when it comes to pricing, new wording or a change in existing, a proposal must be signed by an actuary and sent to the Insurance Regulator for information purposes. Theoretically, the Regulator can object. The Insurance Regulator must also be informed about maximum risk retentions. According to the current insurance law, insurers cannot front and must retain at least a portion of the risk. The Serbian Insurance Act also stipulates that reinsurance must be obtained from a domestic reinsurance company (there are three reinsurance companies in the market).

Product distribution channels

In SEE markets, insurers use multiple distribution channels to distribute their products, including their own sales force, agents, banks and retail brokers. Agents, brokers and insurer sales forces tend to be most common. In some markets, municipal services companies are also used as an active distribution channel of insurance products to individuals.

²⁵ The second approach is known in the industry as the "first loss approach" to property coverage.

²⁶ Allocation to the disaster reserve continues until the created reserve reaches at least the level of the own retention, or 10 per cent of the aggregated exposure written under policies covering disasters caused by the impact of natural hazards.

VI

Conclusions and policy recommendations

Despite considerable risk exposure to disasters caused by the impact of natural hazards, the existing risk financing mechanisms, at both the regional and SEE country level, do not have the capacity to address the consequences of large disaster events. Reducing the adverse financial impact of disasters caused by the impact of natural hazards on governments, businesses and households in the SEE countries must be regarded as an important economic and social priority at the national and regional level.

Investing in development of market-based disaster risk transfer systems at both the national and regional level will bring numerous economic and fiscal benefits. In the case of governments, national and regional risk transfer programmes will help reduce the contingent fiscal liabilities of governments arising out of their unlimited exposure to natural hazards; will enable them to receive access to immediate liquidity in the aftermath of disaster events; and will help to mitigate the adverse impacts of natural hazards on fiscal stability and economic growth. In the case of households, access to affordable market-based disaster insurance will serve as an important financial safety net that will help millions of homeowners protect their lifetime savings embedded in their home equity, and hence avoid financial ruin. For businesses, access to disaster insurance and financial weather hedging instruments will reduce the adverse impacts of natural hazards on their earnings, and hence will reduce the cost of borrowing, and result in improved business valuations.

Several recommendations emerge from this study. They are intended to guide government policymakers in developing and applying national and regional disaster risk financing strategies; to suggest ways in which World Bank staff and managers can better address disaster risk financing in their dialogue with clients; to support the International Strategy on Disaster Reduction system in promoting partnerships to reduce disaster risk; and to provide information and ideas that may be of value to other stakeholders, such as international donor organizations, non-governmental organizations, academics and the general public.

Investing in the development of integrated disaster risk financing capabilities at the national and regional levels.

One of the key findings of the study is that disaster risk management functions at the country and the EU level tend to be fragmented and dispersed across different agencies. The function of disaster risk financing is typically reduced to requesting additional budgetary appropriations and disbursing financial assistance to government agencies in charge of relief, recovery and reconstruction work. This function is typically discharged on an ad hoc basis by national Ministries of Finance in the aftermath of disasters caused by the impact of natural hazards.

These findings suggest that the SEE countries will benefit from building an integrated disaster risk management function at the national level that comprises disaster risk reduction and risk financing. Following the best business practices in large private companies, countries may also consider instituting a position of Chief Country Risk Officer, whose main responsibility would be to identify, assess and manage country disaster risk through a combination of ex-ante activities in disaster risk reduction and disaster risk financing at the country level, including risk transfer. A schematic illustration of the key tasks of the Chief Risk Manager's Office is provided in figure 4.

Lessening the impact of disasters on government budgets.

The 2005 floods in Europe once again demonstrated that large disasters caused by the impact of natural hazards can be very costly and can have major negative impacts on national budgets. This flood impact, however, pales in comparison to the magnitude of loss that can be wrought by a large earthquake. Yet no government in the region has either adequate financial capacity of its own or risk transfer mechanisms in place to cope with financial consequences of large disaster events.

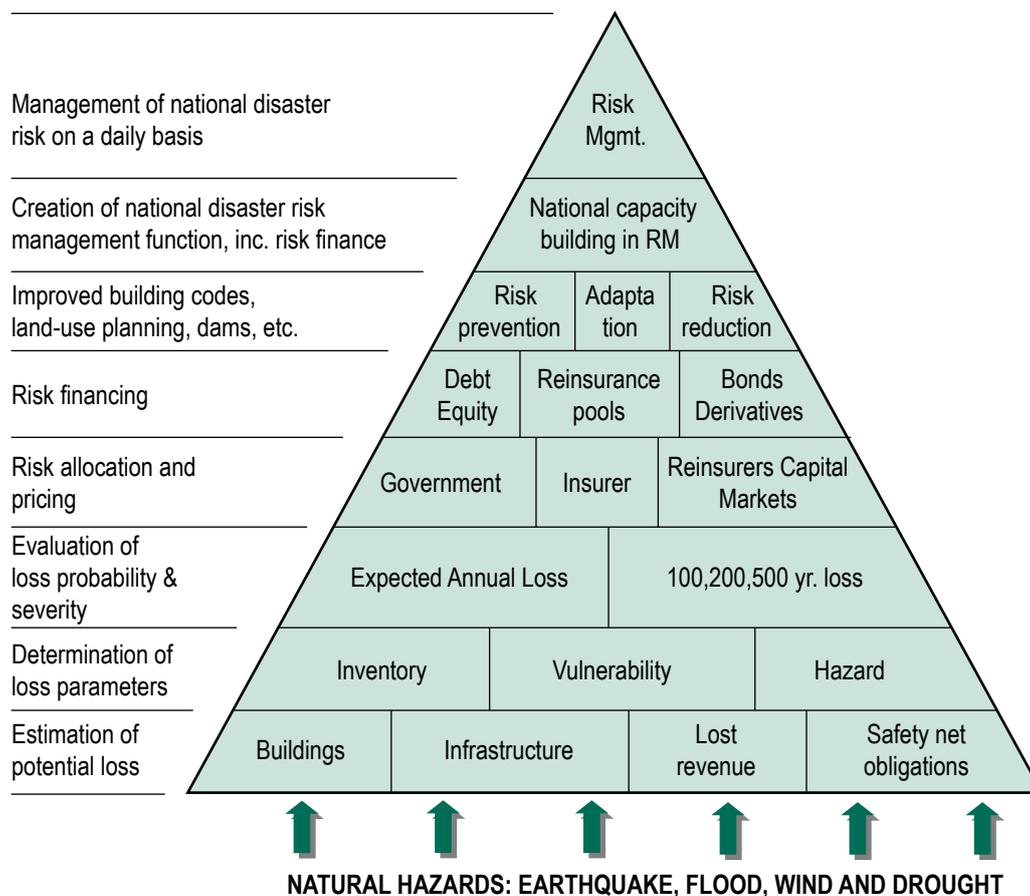
In this context, the SEE countries should consider instituting a regional disaster insurance pool that would act as a regional aggregator of disaster risk and help governments access the global reinsurance market on better pricing terms. The risk pooling arrangement for the SEE countries can be modeled after the regional disaster insurance facility - the Caribbean Catastrophe Insurance Regional Facility - that was launched successfully by the World Bank in May 2007.

The insurance premium payments for disaster risk coverage can be made out of the annual budgetary allocations for emergencies, which effectively would enable countries to limit their annual budgetary exposures to natural hazards by the amount of premium paid to the regional disaster insurance pool.

Reducing the financial vulnerability of homeowners and small-and-medium enterprises to natural hazards. Despite major loss potentials from disasters caused by the impact of natural hazards, the study documented an almost non-existent level of disaster insurance coverage among homeowners and small-and-medium enterprises in SEE countries. Such low levels of insurance penetration can be partially explained by a combination of many factors on both the supply and demand sides. These include the lack of risk awareness, distrust in the population of the ability of local insurers to pay claims in case of a major disaster, reluctance of insurers to actively market disaster insurance coverage on

Figure 4

Key building blocks of national disaster risk management strategy



a wide scale due to difficulties with obtaining reinsurance, complexity of internal risk management procedures for disaster risk, and the highly capital intensive nature of the business. In an attempt to explain the low insurance penetration for disaster risk, one can also point out the still rather nascent stage of insurance industry development in the region, and relatively low incomes of most of the population. The population often finds that the combined cost of disaster insurance and the underlying homeowner's policy is beyond their means²⁷.

In this context, it may be advisable for many countries of the region, particularly larger-size economies exposed to the combination of severe geological and meteorological risks, to consider creating national disaster insurance pools, which can provide efficiently priced stand-alone disaster insurance to homeowners and small business owners. As has been demonstrated by international experience, such programmes can provide highly affordable coverage by realizing the benefits of countrywide risk diversification, economies of scale and the ability to obtain better pricing terms from the global reinsurance market. In 2000, with the World Bank's

assistance, Turkey pioneered and successfully launched the first countrywide disaster risk pool in an emerging market known as the Turkish Catastrophe Insurance Pool (TCIP). Similar national disaster risk insurance programmes can be considered and developed with World Bank assistance in Bulgaria and Serbia. The work on a similar programme in Romania has reached a fairly advanced stage.

Mitigating the negative impacts of disasters caused by the impact of natural hazards on businesses. The growing frequency and severity of disasters caused by the impact of natural hazards, particularly of weather-related events, is becoming a major operational risk for many businesses in the SEE region. Yet so far, businesses have not taken advantage of the latest financial technologies in the area of weather risk hedging. Despite the fact that the international weather risk market has been rapidly developing, companies in SEE countries have rather limited access to weather risk hedging instruments. Such instruments can mitigate financial consequences of weather-related events on business and help companies in their economic adaptation to climate change.

²⁷ The homeowners policy and natural hazards endorsements are always sold together in the market.

The countries of the region, and possibly of the EU, should consider joining forces to create a regional (and possibly pan-European) market in weather risk hedging instruments - a “weather risk market.” Creation of such a market will allow companies whose bottom lines are affected by the weather to hedge their weather risk by buying weather derivatives such as Heating Degree Days (HDD) and Cooling Degree Days (CDD) for major cities of the region²⁸. Tradable indices may also be developed for wind and precipitation. The work in the area of weather derivatives has been pioneered by the World Bank in several countries around the world, with India being the prime example. The existing product development and low-cost distribution technologies for hedging weather risk can be adjusted to the specific conditions of the SEE region.

The creation of the weather risk market would require regional investments in the meteorological data generation and storage capabilities, installation of additional weather radars and weather monitoring stations, the creation of the regional weather risk trading platform, and development of the weather market regulations. All these investments must be well coordinated from the start to achieve desired outcomes. In this context, a World Bank-supported regional weather risk market development programme can serve as an effective regional coordination mechanism.

²⁸ Such contracts are already offered for major US and European cities.

References

CEA (2007). "Reducing the Social and Economic Impact of Climate Change and Natural Catastrophes". CEA: Brussels, Belgium.

EM-DAT Emergency Disaster Database. www.em-dat.net/glossary.htm.

European Environment Agency (2005). Vulnerability and Adaptation to Climate Change. Briefing no. 3/2005. European Environment Agency: Copenhagen, Denmark.

Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters: <http://www.unisdr.org/hfa>

International Commission for the Protection of the Elbe (2004). Dokumentation des Hochwassers vom August 2002 im Einzugsgebiet der Elbe [Documentation of the flood in August 2002 in the Elbe catchment]. Magdeburg.

ISDR Terminology: Basic Terms of Disaster Risk Reduction: <http://www.unisdr.org/terminology>

Kron, W. (2004). "Zunehmende Überschwemmungsschäden: Eine Gefahr für die Versicherungswirtschaft?" In ATV-DWVK (Ed.), Proceedings of the Bundestagung (pp. 47-63). 15/16 September 2004, Würzburg.

Lehrer et al. (2006). Climatic Change.

Linneroth-Bayer, J., et al. (2001). The Uninsured Elements of Natural Catastrophic Losses.

Machetti, I. (2005) "The Spanish Experience in the Management of Extraordinary Risks, Including Terrorism", Catastrophic Risks and Insurance, OECD.

National Geophysical Data Center. <http://www.ngdc.noaa.gov>

Pusch, C. (2004) "Preventable Losses: Saving Lives and Property through Hazard Risk Management", Disaster Risk Management Working Paper Series, no. 9. The World Bank.

Sächsische Staatskanzlei. (2004). Der Stand des Wiederaufbaus. Materialien zur Kabinetts-Presskonferenz am 3 February 2004, Dresden.

Schwarze, R., and Wagner, G.G. (2004). "In the aftermath of Dresden: New directions in German flood insurance", in Geneva Papers on Risk and Insurance - Issues and Practice, 29(2), 154-168.

UN/ISDR and the World Bank (2008). South Eastern Europe Disaster Risk Mitigation and Adaptation Initiative: Risk Assessment of South Eastern Europe Desk Study Review. UN/ISDR.

Vallet, S. (2004) "Insuring the Uninsurable: The French Natural Catastrophe Insurance System", in Catastrophe Risk and Reinsurance, edited by Eugene Gurenko, Risk Books: London.



THE WORLD BANK

The World Bank
1818 H Street, NW Washington
DC 20433 USA
Tel.: 202-458-0268
Fax: 202-522-3227
drm@worldbank.org
www.worldbank.org



United Nations
International Strategy for Disaster Reduction

Secretariat Europe, Geneva
Tel.: 41 22 917 8905
Fax: +41 22 917 8964
albrito@un.org
www.unisdr.org/europe

Postal Address:
Palais des Nations, CH-1211
Geneva, Switzerland