

SOUTH EASTERN EUROPE DISASTER RISK MITIGATION AND ADAPTATION PROGRAM (SEEDRMAP)

CONCEPT NOTE

Introduction

The Global Facility for Disaster Reduction and Recovery (GFDRR)¹ is a major initiative launched in September 2006 that is designed to help meet the global demand for increased investment in disaster prevention and mitigation. Within the context of the GFDRR the World Bank and UN/ISDR secretariat have initiated a South Eastern Europe Disaster Risk Mitigation and Adaptation Program (SEEDRMAP) which is in line with the Hyogo Framework, and aims at reducing the vulnerability of the countries of South Eastern Europe to the risks of disasters. The initiative builds on the existing cooperation in the region, and complements and consolidates the activities promoted by the EU, the Council of Europe, the UN, and the Stability Pact, the CMEPC, and others to promote more effective disaster mitigation, preparedness and response. It equally aims at developing partnership with these actors actively involved in disaster risk reduction issues in the region.

The first phase of the SEEDRMAP has aimed at reviewing South Eastern Europe within the context of (i) hydro meteorological forecasting, data sharing and early warning; (ii) coordination of disaster mitigation, preparedness, and response; and (iii) financing of disaster losses, reconstruction and recovery, and disaster risk transfer (disaster insurance). The findings of these reviews have allowed the development of this concept note capturing the rationale for the World Bank investments in the region as well as program development proposals. These investments represent the second phase of the SEEDRMAP that will be implemented in collaboration with UN/ISDR secretariat and other partners.

Key development issues

Over the last decades, the frequency of major disasters caused by the impact of natural hazards as well as losses caused by them, have increased significantly. Worldwide, the number of disasters grew from 100 in 1975 to about 400 in 2006². The economic costs of major disasters in constant dollars are estimated to be 15 times higher than they were in 1950s, i.e., \$652 billion in material losses in the 1990s.³

¹ To find out more about the Global Facility for Disaster Reduction and Recovery see www.worldbank.org or www.unisdr.org.

² Source: Emergency Events Data Base (EM-DAT), a global disaster data-base maintained by the Center for Research on the Epidemiology and Disasters (CRED) in Brussels.

³ Source: IMF 2003 as cited in *Hazards of Nature, Risk to Development – An IEG Evaluation of World Bank Assistance to Natural Disasters*; World Bank 2006

As the effects of climate change become increasingly felt, the social and economic vulnerabilities to the catastrophic events are rising with growing world population, the consequent pressure on land, and settlements in the disaster-prone areas. The current and projected effects of climate change, combined with changes in land use patterns, will likely further increase frequency and severity of disasters, such as floods, draughts, hurricanes, tornadoes, forest fires, and landslides. Further contributing factor is environmental degradation. For example, in drought problems with shortages of water are exacerbated by deforestation, soil erosion and inappropriate land use. Destruction of forests and overgrazing leads to desertification. Poor agricultural practices which destroy groundcover and other natural means of environmental defense lead to floods by silting up the rivers and contributing to the loss of absorptive capacity of the soil. Reasons behind more severe destruction brought in developing countries by natural hazards, often of the weather-related origin, are poor construction standards, inadequate land use planning, lack of building code enforcement, and informal housing in the vulnerable areas.

In the past, disasters were considered natural events against which response was the only action that could be undertaken. Therefore, most of countries and organizations, including the World Bank group, focused their efforts on the emergency response. However, over the last decades, due to the increased impact of devastating catastrophes and better understanding of underlying causes and effects, the focus has slowly shifted from the disaster response to disaster risk reduction and climate change adaptation. This broader approach is aiming at reducing vulnerability of countries and communities to the impact of natural hazards and promoting adaptation to changes in climatic patterns.

Effects of Climate Change. Changes in climate and their impacts are already observed globally and are expected to become more pronounced. The report released by the Intergovernmental Panel on Climate Change (IPCC) in 2007⁴ shows that climate change will lead to exacerbation of natural hazards associated with the hydro-meteorological conditions, such as floods, droughts and forest fires. The key implications of climate change are increasing magnitude and frequency of climatic extremes that lead to higher probability of floods, landslides, avalanches, drought, heat waves, and soil erosion with associated damages.

The effect of climate change is a very important development issue for Europe as majority of human losses in the region derive from hydro-meteorological events, as measured by number of people reported killed in disasters per million inhabitants – 4.77 killed due to catastrophes of hydro-meteorological origins, as compared with 0.23 killed in the geological events in the period 1991 to 2005⁵. Mountain regions, coastal zones, wetlands and the Mediterranean region are particularly vulnerable. The adverse impacts of climate change and disasters caused by the impact of natural hazards are projected to affect various sectors, such as human health, agriculture, fisheries, forestry, water

⁴ *Climate Change 2007: Impacts, Adaptation and Vulnerability*; Intergovernmental Panel on Climate Change, 2007

⁵ Emergency Events Data Base (EM-DAT); Center for Research on the Epidemiology and Disasters (CRED)

resources, tourism, and energy. The most vulnerable industries, settlements and societies are particularly those located in coastal and flood plains and those in areas prone to extreme weather events, especially the areas experiencing rapid urbanization. Where extreme weather events become more intense and more frequent, the economic and social costs will increase.

Recent studies indicate that over much of Europe one in 100 years floods will occur every couple of decades⁶. The studies on flood risk and climate change at EC Joint Research Centre point that that potential damage of a 100-year flood will rise in Europe between 19 and 40 percent, and the number of people affected is estimated to grow by 6 to 11 percent.

The projections suggest⁷ that South Eastern Europe, Mediterranean and Central European regions are the most vulnerable to climate change and 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 impact on snow cover, glaciers and permafrost causing an increased risk of natural hazards. Mountainous regions are particularly vulnerable to climate change, along with the coastal zones due to sea level rise and changes in frequency and/or intensity of storms. Coastal areas along the Mediterranean and Black Seas in particular are at high risks. Southern Europe is consistently projected to become much drier and warmer with higher risk of drought and negative consequences for agriculture and water supply. Heat waves, combined with drought, will trigger massive forest fires. The changes in precipitation, temperature and sea levels will have significant financial and human consequences throughout Europe.

In summary, due to climatic changed the following should be expected:

- increases in weather variability
- new extreme values of temperatures, precipitation or wind speed
- new exposures
- more frequent and fierce disasters

Consequently, based on the current knowledge, disaster risk management becomes a vital and urgent component of adaptation and coping with climatic changes.

Vulnerability of SEE countries to disasters. South Eastern Europe (SEE) is exposed to a variety of natural hazards, including floods, droughts, forest fires, earthquakes, and landslides.

A recent hazard risk assessment carried out for 11 countries of South Eastern Europe⁸ examined the occurrence of different perils in each country. Table 1 below gives an overview of the common risks in the SEE. The country-wise peril matrix shows that

⁶ *Climatic Change*; Lehrer et al, 2006

⁷ *Vulnerability and Adaptation to Climate Change*; European Environment Agency; 2005

⁸ *Synthesis Report on South Eastern Europe Countries Disaster Risk*; RMSI; 2007

flood and technological hazard are common perils in all countries of the region. Except Moldova and Slovenia all the countries are prone to seven or more hazards.

Table 1. Peril matrix by country

Country	Perils								
	Earth quake	Flood	Land slides	Drought	Extreme temperature	Wind storm	Wild fire	Epidemic	Technological
Albania	x	x	x	x	x	x		x	x
Bosnia and Herzegovina		x	x	x		x	x	x	x
Bulgaria	x	x		x	x	x	x		x
Croatia	x	x		x	x	x	x		x
Republic of Macedonia		x		x	x	x	x	x	x
Moldova		x		x	x	x		x	
Romania	x	x	x	x	x	x		x	x
Serbia	x	x			x	x	x	x	x
Montenegro	x	x			x	x	x	x	x
Slovenia	x	x			x				x
Turkey	x	x	x		x	x	x	x	x

Source: EM-DAT after *Synthesis Report on South Eastern Europe Countries Disaster Risk*; RMSI; 2007

The same study analyzed vulnerability of SEE countries based on the incidence rate of hazards, annual average number of deaths and exposed population. Table 2 shows that on average one flood strikes Romania and Turkey every year and the combined data on Serbia and Montenegro shows one flood event every two years. Substantial number of population is exposed to earthquakes in Albania, Croatia, Macedonia, Romania, Slovenia and Turkey, while in most countries large number of population is at risk of floods. Data on population exposed to drought is available for few countries like Bosnia and Herzegovina, Bulgaria, Moldova and Romania and shows the risk as substantially high.

Table 2. Average annual incidence of major hazards and vulnerability of SEE countries

Country	Annual average incidence of major perils					Annual average number of deaths due all perils	Exposed population		
	Drought	EQ	Flood related	Wind storm	Technology related		Drought	EQ	Floods
Bosnia and Herzegovina	0.17	x	0.28	0.11	0.17	3.72	71397	NA	NA
Bulgaria	0.21	0.15	0.27	0.15	0.15	6.64	325,406	NA	275,537
Croatia	0.28	0.06	0.22	0.06	0.17	8.61	NA	30,928	108,929

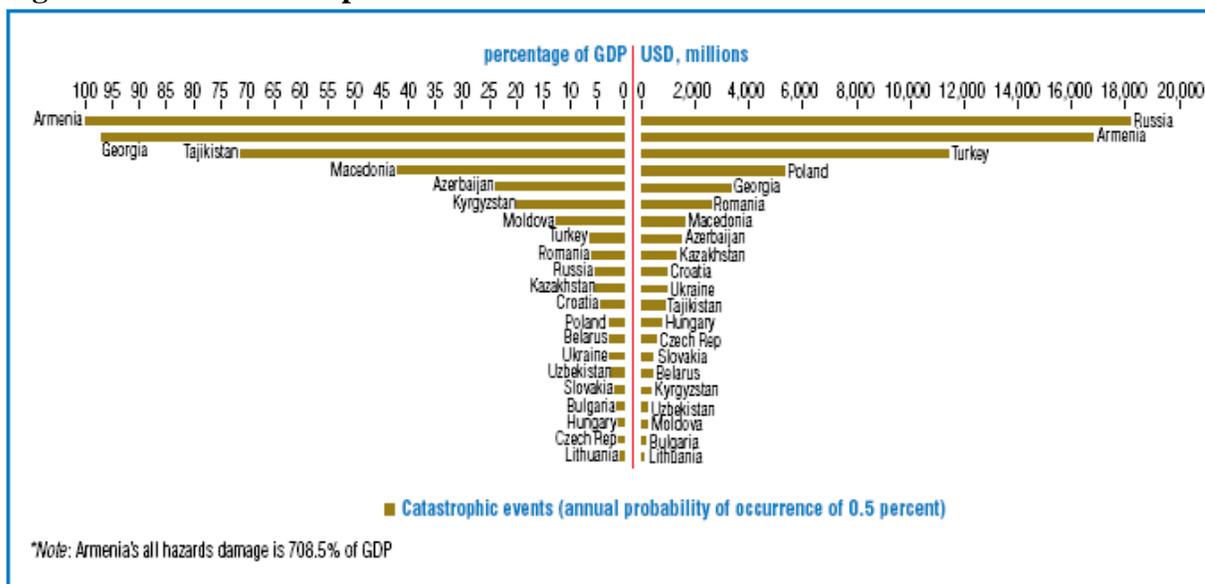
Macedonia	0.17	x	0.22	x	0.11	13.39	NA	NA	17,784
Moldova	0.09	0.09	0.22	0.09	x	1.83	279,603	18,909	193,262
Romania	0.45	0.12	1.03	0.24	0.48	82.42	347,229	1,007,506	1,174,894
Serbia and Montenegro	0.17	0.06	0.50	0.06	0.56	10.00	NA	NA	321,934
Slovenia	0.04	0.09	0.04	x	x	0.04	NA	30,984	NA
Turkey	0.30	0.97	1.06	0.21	3.00	941.36	NA	2,745,757	1,883,782

x - data not available for computation, NA – data not available in the website

Source: Annual average incidence and death computed using EM-DAT, exposed population UNDP

Disasters have a significant impact on the economic performance and may affect country macroeconomic situation. The most important macroeconomic effects are those that affect GDP, sectoral production, the current account balance, indebtedness and public finances. The economic loss potential for ECA countries is shown in Figure 1 below.

Figure 1. Economic loss potential*



**The figure does not include drought, forest fire, and industrial accident hazards.*

Source: *Preventable Losses: Saving Lives and Property through Hazard Risk Management*; Christoph Pusch; World Bank 2004

While the above Figure 1 does not include the potential losses due droughts, the drought-related hazards are also severe in many SEE countries. 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, Macedonia, Moldova and Romania. The extent of economic damages from drought in SEE countries is summarized in Table 3 below.

Table 3. Major recent droughts in SEE countries

Country	Date	Number of deaths	Number of victims (people)	Economic loss (in million USD)
Albania	1989-1991	0	3.2 million	24.67
Bosnia and Herzegovina	2003	0	62575	250
Bosnia and Herzegovina	2003	0	0	158
Croatia	2003	ndr	ndr	330
Moldova	2000		2.6	170
Macedonia	1993	0	0	10
Romania	2000	ndr	ndr	500

Source: *Synthesis Report on South Eastern Europe Countries Disaster Risk*; RMSI; 2007

With the expected temperature rises of 4-5°C throughout the Southern and South Eastern Europe, the yearly rainfall is expected to drop by up to 40% of current annual precipitation⁹ and the frequency of droughts and economic damages caused by them could become only more pronounced.

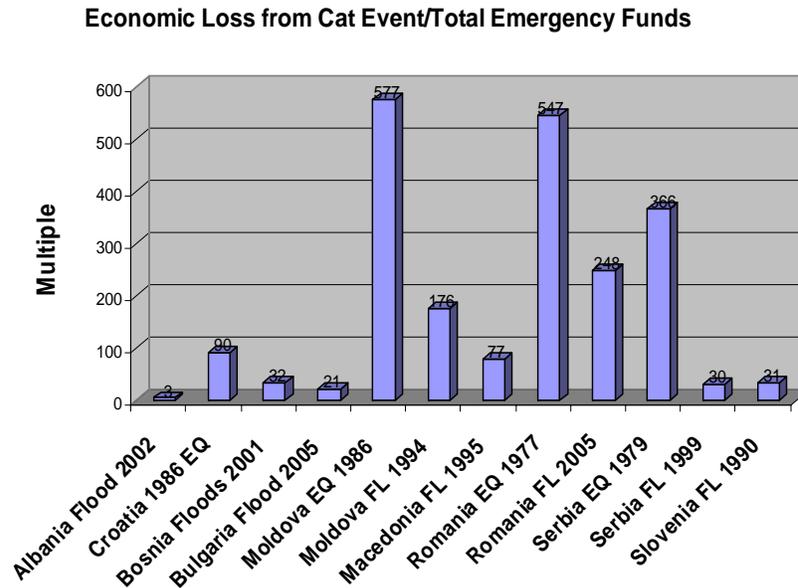
Economic and Financial Impacts of Disasters on SEE countries. The increased intensity and severity of disasters will have significant impact on the countries' fiscal stability, households, as well as business. The following paragraphs summarize these effects.

Adverse impacts on countries' fiscal stability and macro-economic performance. With the growing frequency and severity of disasters, it is becoming increasingly difficult to cover economic costs of such events from recurring budgets. Even though every SEE country makes annual budget appropriations for emergency expenditures, often the actual budgetary outlays on such events are well in excess of budgeted amounts. To finance losses from large natural hazards, countries typically make additional emergency budgetary appropriations funded either by budgetary reallocations or by increasing budget deficits through borrowing. To indicate the magnitude of the problem, Figure 2 presents a ratio of economic losses from the recent large catastrophic events in SEE countries to the amount of annual budgetary appropriations for emergencies in 2007. As can be seen, the mismatch between planned annual budgetary appropriations and the size of actual economic losses caused by large catastrophic events is rather striking. For

⁹ *Adapting to Climate Change in Europe – Options for EU Action*; Commission of European Communities; 2007

instance, in the case of the 2005 floods in Bulgaria, it would have taken 21 annual planned emergency budgetary allocations to cover the economic losses from the flood.

Figure 2.



Besides adversely affecting the fiscal stability of small and mid-size economies, large natural catastrophes may also have profound implications for the SEE countries' macro-economic performance and the overall global economic competitiveness¹⁰.

Socio-economic implications on households. The growing frequency and severity of weather related events is likely to increase the financial vulnerability of many households in SEE countries. In the future, 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 catastrophe insurance penetration in SEE countries, of the order of 1-3 percent, climate change is likely to take a considerable financial toll on the population of the region.

Adverse economic effects on business. Marked increases in losses from property damage and lost revenue due to business interruption caused by extreme events translate into the increased volatility of earnings in the sectors exposed to weather. These include utilities,

¹⁰ In a major regional study on the economic vulnerability of Latin American countries to disasters caused by the impact of natural hazards, Friedman (2003), for instance, finds that besides the direct costs associated with physical damage, disasters caused by the impact of natural hazards 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 disasters caused by the impact of natural hazards.

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.

Regional Coordination and Collaboration. Due to cross-boundary character of many natural hazards and cross-sectoral linkages required to manage hazard risks, emergency preparedness and mitigation entails institutional coordination and collaboration within and between neighboring countries, i.e., between hydro and meteorological services, civil protection, fire brigades, health sector, education, private sector, etc., within but also between the countries.

The cooperation is of particular importance for the countries sharing river basins and water resources. Ninety (90) percent of the area of SEE countries falls within trans-boundary river basins¹¹ and more than half of these basins are shared by three or more riparian states. Such collaboration is beneficial and needed in the weather forecasting, early warning, and development of plans for river catchments, including flood protection measures, etc.

Because of shared risks, high vulnerability, and relative small size of many countries in the SEE region, it would be efficient for the countries within sub-regions to cooperate in the area of civil protection and disaster preparedness. Currently, there is much room for strengthening the emergency response system and for the sub-regional cooperation. If there is a catastrophic event, e.g., a large earthquake in one of the main capital cities of SEE, the affected country may not be able to respond by own means. Even the recent forest fires raging through SEE countries are a case in point.

There are several existing regional cooperation initiatives in disaster preparedness in SEE, including the Civil Military Emergency Preparedness Council (CMEPC), the Disaster Preparedness Initiative of the Stability Pact (DPPI), and the Informal Conference of South Eastern Europe of Hydromet Directors (ICEED). These regional platforms have advanced the regional cooperation in disaster risk reduction and developed cooperation protocols among the countries. However, the capacity as well as the actual regional activities are still not fully adequate and require further strengthening.

Rationale for Bank involvement

The World Bank has been engaged in assisting countries to recover from the catastrophes and to reduce their vulnerability to natural hazards since its inception. From 1984 till 2006 the Bank financed 528 projects that addressed disasters caused by the impact of natural hazards, representing more than \$26 billion in lending¹². Traditionally, the

¹¹ These include: Danube, Drin, Martisa/Evros, Neretva, Nestos, Sava, Struma/Strimon, Vardar/Axios and others, which flow into the Adriatic, Aegean, Ionian and the Black Seas.

¹² *Hazards of Nature, Risks to Development – An IEG Evaluation of World bank Assistance for Natural Disasters*; Independent Evaluation Group (IEG), World Bank, 2006

assistance was provided to the reconstruction needs in the aftermath of disasters. However, in recent years, the focus has shifted to increasing support to the countries in disaster preparedness and mitigation, and catastrophe risk financing. The Bank has also a growing program addressing challenges of climate change and the adaptation to its effects.

Over time, Bank has developed specialized expertise and knowledge in the area of hazard risk management and climate change adaptation. Some of key policy tools and knowledge products were developed by the Bank in partnership with other organizations, such as post-disaster damage and needs assessment, hazard and vulnerability assessment or risk transfer instruments, to name just a few.

The Bank has been effectively working with other partners to advance the hazard risk management agenda and catalyze funds from wide spectrum of donors for both reconstruction and mitigation programs. As examples may serve the Multi Donor Trust Fund established in the aftermath of Indian Ocean tsunami of 2004 financing reconstruction needs in Indonesia; the Global Facility for Disaster Risk Reduction and Recovery set up with multiple donors and partners, notably, the UN International Strategy for Disaster Reduction (ISDR), which supports development and implementation of disaster risk mitigation strategies in countries considered to be at high risk to disasters caused by the impact of natural hazards; or the first ever multi-country catastrophe insurance pool - Caribbean Catastrophe Risk Insurance Facility (CCRIF), which provides participating governments from the Caribbean region with immediate access to liquidity if hit by a hurricane or earthquake.

In ECA region there has been a growing recognition of the importance of the proactive measures for the disaster preparedness and risk management. The Bank supported several programs in disaster risk reduction, including the Romania Hazard Risk Mitigation and Emergency Preparedness (HRMEP) and the Istanbul Seismic Risk Mitigation and Emergency Preparedness (ISMEP) projects. The proposed regional program constitutes a consistent step towards advancing the disaster risk management and adaptation agenda based on the experience gained in the ECA and other regions.

Disaster risk reduction and adaptation framework

While SEE countries have recognized the importance of disaster risk reduction, most of them do not have a comprehensive disaster risk reduction and adaptation strategy. The proposed program framework will provide the support to the development of a comprehensive hazard risk mitigation and adaptation strategy for SEE sub-region. The framework identifies the following set of activities aimed at reducing the impact of disasters on the region over the next few years.

1. **Disaster preparedness.** Countries in the region need to develop their own local capacity for disaster response as well as to strengthen regional cooperation in weather forecasting, flood early warning systems, forest fire fighting, civil

protection, and emergency management information and communications systems. The close cooperation will enable SEE countries to share information and to help each other respond to large scale disasters.

2. **Disaster risk insurance and hedging instruments.** SEE countries need to develop catastrophe risk financing and weather risk hedging instruments to reduce the financial vulnerability of governments, businesses, and households to the adverse impacts of geo-hazards and climate change through development of market-based risk transfer mechanisms.
3. **Disaster Mitigation.** The region needs to invest in the protection of vital infrastructure to withstand key hazard risks, taking into account the increased vulnerability resulting from the climate change. Disaster mitigation could include flood control, retrofitting of buildings, bridges, lifelines and other key infrastructure to resist seismic shocks.
4. **Adaptation.** Not all risks can be mitigated, and therefore, adaptation becomes essential to ensure that development activities take into consideration the changes in weather conditions in the region. The adaptation measures include changes in agriculture practices, revisions of building codes and land use plans, water resources management, education, health, and power sector, etc.

While carbon reduction is a very important pillar in mitigation of climate change, it is not part of the proposed program framework as other operations in the region address this issue in a focused and systematic manner.

Proposed program objective and components

The objective of the proposed Disaster Risk Mitigation and Adaptation Program for SEE countries (DRMAP) is to reduce the vulnerability of the South Eastern Europe countries to the natural hazards and to reduce human, economic and financial losses due to weather extremes and other natural and man-made disasters.

The proposed DRMAP will be designed as a regional APL lending instrument that will provide financing to investment priorities in disaster risk reduction and adaptation at the regional and country levels. To address the uniqueness of country vulnerabilities and response mechanisms, the program will have the built-in flexibility to accommodate requests for different types of lending projects that may meet best the climate adaptation and hazard risk management needs of each country. Despite a rather broad range of activities that would be eligible for Bank financing under the DRMAP, to ensure its effectiveness, the program will be deployed in two phases and its components and activities would constitute a menu of options from which countries may select those that are relevant to their particular natural hazard risks and vulnerabilities.

The first phase will provide financing to soft (non-structural) and less expensive measures that will have significant positive impacts. These include activities and

investments that will build the capacity of governments to respond effectively to disasters, such as weather forecasting and early warning system, development of disaster insurance schemes, land use planning and building code enforcement and development of disaster risk reduction and adaptation strategies.

The second phase will extend financing to structural investments that will protect the population from the disasters. The investments in this phase could include mitigation measures such as flood control, retrofitting of buildings and infrastructure, relocating communities who live in flood planes, etc. This phase will also extend funding to adaptation measures such as power grid enhancement, coastal zone management, etc. Since the second phase investments will be rather significant, the development and approval of a country-level comprehensive disaster risk reduction and adaptation strategy identifying priority actions, will be a trigger for the advancement to the second phase of the program.

Both phases will include the Contingency Funding (Differed Drawdown Option) to provide readily available liquidity in the aftermath of a disaster and to back up the catastrophe insurance program.

Successful implementation of several activities, such as weather forecasting and flood early warning system will depend on the agreement among the member states to share information using standard format. Therefore, these components of the program will be designed at the regional level but the implementation will be executed in the individual countries.

Phase I: Non-structural Measures

Phase I will support non-structural measures that are less expensive than the structural ones but have potentially high impact on vulnerability reduction of countries and communities. This phase will consist of the following components:

Component A: Development of National Hazard Risk Management and Adaptation Strategies. The component will support the development of comprehensive disaster risk management and adaptation strategies in the SEE countries which will include sectoral reviews and multi-sector analyses involving all key stakeholders. The reviews would provide recommendations for organizational and legislative improvements and priority mitigation investments in adaptation and disaster risk reduction which may be supported in Phase II of the program.

Other non-structural investments that may be supported under this component include: (i) risk assessments; (ii) hazard mapping; (iii) revisions in land use planning guidelines and construction regulations.

Component B: Disaster Risk Financing and Hedging Instruments. All projects funded in this area will be selected on the basis of their clearly demonstrable potential to reduce

the financial vulnerabilities of governments, businesses, and individuals to the adverse impacts of hazards and climate change through market-based risk transfer mechanisms (such as catastrophe insurance and weather derivatives)¹³. A possible list of eligible projects in this area is likely to include development of: (i) national and regional catastrophe insurance programs for businesses and individuals; (ii) regional weather derivatives markets for businesses¹⁴; (iii) country level disaster risk fiscal hedging programs; and (iv) national institutional capacity building in catastrophe risk management and risk transfer.

Component C: Strengthening of Weather Forecasting and Flood Early Warning Systems. The component will finance the development and strengthening of meteorological and hydrological monitoring and forecasting systems both at the country, and the sub-regional levels. The support will be provided to increase data-gathering capacity and data quality, and to enhance data-sharing between the countries of the region. It will also finance design, feasibility studies, and installation of flood early warning systems as well as regional workshops to allow for knowledge dissemination and sharing and to encourage further cooperation between hydromet services of relevant countries.

Component D: Disaster Preparedness and Response. The component would support a range of activities which enhance disaster preparedness in the countries of the region to respond to a range of disasters such as earthquakes, floods, forest fires, industrial accidents, droughts and other emergencies. Within the realm of the component, the support will be extended to: (i) emergency response equipment for public safety units such fire trucks, ambulances, search and rescue equipment, or fire fighting planes, etc.; (ii) emergency response planning and exercises at local, national and regional levels; (iii) emergency communication systems and information management systems for collecting, analyzing, and sharing real-time data between emergency response units and other public authorities; (iv); 112 emergency call systems; and (v) public awareness and education.

Component E: Contingency Facility (Differed Drawdown Option). The contingency facility would provide pre-approved funding that could be swiftly withdrawn in case of a catastrophic event to address the country's immediate liquidity needs in the aftermath of a disaster. The contingency funding would also be used to back the national or regional catastrophe risk financing programs. Thus, this instrument would protect country resources allocated to other development programs.

Phase II: Structural Investments

¹³ Such programs would follow the previous Bank models of catastrophe insurance operations both at the country and regional level, e.g. TCIP in Turkey and CCIF facility in the Caribbean as well as a weather derivatives risk market project in India.

¹⁴ Development of financial weather risk hedging instruments will be accomplished through the creation of a regional and possibly at a later stage a pan-European weather risk market, which implies development of tradable indexes of temperature and precipitation that can be used by businesses to hedge against weather extremes.

This phase would support structural investments aimed at protecting assets, lives and livelihood of communities in the disaster-prone areas. It will also provide funding for adaptation to climate change and streamlining adaptation activities into countries' development programs. The prioritization of the investments would be carried out during Phase I of the program through the process of development of national hazard risk management and adaptation strategies. The national strategy would constitute a basis for investment decisions and a trigger for Phase II of the APL which will include the following components:

Component A: Structural Investments in Disaster Risk Reduction. The component will provide funding to investments aimed at reducing country vulnerability to hazards, including: (i) flood protection; (ii) dam safety; (iii) retrofitting of priority buildings, such as schools and hospitals to withstand earthquakes and severe storms; and (iv) retrofitting of the infrastructure such as road networks, power grids, water supply, etc. Because of the significant investments involved, careful prioritization will be carried at the country level, taking into account the hazard risks, affected population, and costs. The prioritization process will be conducted as part of the development of the country disaster risk reduction and adaptation strategy.

Component B: Sectoral Adaptation Investments. Not all risks can be mitigated, and therefore, the component will finance sector-specific adaptation investments aimed at streamlining adaptation into government development programs. The priority investment will vary from country to another, but could include a range of activities, such as: (i) water saving investments; (ii) investments in innovative energy technologies and improvement of energy grids; (iii) changes in crop patterns and introduction of drought resistant crops; and (iv) improvement of forest management to reduce the risk of forest fires, etc.

Component C: Contingency Facility (Differed Drawdown Option). As in Phase I, the contingency facility will provide the pre-approved funding that could be withdrawn quickly in case of a disaster caused by the impact of natural hazards and upon meeting predefined triggers. This pre-approved funding could be withdrawn by the governments to address the country's immediate liquidity needs in the aftermath of a disaster and provide a financial support for catastrophe financing schemes.

Proposed lending instrument

The proposed framework program would provide the investment support through the horizontal adaptable program loan instrument (APL). The proposed horizontal APL would give an overall framework for comprehensive regional and country-based disaster risk reduction and adaptation activities in the SEE countries. It is anticipated that other multilateral organizations and donor agencies would co-finance the proposed program.

Similarly to the previously approved Avian Influenza, HIV/AIDS, Energy Community of South Eastern Europe, etc., multi-country programs, the proposed approach would allow

the Bank, working in cooperation with other multilateral and bilateral organizations, to assist individual countries and their needs in the area of disaster risk reduction and climate change adaptation in a cost-effective and timely manner by maximizing use of common tools and measures while including tailored projects adjusted to the specific country vulnerability and needs. The APL would allow the Bank to provide support in a flexible way, i.e., when individual country level projects are ready and meet pre-defined criteria.

Bank assistance to the individual projects would be committed through loans and credits to individual countries within their respective Country Assistance Strategies or Country Partnership Strategies frameworks and limits. In case of certain country programs which cannot accommodate the proposed projects, countries eligible for IDA support are expected to be able to obtain additional allocations for their participation in a regional program.

The contingency funding of the proposed APL would use the Deferred Drawdown Option (DDO) instrument. The proposed disaster risk management DDO would address the borrowers' liquidity needs in the aftermath of natural catastrophes but also provide contingency funding for the hedging instruments to be established under the program. The discussions on the enhancements to the DDO in the context of Bank strategy for the middle income borrowers are still ongoing. It is expected that the new instrument will serve as a flexible and prompt financial tool to address risks to which the countries are prone, including natural hazard risks.