INSURANCE AGAINST CLIMATE CHANGE

FINANCIAL DISASTER RISK MANAGEMENTAND INSURANCE OPTIONS FOR CLIMATE CHANGE ADAPTATION IN BULGARIA

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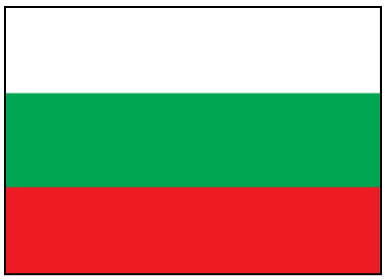

Financial Disaster Risk Management and Insurance Options for Climate Change Adaptation in Bulgaria

Summary of Main Findings

- Bulgaria is exposed to nearly all types of climate extremes, including floods, droughts, and others, as well as earthquakes. Climate-related risks are expected to increase due to the changing climate in the next decades.
- The combination of insurance products, early warning systems, information campaigns, infrastructure adaptation measures, and strict regulations can be very useful in tackling the negative climate change impacts.
- The contribution of insurance companies to risk reduction and climate change adaptation in Bulgaria as well as insurance mechanisms deployed by the government are still low.
- Despite a growing awareness regarding the need for ex ante protection against disaster risks, the existing knowledge base and capacity, as well as a number of institutions and policies dealing with emergency response and preparedness, further actions and progressive steps from the government in creating Financial Disaster Risk Management (FDRM) would need to be put in place to address the expected growing challenges expected with the climate change.
- The Bulgarian insurance sector is showing signs of renewed growth and there is capacity and understanding of FDRM principles. However, the sector remains fragmented, creating hurdles for the future risk-pooling solutions.
- The lack of insurance culture is a major challenge for the insurance companies, as it implies relatively low and insufficient demand for insurance products. Moreover, the lack of incentives in a form of an obligatory insurance also hinders the development of the insurance sector and its potential to respond to the expected increase of disaster events.
- The choice among various options and insurance products will depend on specific circumstances pertinent to Bulgaria's context and must be based on a more in-depth analysis and stakeholders' consultations.

Bulgaria at a Glance*

Population (million): 7.305 (2012)
GDP (current US$ billion): 50.97 billion
GDP per capita (current US$) / GDP growth (annual %): 6,978 / 0.8 (2012)
CO_2 emissions (kt): 44,678 (2010)
CO_2 emissions (metric tons per capita): 5.9 (2010)

**Based on World Development Indicators, World Bank (http://devdata.worldbank.org).*

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Executive Summary

This note provides an overview of the insurance sector's contribution to climate change–related risk prevention and highlights some of Bulgaria's ongoing disaster risk management (DRM) efforts. As such, the note aims to raise awareness and emphasize the role that financial disaster risk management (FDRM), including insurance, can have in climate change adaptation. Based on a desk review and preliminary in-country stakeholder consultations, the note's findings are meant to motivate new thinking and serve as an engagement tool for ongoing in-country discussions, as well to help identify analytical work to be carried out in the future.

FDRM typically provides ex ante protection against losses and costs arising from natural disasters. Even though in the last 15 years FDRM has increasingly been used in developed countries, its broad uptake in many developing and middle-income countries has been hindered. Recent advances in climate science are increasing the potential FDRM application in those countries, including in Bulgaria.

There is a consensus in the scientific community that climate change is likely to increase the frequency and magnitude of extreme weather and climate events (so-called climate extremes).[1] Since 1999, the frequency of climate extremes in Bulgaria has increased significantly, with 10 such events recorded between 2004 and 2006. The most common hydrometeorological and geophysical natural hazards are floods, extreme temperatures, storms, wildfires, earthquakes, landslides, and droughts. The number of deaths and victims due to natural hazards has also been rising, indicating an increasing vulnerability. The vulnerability of Bulgaria's population and businesses to the impacts of climate change is accelerated by a relatively high degree of poverty in the most impacted areas, the continuing concentration of the country's population in several industrial and urban regions, and various consequences of the transition from a state-controlled economy to a free-market economy.

A growing body of evidence suggests that economic losses from climate- and weather-related disasters have also been rising. For many years now, the global insurance industry has been facing a number of challenges related to a changing climate, and that trend is likely to continue over the coming decades. In particular, it is expected that climate change, due to increased impacts and associated risks, will further escalate the demand for insurance. By the same token, the combination of insurance products, early warning systems, information campaigns, infrastructure adaptation, and strict regulations can be considered as a valuable adaptation tool and reduce negative impacts of extreme climate- and weather-related events. In particular, the insurance industry can support adaptive practices by contributing to better climate change – related risks management, by providing incentives for risk prevention, and, finally, by disseminating information on prevention measures.

Adding finance to DRM is a necessary element in a larger set of solutions that is designed to build a climate-resilient society. The contribution of insurance companies to risk reduction and climate change adaptation in Bulgaria is still low due to the insufficient information available to

[1] For the purpose of this note, both extreme weather and climate events are referred to collectively as "climate extremes."

the potential customers, a relatively underdeveloped insurance culture, the general underestimation of risks, and the lack of associated financial capacity. Also, the government has not adopted insurance strategies within its broader policy framework to handle climate- or natural disasters (such as earthquakes)–related catastrophic risks. However, while the sector remains largely fragmented, creating hurdles for the future risk pooling solutions, the Bulgarian insurance market is also showing signs of renewed growth and there is capacity for and elementary understanding of FDRM principles. A significant presence of international insurers and reinsurers in Bulgaria, as well as other enabling factors, create the opportunity for offering insurance products applicable to a wide range of climate extremes.

Based on the preliminary review of Bulgaria's specific context, several ideas are being put forward to be further explored in the ongoing discussions toward creating FDRM products to address the major natural disasters (in particular, floods, droughts, and earthquakes) and improving adaptation to climate change. The choice among various options and insurance products will largely depend on specific circumstances pertinent to Bulgaria's context and must be based on a more in-depth analysis and stakeholders' consultations. Potential areas of analysis that could be further explored and, as such, plant a seed for future action could focus on promoting risk prevention and deploying insurance instruments, including issues around traditional risk management, technology innovation, compulsory disaster insurance, forecast insurance, and disaster insurance pools, to name a few. The analysis which would assess the extent of vulnerability of the subjects covered by existing insurance products, could subsequently lead to the decisions on priority insurance products to be introduced in the future.

1 Risk Assessment in the Context of Climate Change

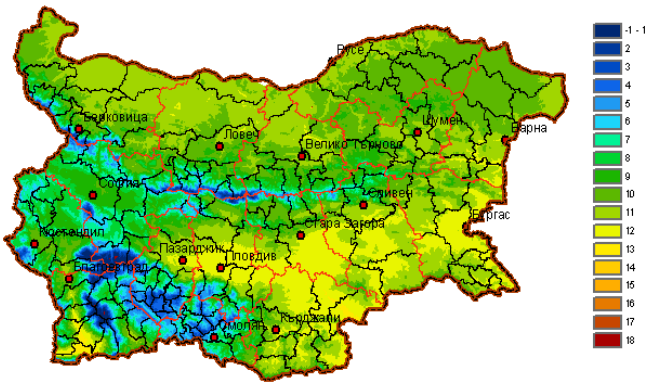
1.1 Background

Scientific projections indicate the global temperature will rise between 1.8°C and 4°C by 2100, with the temperature increase in Europe expected to be even higher than the estimated global average. Biodiversity, land and aquatic ecosystems, as well as water resources, agriculture, and forestry sectors are expected to be affected by anticipated changes. These changes would furthermore impact society and its citizens as well as the economy as a whole.

Climate change impacts do not affect all people and territories equally due to different levels of exposure, existing vulnerabilities, and adaptive capacities to cope. The risk is greater for the segments of the society and businesses that are less prepared and more vulnerable.

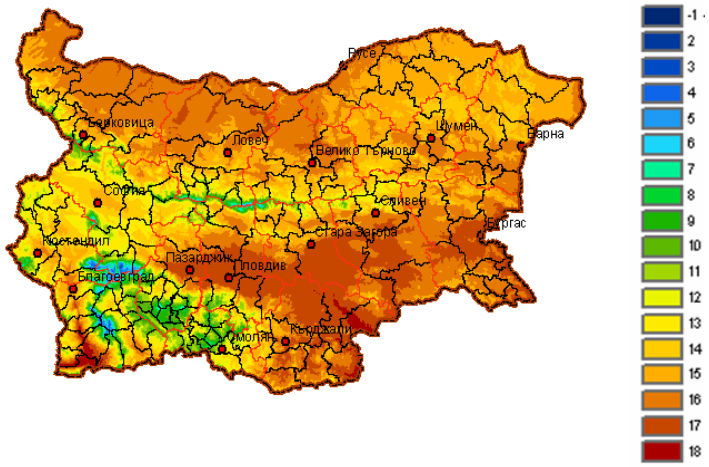
There is also a consensus in the scientific community that climate change will increase the frequency of extreme events. While the challenge of addressing both the extreme impacts and incremental change is daunting, there is an indisputable need to manage loss and damage both today and in the future by adopting and applying mechanisms that facilitate prevention, reduction, and transfer of climate change–related risks. Since the climate-related loss and damage threaten to derail social and economic development in many parts of the world, it is necessary that planning and management strategies are based on the prevention and reduction of risks rather than focused solely on disaster preparedness and responses.

Bulgaria is situated in one of the regions that are particularly vulnerable to climate change (mainly through temperature increase) and to the increased frequency of climate change–related extreme events, such as flash floods and droughts.



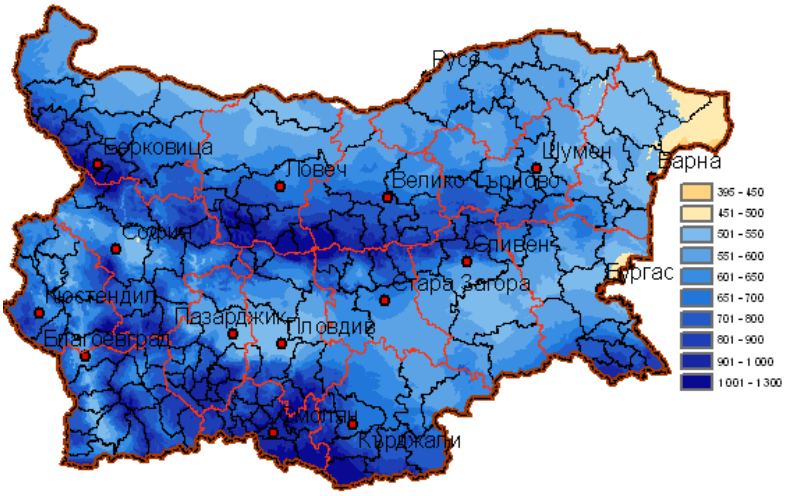
Research conducted by the Department of Meteorology, National Institute of Meteorology and Hydrology and Bulgarian Academy of Sciences, projects an increase in annual air temperature in Bulgaria of between 0.7°C and 1.80°C by 2020. Even warmer temperatures are expected by 2050 and 2080, with projected increases of between 1.6°C and 3.1°C and between 2.9°C and 4.1°C, respectively. Generally, the temperature increase is expected to be more significant during the summer season (from July to September).

Average Year Temperature for the Period 1961–1990

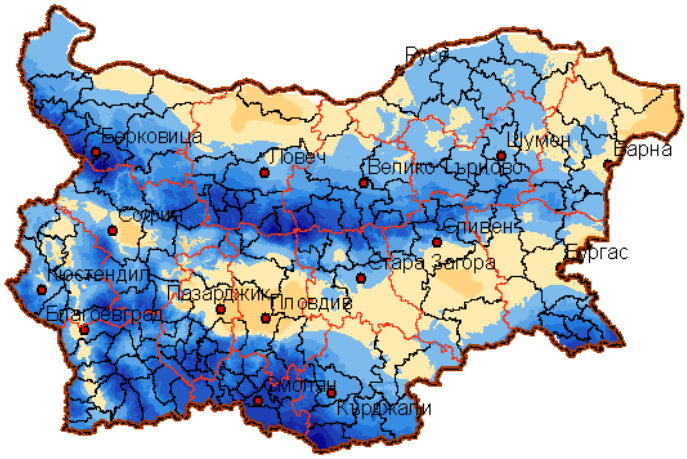


Pessimistic Climate Scenario for Average Year Temperature for 2080

In terms of the expected changes in rainfall patterns, a reduction in precipitation is likely, leading to a significant reduction of the total water reserves in the country. In this regard, projections suggest a decrease in precipitation by approximately 10 percent by 2020, 15 percent 2050, and up to 30–40 percent by 2080. In most climate change scenarios, rainfall during the winter months is likely to increase by the end of the century, but significant decrease in rainfall during the summer months is expected to offset this increase.



Precipitation per Year for the Period 1961–1990



Precipitation per Year for 2080, According to the Pessimistic Scenario

According to the available climate change scenarios for Bulgaria, there is a trend toward increased frequency of extreme events and disasters, as demonstrated in more often occurrences of heavy rainfalls, heat and cold waves, floods and droughts, hurricane winds, forest fires, and landslides.

1.2 Types of Natural Disasters in Bulgaria

As like many other regions in the world, Bulgaria is exposed to almost all types of natural disasters[2] and perils associated with climate change. The events resulting from such risks do not only cause the loss of human life, they also cause damages worth millions of euros every year, thus largely affecting economic stability and growth. Such events may also have effects across borders and can potentially threaten significant areas in neighboring countries.

Since 1999, the frequency of natural disasters in Bulgaria has increased significantly, with 10 events recorded between 2004 and 2006. The number of deaths and victims due to natural hazards has also been rising, indicating an increasing vulnerability. The most common hydrometeorological and geophysical natural hazards are floods, extreme temperatures, storms, wildfires, earthquakes, landslides, and droughts.

[2] The definition from the National Plan for Disaster Protection for disaster is as follows: "Disaster is an event or series of events caused by natural events, accidents, emergencies or other extraordinary circumstances which affect or endanger life or health, property or the environment to a degree that requires taking measures or involving special forces or the use of special resources."

Table 1. Economic Losses Due to Natural Disasters in 2012

Type of disaster	Number of events	Cost of damages in BGN
Floods	692	20,898,000
Fires	3,010	1,437,000
Landslides	72	17,384,000
Earthquakes	22	59,037,000

Source: Adapted from NSS, accessed 2013.

If only the frequency of these events is considered, Bulgaria faces the highest threat from floods, which account for the largest share of total victims and economic losses. Nevertheless, it is also important to assess less frequent yet potentially catastrophic risks, which makes earthquakes possibly the most troublesome natural disasters for both public and private sector entities. For instance, it is estimated that 98 percent of the territory of Bulgaria is vulnerable to seismic impacts of 7.0 magnitude or higher. An extreme earthquake would therefore create far more damage than the most extreme flooding event for Bulgaria.

The vulnerability of Bulgaria's population and businesses to the impact of disasters is accelerated by a relatively high degree of poverty in the areas that are typically most impacted. In addition, the continuing concentration of the population in several industrial and urban regions and various consequences of the transition from a state-controlled economy to a free-market economy further increase the vulnerability. Structural vulnerability stems partly from the lack of or insufficient maintenance of some installations, including dyke systems, drainage channels and dams, and unsafe buildings. According to Schwab (2012), Bulgaria ranks 115th out of 144 countries in terms of quality of overall infrastructure. These effects have been intensified by the negative impacts of the recent global economic crisis, which has led to tightening of budgets for the public sector.

Earthquakes

The territory of Bulgaria has comparatively high seismic activity due to combined compressive motions of both the Eurasian and African tectonic plates, as is the case in most of the Balkan Peninsula. The last two major earthquakes took place in 1977 and 1990; they were a direct result of seismic activity in Romania, which had a strong impact on the northern part of Bulgaria. Aside from earthquakes, a large part of the Bulgarian territory is prone to landslides, which can be triggered by earthquakes. For instance, in May 2012 a strong earthquake occurred, which in turn affected the area of Sofia, Pernik, and Radomir, causing fairly large

losses according to data from the National Statistical Institute (NSI), the total loss from the 2012 earthquake in the area of Pernik and Radomir was estimated to be around BGN 51,564,000, with losses from all earthquakes in 2012 estimated at BGN 59,037,000.

Floods

At the beginning of the 21st century, Bulgaria was not considered a frequent subject to flood damages, but the situation has changed since 2005. In 2005 and 2006 alone, there were several significant flooding events caused by an increase in the level of either local or European-wide rainfalls, subsequently carried down the Danube River. The effects of heavy rainfalls were exacerbated by the increased rates of deforestation, poorly maintained irrigation dams and culverts, as well as low penetration of insurance in rural areas where most of the damaged properties were.

The Flood in 2005

The most significant flooding event in recent history occurred in the summer of 2005, when torrential rains in the northern and western parts of the country caused the Yantra, Kamchiya, and Rusenski Lom rivers and their tributaries to overflow their banks. The wave of floods, which lasted from May to November, reached cataclysmic proportions, affecting more than 70 percent (SEEDRMAI 2008) of the country and causing unprecedented economic losses. While it is difficult to find data on exact estimates of such losses, various sources suggest that the direct losses were up to a half billion USD.[3]

Droughts

Drought is another climate extreme that occurs in Bulgaria, with historical records of its effects dating back as far as the Thracian period. Three significant prolonged droughts occurred during the 20th century: from 1902 to 1913, from 1942 to 1953, and from 1982 to 1994.

In the last 13 years, droughts have become more frequent and intense in many European Union (EU) member states, including Bulgaria. For instance, in 2003 one widespread drought affected more than 100 million people and one-third of the EU's land area.

Other Hydrometeorological Hazards

[3] Data derived from "Bulgaria — Disaster Statistics," an online presentation of data from EM-DAT: The OFDA/CRED International Disaster Database, Université Catholique de Louvain, Brussels, Belgium. Data version: v11.08, August 2011. http://www.preventionweb.net/english/countries/statistics/?cid=26.

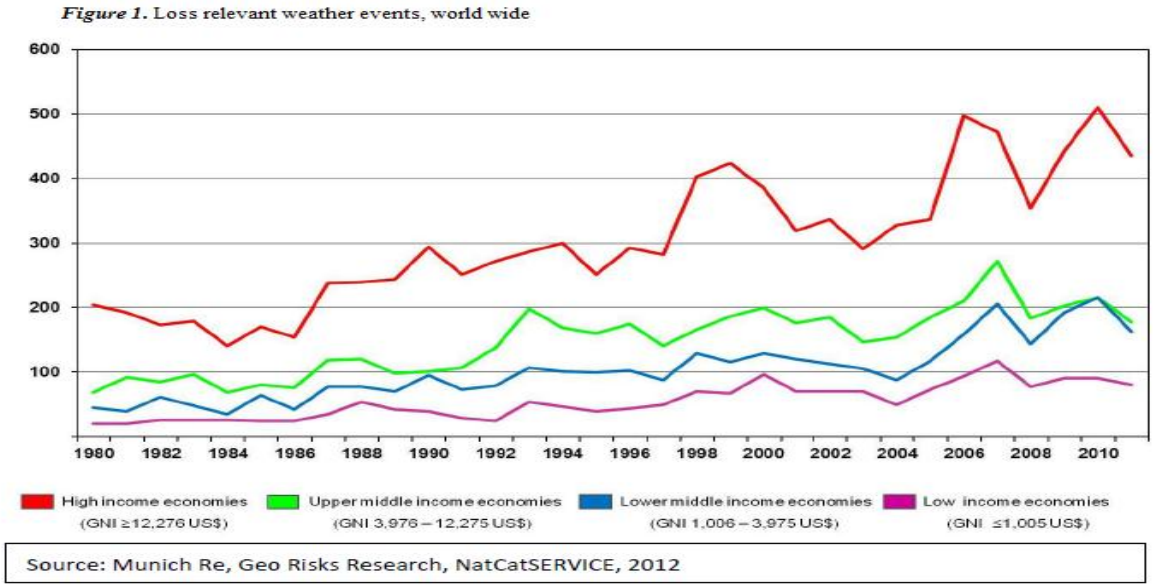
In the last three years, the frequency of windstorms has increased. Between 2010 and 2013, there was at least one such event per year. Most of Bulgaria's territory is exposed to heavy snow, ice, and freeze. The heavy snow at the end of the winter season usually results in intense melting, which causes a lot of damage. In addition to the physical property damages, different infrastructure objects of local or national importance are often impacted through roads closures, collapsed bridges, and landslides, as well as damages to electrical transmission and distribution lines. Hail is one of the typical natural disasters in summer. Almost each summer numerous forest fires are recorded due to drought and high temperatures.

2 Role of Insurance Sector and Insurance Mechanisms in Responding to Climate Change

2.1 Linkages between Climate Change and Insurance Sector

There is a growing body of evidence that changing patterns of extreme events are one of the contributing factors to recent global economic losses. The economic bearings caused by climate change differ from one region to another, not only because of geographical differences, but because of regional differences in adaptive capacity and response to hazards. Climate change adaptive capacity and related response to its threats also largely affect the functioning of insurance markets, as it is likely that climate change, due to higher risks, will increase the demand for insurance. Also, if not addressed, climate change could lead to insurance becoming less affordable or even unaffordable, particularly for low-income segments of the population or for human settlements located in areas deemed particularly at risk. Likewise, climate change disaster risks need to be considered as a contingent liability within governmental priorities, implying a need to incorporate sovereign-level insurance mechanisms in governmental fiscal planning.

Figure 1. Loss-Relevant Weather Events Worldwide



Insurance is a dynamic sector as far as both covered risks and insured objects are concerned. Existing dynamics are determined by economic development, population and urban concentrations, technological changes, industrial buildup, and other factors. A number of insurance objects exposed to catastrophic events are rising, given the growing wealth, increasing value of properties, and an extent of exposure of economic assets and possible losses. While negative impacts of climate change currently do not always imply serious consequences and a wide range of potential losses, the consequences are likely to become more significant in the longer term. This is of particular importance for countries and economic sectors in which the penetration of insurance coverage is low or in which there is a lack of

proper insurance products, including those in the public sector. Equally important are the availability and affordability of insurance mechanisms and products as well as the general susceptibility of the society toward insurance. An unfavorable combination of these factors can result in a situation where the government is being put under pressure at times when catastrophic events take place and when there are significant losses for the society.

From this perspective, insurance can be seen as an important tool for addressing climate change and disaster risk management, in addition to other prevention and security measures, such as development of a disaster modeling system beyond risk sharing and incorporation of risk management cycle into the government budget planning. When properly designed, the insurance system can be used as a market-based instrument against moral hazards and influencing risk behavior. It can also positively impact awareness raising and disaster proofing for adaptation actions and financial decisions.

The global insurance industry has already been facing a number of challenges related to a changing climate for many years now and that trend is likely to continue over the coming decades. While the extent of losses caused by certain categories of extreme weather and climate events, such as severe freezing events or spring thaw floods, are likely to decrease overall, the costs of climate extremes–related claims are expected to increase—particularly those related to floods and droughts, as well as winds and fires in some regions.

Insurance companies will have to adapt their operations and reserving and pricing policies that they apply nowadays. In particular, in order to provide incentives for risk prevention, insurance prices should be risk based and adequately adjusted according to risk prevention efforts taken by the customers. When past risk assessment is overtaken by the real exposure to new and growing risks, such as those linked to climate change, existing reserves might fall short of future claims.

Insurance is often considered an unnecessary expense, especially if the consumers are not informed both about the possible perils as well as the features of the insurance products. However, if done right, an investment in the protection of assets and activities can be useful, because it is often the precondition for other economic actions and it is connected with the most basic human needs and aspirations. In addition, the insurance products can assist the government in hedging its fiscal risks if future major disasters result in stress to the budget and large fiscal expenditures. Furthermore, insurance sector organizations are among the entities that could provide climate change risk-related information to their clients, since they are already involved in the business of risk management. Last but not least, in terms of government policies, insurance can be a valuable adaptation tool in terms of its contribution to improved adaptive practices by helping to manage climate change–related risks, by providing incentives for risk prevention, and by disseminating related information. Insurance should, therefore, be part of strategic risk management strategies and practices, involving actions by both the public and the private sectors.

2.2 Insurance as Adaptation Mechanism

The combination of insurance products, early warning systems, information campaigns, infrastructure adaptation, and strict regulation can be very useful for reducing the possible negative impact of climate change. Due to its distinctive feature of spreading losses among people and across time, insurance helps address the wide, often catastrophic losses from climate impact extremes and enables a timely recovery. Its contribution to reducing the range and extent of losses can be considered as an adaptation measure. It can be used by the government to hedge losses from extreme budget outlays while also reducing such outlays by transferring insurance responsibility to the private sector (households and businesses). Finally, insurance also supports preventive activities.

The menace arising from not tackling climate change–related risks is that if one waits too long before taking action, much costlier intervention may be needed or the opportunity to effectively deal with climate change impacts may pass altogether. Adaptation is not exclusively focused on controlling negative climate change impacts; it equally focuses on taking advantage of existing opportunities and incentives. Several such incentives exist:

- Mutualized funds for including financial compensations for economic losses to farmers caused by climate extremes, the outbreak of the animal or plant diseases, pest infestation, or an environmental incident;
- Assessment of building and company values through inclusion of the adaptation considerations in the total cost of the property;
- Public-private partnerships that provide an initial capital for project, transfer ownership of public assets as in-kind payments, or reduce the tax amount on the revenues generated from a project itself; and
- Use of risk-based pricing by insurers, which can encourage behavioral changes that would result in creating better risk profiles and reducing subjective risks.

In regard to additional local incentives, countries can opt for different approaches. One possibility for local governments is to define appropriate risk reduction priorities by taking into account the risk profile of the area, as well as setting up plans to reduce weather-related risks. Other examples of different approaches include the following:

- Identify risks and forbid settlements in zones that are evaluated as high-risk.
- Develop infrastructure and houses that are resilient to natural hazards.
- Develop buffers.
- Design and implement early warning systems.
- Develop policies and action plans.
- Launch and carry out information campaigns and establish a culture supportive of risk prevention and resilience.

If designed and implemented properly, most of these measures will be cost-effective when dealing with climate extremes with relatively low impact. Applying a package of such preventive measures will also have a positive impact on the pricing policy and will contribute to the

premium reduction. Another major advantage of insurance over post-disaster financing options—including aid, loans, and family assistance—is its timeliness and reliability. Compared to usually ad hoc disaster assistance, insured clients have a "right" to post-disaster compensation. Index-based contracts, which require no inspections for claim settlements, can, in principle, provide payouts immediately following the "triggering" event. Timely payouts, in turn, will enable households to purchase food and other necessities without resorting to personal bankruptcy situations, and will help governments avoid fiscal deficits related to post-disaster expenditures.

In the case of Bulgaria, some insurance companies with larger portfolios have already started to address climate-related risks, mainly through flood risk monitoring and development of related insurance products. However, even though there has been some progress in both insurance penetration as well as flood modeling, the rate of insurance coverage remains extremely low. While most of the household insurance policies include flood protection, less than 10 percent of all households are insured. In addition, most insurers continue to include flood risk without a specific premium or increased deductible. Some insurance companies, on the other hand, tend to treat the flood risks separately, especially for particularly vulnerable areas, close to rivers and irrigation dams. In regard to risks of windstorms, they are usually a part of the standard offered insurance coverage. However, due to low coverage of property insurance, the penetration of insurance products against windstorms is also quite limited. Even though almost every summer numerous forest fires are recorded due to drought and high temperatures, there is usually no specific insurance coverage against such risks. Finally, in regard to earthquakes, despite the efforts of the Association of Bulgarian Insurers to promote the catastrophe pool as an opportunity for better protection of households and businesses, there is only partial interest in taking this approach further.

3 Policy and Institutional Frameworks on Climate Change and DRM

3.1 EU Policies and Instruments

The need for urgent action in terms of responding to climate change is reflected in the EU 2020 Strategy and its ambitious so-called 20-20-20 targets for climate change mitigation—that is, a commitment to cut greenhouse gas (GHG) emissions by 20 percent (30 percent if the conditions are right); reduce energy consumption by 20 percent through improved energy efficiency; and meet 20 percent of energy needs from renewable sources.

The European Climate Change Programme (ECCP), which was launched in 2000 with the objective to identify and develop all necessary elements of an EU strategy to implement the Kyoto Protocol, also sets a foundation for the EU's mitigation policies. The second European Climate Change Programme (ECCP II) was launched in October 2005. As a result of the ECCP, the European Commission (EC) has developed a range of policies and measures to reduce GHG emissions, including legislative initiatives to promote renewable energy sources for electricity production, improve buildings energy performance, and control emissions from fluorinated industrial gases, to name a few.

The EC's 2009 White Paper "Adapting to Climate Change: Towards a European Framework for Action" outlines the policy framework for reducing the EU's vulnerability to climate change impacts.

Furthermore, in April 2013 the European Commission adopted an EU climate change adaptation strategy, with the objective to make Europe more climate resilient and enhance its preparedness and capacity to respond to the impacts of climate change. The adaptation options identified in the strategy aim at addressing previously identified concerns, reducing negative climate change impacts, and creating incentives for undertaking further climate actions. Adaptation options can range from actions that build adaptive capacity (for example, sharing information, creating supportive institutional framework) to concrete adaptation measures (for example, technical solutions, insurance mechanism).

Specifically, the EU Adaptation Strategy focuses on three types of activities:

- Promote climate action by member states;
- Improve climate-proofing actions at the EU level by further promoting adaptation in key vulnerable sectors, such as agriculture, fisheries, and others; and
- Inform EU and national decision-making processes by addressing gaps in knowledge about adaptation and further developing the European climate adaptation platform (Climate-ADAPT) as the "one-stop shop" for adaptation information in Europe.

The adaptation strategy is accompanied by documents that explore relevant sector-specific climate-related risks and propose measures and tools that can be applied to adapt to these challenges. Such documents cover agriculture and forestry, coastal areas, infrastructure, water management, biodiversity, disaster risk reduction, health, and the marine and fisheries sectors.

One of the main challenges that the EU Adaptation Strategy aims to overcome is the fact that insurance and financial markets are not yet fully delivering the appropriate products and services to help private insurance subjects to enhance their resilience to climate risks. For this reason, the EU Adaptation Strategy package includes a Green Paper on the insurance of natural and man-made disasters, with an objective to raise awareness and assess whether an EU-level action could be appropriate for improving the market for disaster insurance in the European Union. The "Green Paper on the Insurance of Natural and Man-made Disasters" also poses a number of questions concerning the adequacy and availability of disaster risks–related insurance products.

The role of the insurance sector as adaptation mechanism is also covered in the EC Communication "Adapting Infrastructure to Climate Change" (2013), which focuses on three aspects: (1) the EU's contribution to financing climate-resilient infrastructure investment; (2) private sector infrastructure investment; and (3) the role of institutional investors, such as pension funds and insurance companies, in climate change adaptation. According to this document, the insurance sector—which is examined as a market, as an instrument for adaptation, and as an industry and investor—plays a central role in handling climate risks related to infrastructure and physical assets.

In January 2006, the European Commission put forward a directive on the assessment and management of floods (COM(2006)15), with the objective to reduce and manage the flood-related risks. Under this directive, member states are obliged to undertake a preliminary assessment of the flood risks in each river basin and associated coastal zones. In addition, member states are tasked to develop maps of these regions in order to improve readiness for flood prevention and management.

The EU Multiannual Financial Framework (MFF) constitutes a political and budgetary framework for mainstreaming climate action (adaptation and mitigation) into the EU budget. The forthcoming MFF 2014–2020 stipulates a requirement for the EU policies to demonstrate their contribution to meeting the EU 20-20-20 climate and energy targets. To further advance this mainstreaming process, the European Commission has proposed that at least 20 percent of the EU's budget for 2014–2020 is allocated for climate-related expenditures.

Climate change adaptation is further mainstreamed throughout the five European Structural and Investment Funds (ESI Funds)—the European Regional Development Fund (ERDF), European Social Fund (ESF), Cohesion Fund (CF), European Agricultural Fund for Rural Development (EAFRD), and European Maritime and Fisheries Fund (EMFF)—as well as a number of other instruments, such as Horizon 2020, which promotes research and development on climate change adaptation, and the EU Solidarity Fund for natural disasters.

The European Union Solidarity Fund (EUSF) was established after the severe summer floods that hit Central Europe in 2002. Since then, EUSF has been used for a range of different catastrophic events, including floods, forest fires, earthquakes, storms, and drought. So far, funding has been provided for 52 disasters in 23 European countries, amounting to nearly EUR 3.2 billion. Total Bulgarian access to this fund has amounted to EUR 459 million, in response to

the 2005 floods and the floods accounted for approximately 8.8 percent of the total estimated economic damages.

The LIFE+ instrument is another EU mechanism for financing a wide range of projects related to environment and climate change mitigation and adaptation. It also provides financial support for the development of adaptation strategies and projects that address key cross-sectoral, trans-regional, and/or cross-border issues. The LIFE+ program has also contributed to climate change adaptation, for instance, by restoring ecosystems and increasing their resilience, by improving habitat connectivity, or by supporting the development of municipal strategies for local climate change adaptation.

3.2 National Policies

National Adaptation Policies

The EU member states are at different stages of preparation, development, and implementation of their adaptation strategies, depending on the magnitude and nature of the observed impacts, the assessment of current and future vulnerability, and the existing adaptive capacity.

Bulgaria's Third National Action Plan on Climate Change 2013–2020 outlines specific mitigation measures aimed at reducing GHG emissions in all sectors. The overall impact of the proposed measures is expected to ensure the achievement of EU-set objectives that are legally binding for the country.

In recent years, the Bulgarian government started to develop policies and actions on adaptation to climate change. The government intends to develop the national strategy for adaptation to climate change. The Fifth National Communication on Climate Change to the UNFCCC and the Second National Action Plan on Climate Change identified agriculture, forestry, and land as the sectors of the highest priority for adaptation.

Bulgaria has elaborated several national and sectoral mid-term and long-term programming documents, envisaging measures and activities for the adaptation of specific sectors (for example, water, agriculture, and forestry) to climate change, including the following:

- National Strategy for Water Sector Development and Management in Bulgaria for the period until 2015
- Flood risk management program
    - River Basin Management Plans -- The Basin Directorate for Water management – East Aegean Region, Basin Directorate for Water management – West Aegean Region, Basin Directorate for Water management – Danube Region and Basin Directorate for Water management – Black Sea Region -- are regional water management departments of the Ministry of Environment and Water (MOEW). They have been undertaking measures to tackle climate change as defined in their respective management plans, along with measures 2010-2015
    - Strategy for the Protection of Forests Against Fire

- National Strategy for Sustainable Development of Forestry in Bulgaria for the period 2006–2015
- National Strategy for the development of Forestry Sector 2013-2020
- Program of measures for adaptation and mitigation of the negative climate change related effects on forests

Despite these policy developments, under the existing legal framework, the definition of coordination mechanisms across the institutions responsible for the implementation of these strategies is still missing. A national effort toward the development of a comprehensive climate change adaptation strategy, covering all vulnerable sectors, would be needed to provide a more integrated and coordinated approach related to identifying adaptation measures in the respective sectors.

National DRM Policies

The Bulgarian Parliament recently approved the Climate Change Mitigation Act. This act is intended to serve as an overall legal framework governing the government's mitigation and adaptation policies, as well as outline the institutional arrangements, roles, and responsibilities for their implementation.

The primary legislation dealing with natural and anthropogenic disasters in Bulgaria is the Disaster Protection Act, adopted in 2006. This act provides a legal and regulatory framework for prevention, mitigation, preparedness, and response activities, and outlines the organizational structure, major functions, and tasks of national, regional, and local administrations (including private stakeholders) with respect to disaster risk reduction (DRR) activities.

The main tool for disaster protection according to this act is the set of preventive activities aimed at reducing the risk of disasters. It includes analysis and assessment of disaster risks; development of disaster risk maps; identification and risk assessment of critical infrastructures and elements thereof; measures to reduce the vulnerability of infrastructure sites and facilities; development and maintenance of observation, early warning, and alert systems; and preventive control. Monitoring, early warning, and disclosures are based on information and data provided by individuals, organizations, and institutions, as well as on the information and data provided by the systems monitoring meteorological, hydrological, seismic, chemical, biological, radiological, nuclear, environmental, and other phenomena.

The Environmental Protection Act defines the Bulgarian national green investment scheme as an instrument intended to be used for the development of projects with adaptation activities.

The Water Act regulates the ownership and water resource management. It also regulates water-related damage and loss, which also includes protection against flooding. Under this act, there are two types of floods: natural flooding (primarily caused by melting of ice and snow, by precipitation, or by the formation of blockages due to ice run or freezing) and techno-genic flooding (caused by damages to hydraulic facility, among others). Flood management plans are under preparation for the regions with significant flood risk and likelihood.

3.3 Institutional Framework

Bulgaria has a number of institutions that are involved in various levels of emergency response, preparedness, and the development of more resilient DRM systems. Such agencies include but are not limited to (a) the Consultative Council, established in 2012 and designed as the new national platform for DRR in Bulgaria, supporting the Council of Ministers in forming the state policy for disaster protection; and (b) the Directorate General Fire Safety and Civil Protection, a structure under the Ministry of Interior, which is in charge of the National Plan for Disaster Protection development, implementation of state policy, data collection on disasters and accidents, advising on prevention activities, and addressing consequences to human life and the environment.

As part of disaster risk prevention, Bulgaria is also working on the establishment and modernization of monitoring, forecasting, and early warning systems. In 2007, the Minister of Emergency Situations (now the Directorate General Fire Safety and Civil Protection) established a specialized monitoring structure, the Aerospace Monitoring Center (ASMC), within the Communications and Information Systems Directorate to provide support in the process of discovery, monitoring, risk assessment, and management of natural and man-made hazards, and in emergency situations.

With respect to flood protection in Bulgaria, the water management in the country is carried out and directed by the Ministry of Environment and Water (MOEW), as the central institution responsible for the implementation of the Water Framework Directive in Bulgaria. The institutional responsibilities in relation to water basins on the territory of the country are divided between four different ministries—the MOEW, Ministry of Regional Development (MRD), Ministry of Agriculture and Food (MAF), Ministry of Economy and Energy (MEE)—and municipalities.

The Executive Environment Agency carries out research and analysis of the status of water basins and conducts monitoring of the water basins at the national level. The MAF carries out the national policy related to the activities associated with the construction, reconstruction, and modernization of irrigation systems and the equipment for protection against the adverse impact of water outside inhabited cities and villages.

Operational protection is implemented against flooding, ice accumulation and ice action, and water-related natural disasters under the leadership of the authorities of the Ministry of Interior (MOI). Operational protection is implemented in accordance with an emergency response plan, drafted by the owners or users of water development systems and hydraulic-engineering facilities in consultation with the authorities of the Ministry of Interior.

Regional governors examine the technical and operational condition of potentially dangerous water sites on an annual basis.

Despite Bulgaria’s efforts and existing policy and institutional frameworks designed to address DRM, further actions and progressive steps in improving the institutional coordination and for creating FDRM have been lacking.

3.4 Government Expenditures and Risks of Climate Extremes

The resources allocated by the Bulgarian government for prevention and mitigation of risks of natural disasters, including those with potentially high economic impacts, such as earthquakes, are quite limited. Ministry of Finance data indicate that in 2005 and 2013 the expenditures set aside in the reserve for unexpected and urgent spending ranged approximately between BGN 60 million and BGN 118.5 million. In relative terms, these amounts represented between 0.23 percent and 0.71 percent of the actual government expenditures for the respective years.

Significant differences between planned and actual expenditures also occurred in 2005 and 2006, when there were major floods and slides. In 2005, almost the entire territory of the country was affected, while in 2006 the affected areas were in the northern and eastern parts, near the Danube River and the seaside. According to the National Association of Municipalities, the damage caused to public infrastructure amounted to more than BGN 300 million, with 191 out of 264 municipalities affected. According to the then Ministry of Agriculture and Forestry, the crops of 682,000 decares were destroyed, while the affected arable land totaled 939,000 decares. The total losses in crop farming were estimated at more than BGN 70 million. Overall, there were seven major floods in the country between May 2005 and May 2006.

Table 2. Government Expenditures for Prevention, Mitigation, and Rehabilitation of Consequences of Natural Disasters in the State Budget's Reserve for Unexpected and Urgent Expenditures

Year	Planned expenditure, BGN	Actual expenditure, BGN
2005	55,500,000	118,500,000
2006	120,000,000	111,298,410
2007	70,000,000	80,000,000
2008	80,000,000	79,760,000
2009	90,000,000	59,950,581
2010	81,000,000	79,005,383
2011	81,000,000	77,680,202
2012	70,000,000	71,479,337
2013	70,000,000	-

Source: Ministry of Finance, Bulgaria.

Note: - = not available.

As the scarce budget resources cannot cover the damages from natural disasters, designing a risk-sharing model between the government and insurers could be a possible means for decreasing the losses for the population.

4 Overview of Insurance Sector in Bulgaria

The insurance sector in Bulgaria lags behind most of Europe, with the participation rate being 2.1 percent of per capita income compared to 7.6 percent in the case of most European countries. Significant presence of international insurers and reinsurers in the country and other factors, however, create the opportunity for offering insurance products tailored to a wide range of natural disaster risks.

The Insurance Act of 1997 was revoked with the adoption of a new Insurance Code, which was published in the *State Gazette* on December 25, 2005, and which came into effect on January 1, 2006. According to the current legislation and practice, insurance companies can deal with climate extremes by

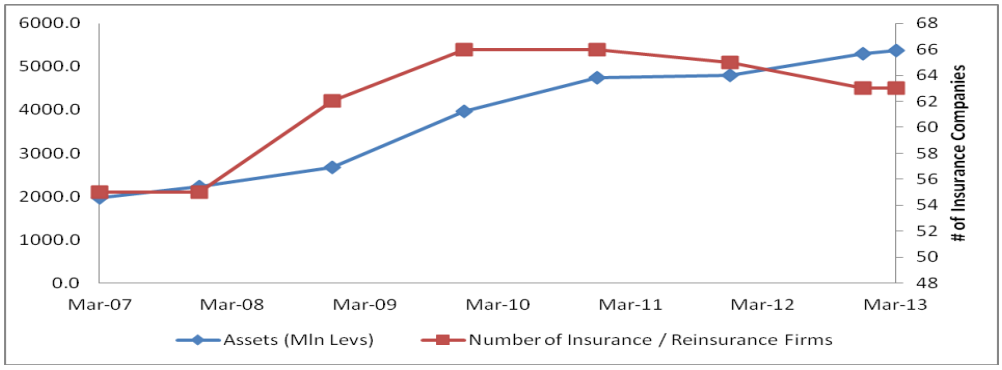
- Setting the solvency margin above the legally prescribed levels;
- Setting an equalization reserve;
- Using appropriate reinsurance; and
- Excluding catastrophes from policy wordings.

The Financial Supervision Commission (FSC), which was established in 2003 under the Financial Supervision Commission Act, is the Bulgarian public sector institution responsible for the supervision and regulation of the insurance sector.

In recent years, foreign investors have acquired shares in most of the Bulgarian insurance companies. At present, there are more than 50 licensed insurance entities in Bulgaria, out of which 17 are general insurance companies, 16 are life insurance companies, and 19 are health insurance companies. In the area of reinsurance, there are 4 general insurance companies, 2 life insurance companies, and 1 reinsurance company. The number of all registered insurance brokers in 2012 stood at 378. The gross premium income registered by all insurance brokers for 2011 was BGN 793,710,501.[4]

[4] For more information on the Bulgarian insurance sector, refer to the report "Analysis of Insurance Sector and Financial Instruments' Contribution to Climate Change–Related Risk Prevention, Loss and Damage Management in Bulgaria" by Svetlana Alexandrova, 2013.

Figure 2. Growth of the Insurance and Reinsurance Sector in Bulgaria, 2007–2013



Source: Insurance Europe.

In a certain number of cases, the purchase of insurance is compulsory and mandated by the existing laws. The main compulsory insurance classes include motor and aviation third-party liability, personal accident for passengers on public transport, personal accident for workers in hazardous occupations, and professional indemnity for notaries, auditors, insurance intermediaries, doctors, and participants in construction projects. Furthermore, each of the ministries has set provisions for compulsory insurance of their employees and, in some cases, others persons affiliated with the ministry, such as volunteers during natural disasters, state park rangers, and others. A number of other laws also include provisions for compulsory insurance for agricultural leases, state-owned animal breeding, petroleum product storage, state concessions, registered pledges, railway liabilities, civil aviation, merchant shipping, the legal profession, nuclear power, and dams used by agricultural associations. In some of these cases, there is currently a national dialogue regarding new insurance products. For instance, there are ongoing discussions regarding the potential introduction of an "income" insurance program in the agriculture sector.

Despite being relatively new, the Bulgarian insurance sector is showing signs of renewed growth. Between only 2006 and 2007, the volume of non-life gross insurance premium increased by more than 32 percent (Gurenko, Itigin, and Dumitru 2008). In recent years, an increase of 6.7 percent in non-life premiums sold was observed. Motor insurance accounts for the largest share, comprising 70 percent of the gross written product. Fire and natural disaster insurance comprise approximately 12 percent of gross written product.

The consultations among key stakeholders in the insurance sector demonstrated that it is quite difficult to separate insurance that is covering natural disaster risks, because even automobile insurance includes some coverage for losses that may be caused by natural disasters. Additional add-ons for property and casualty insurance may also include some protection from earthquakes. Nonetheless, the stakeholder consultations demonstrated that there are very few products that specifically cover losses from flooding events and droughts. Even in the case of agricultural insurance, the vast majority of coverage is for hail losses, which are generally less correlated to losses from flooding and droughts.

5 Financial Disaster Risk Management in Bulgaria

Financing mechanisms differ among countries, depending on the degree of economic development and other local context considerations. More advanced economies typically rely on a combination of private risk financing arrangements and a deep tax-based public revenue system. Middle- and low-income countries usually have underdeveloped catastrophe risk markets and low tax ratios and face an ongoing fiscal pressure. In such cases, post-disaster reconstruction tends to be funded through ex post borrowing and assistance from international development partners.

The assessment of existing mechanisms in Bulgaria suggests their inadequacy to manage the potentially enormous economic and fiscal losses related to the country's vulnerability, especially the magnitude of flood and other natural disaster risks. As is the case in much of southeast Europe, insurance penetration for private property is low. Approximately 8 percent of the 3.6 million homes in Bulgaria have catastrophic insurance for natural disasters, such as earthquakes and floods (Galabinov 2007). Such low insurance penetration implies significant contingent liabilities for the government in the aftermath of a major shock (Gurenko and Zakout 2008).

Two principal mechanisms for fiscal disaster management in Bulgaria include the national disaster fund and the EUSF. These post-disaster funding arrangements have significant drawbacks. The national disaster fund lacks capacity to handle catastrophic events. In addition, reliance on annual budgetary appropriations for the fund introduces major uncertainty into the fiscal planning process when a disaster strikes. Likewise, the EUSF does not have sufficient capacity to finance large disaster losses. Furthermore, it only partially compensates central government budgets for disaster-related damages, and it excludes private losses. Applying and receiving funds is also a lengthy process that involves substantial delays before funds are disbursed, as member states also need to approve appropriations. Another disadvantage is that the administrative process of the EUSF is too cumbersome for immediate needs (Gurenko and Zakout 2008).

This suggests that preventing natural hazards from turning into truly catastrophic events requires ex ante measures rather than merely responding to disasters. Financial disaster risk management (FDRM) is an important component of comprehensive disaster risk management that can respond to this need. Properly structured ex ante FDRM instruments, in conjunction with existing disaster response funds, can be used to lessen the impacts of the economic and fiscal losses from major disasters. For these solutions to be most effective and efficient, they must be sequenced in a way that reflects the frequency and magnitude of a particular risk for households, businesses, or government equally. This also implies a blending of possible market and government solutions depending on the disaster risk profile.

In the case of the public sector, FDRM is most effective when integrated into an overall policy and risk management strategy, including mitigation and response planning. Within such frameworks, FDRM can help safeguard national budgets against open-ended contingent

liabilities, provide fast and reliable liquidity for responding swiftly to disasters, and fund loss levels that exceed existing ex post funding mechanisms.

For the private sector, FDRM can compensate for a wide range of disaster-related direct losses as well as business interruption costs and other consequential losses that discourage investment and constrain access to financial markets. Once the market for FDRM is established, it may then be feasible to introduce household-level products against flood, earthquake, and other perils to protect vulnerable assets and individual livelihoods.

One straightforward way to classify an FDRM is by whether it transfers or finances the risk exposure. The former relies on international capital and reinsurance markets to bear the risk for the cost of the premium, while the latter represents different forms of risk retention or self-financing. Traditionally, risk transfer has relied on indemnity mechanisms (for example, indemnity insurance) and predefined criteria (for example, conditionality of budget or emergency fund resources), while more recent FDRM are often based on parametric (index) innovations.

Table 3. Examples of Risk Transfer and Risk Financing Solutions

Risk transfer and insurance instruments	***Loss financing instruments***
Indemnity insurance	Budget reserves
Parametric (index) re/insurance	Contingent loans
Catastrophe bonds	Parametric contingent credit
Weather derivatives	Bond guarantees

Source: Based on Pollner 2012.

6 Summary: Options for Improving Adaptation Capacity for the Bulgarian Insurance Sector

For the purpose of this note, a survey among the insurance companies in Bulgaria was undertaken to take stock and analyze their views on the insurance sector's contribution to climate change adaptation in Bulgaria. In principle, the insurance companies demonstrate willingness to apply and enhance policy management and development of disaster risks–related products. More information on the analysis of responses of insurance companies from the mentioned survey can be found in the Annex.

There are good existing practices for measuring risk, evaluating concentration of objects, managing big exposures, creating statistical databases, conducting modeling work, and so on. In addition, based on the anticipated changes related to the risk costs, there is typically a natural incentive for the insurance industry to take climate issues into account in its day-to-day operations.

Based on the preliminary review of Bulgaria's specific context, several ideas are being put forward to be further explored in the ongoing discussions toward creating FDRM products to address the major natural disasters (in particular, floods and droughts) and improving adaptation to climate change. The choice among various options and insurance products will largely depend on specific circumstances pertinent to Bulgaria's context and must be based on a more in-depth analysis and stakeholders' consultations. Potential areas of analysis that could be further explored and, as such, plant a seed for future action could focus on promoting risk prevention and deploying insurance instruments, including issues around traditional risk management, technology innovation, compulsory disaster insurance, forecast insurance, and disaster insurance pools, to name a few. The analysis which would assess the extent of vulnerability of the subjects covered by existing insurance products, could subsequently lead to the decisions on priority insurance products to be introduced in the future.

6.1 Promoting Risk Prevention

Risk management combined with control over losses plays a central role in the insurance industry. While in the past the emphasis has been on the risk management from a purely financial perspective, the focus is now shifting and physical risk management is attracting significantly more attention. The most recent building legislation and imposed requirements as well as the land-use management have become increasingly important. For instance, innovations such as energy-efficient and renewable energy technological developments have made infrastructure less vulnerable to insured losses.

Improving Traditional Risk Management

Improved building codes are one of the key strategies for reducing economic losses in the aftermath of climate extremes. A possible incentive in this case would be the introduction of discounts for insuring buildings, which have been synchronized with the actual building

requirements (energy efficiency, improved resilience, and others). The risks and opportunities extend well beyond the building sector to include crops, roadway safety, marine settings, and life/health risks.

Integrating Energy Management and Risk Management

In the context of climate change, some win-win approaches to risk management include the need to put in place a set of strategies capturing the insurance loss-prevention benefits of certain energy-efficient and renewable energy measures. A clear example pertaining to fire safety—a familiar concern for insurers—is the elimination of fire hazards using energy-efficient lighting solutions that give off less heat. A subset of these measures can directly enhance disaster resilience, the ability of facility-integrated solar power systems to avert business interruptions following electricity grid outages, or foam insulation resistance (as opposed to less efficient fiber-based products) to waterlogging after floods.

Amid rising concerns about occupational health and safety, as well as business interruptions, risk managers will find particular opportunities in industrial and high-technology settings. Recent work in data laboratories and data centers has identified strategies that enhance safety and reliability while reducing energy use and GHG emissions. Downtime in these facilities can yield large business-interruption insurance claims.

Table 4. Energy-Efficient Measures with Insurance Loss-Prevention Benefits

Strategy	Insurance sector affected
Efficient refrigeration	Refrigeration interruption
Data centers powered with direct current	Business interruption
Energy-efficient windows	Property
LED traffic lights	Personal and commercial auto
Duct sealing.	Property; liability; health
Fuel-switching from electric to gas cooking	Property

Source: Alexandrova 2013.

Improving Forest, Agriculture, and Wetland Management

While most GHG emissions come from the energy sector, substantial GHG reductions can also be achieved in forestry, agriculture, and wetlands. Improved forest management can reduce emissions by minimizing wildfires (a major source of carbon dioxide and associated public health problems) as well as by lowering the risk of flooding and mudslides that typically follow deforestation. Sustainable agricultural practices can help sequester carbon in the soil while increasing drought resistance. Wetlands and mangrove protection also offers multiple win-win benefits. Hurricane Katrina, for instance, would have been less damaging had it not been preceded by decades of wetland destruction.

Applying Concept "Rebuilding Right" Following Losses

Insurers can promote risk-prevention strategies in the context of rebuilding after losses occur. "Rebuilding right" can be applied to a wide range of post-disaster activities, from improving wetland restoration to promoting energy-efficient and disaster-resistant housing and renewable energy generation.

Improving Information and Risk Management

Proper risk management and creation of related insurance products should be supported by adequate information about risk groups in order to avoid adverse selections. If there is no proper information, risk-based pricing would not be possible and premiums may be too high or too low. Public agencies could be an important partner to the insurance sector by providing them easy-to-access, reliable, and precise data on past and future natural hazards. On the other hand, these agencies will need to have better technologies at their disposal in order to be able to not only provide data about past events but also forecast future events. This can add value to disaster management strategies and prevention practices while at the same time extend insurance penetration. Comparable aggregate loss data collected from the insurance industry can also be shared with public sector agencies and the private sector to improve risk assessment.

As is the case for insurance companies, individual consumers also face difficulties related to access to information. Poor or no information at all results in the lack of awareness. Better climate- and weather-related risk disclosure is necessary, as it allows investors and consumers to incorporate additional information into their investment and purchasing decisions. In addition to better information and greater access to data, a higher level of standardization of data (for example, common definitions) would also improve the quality of the analyses.

Promoting Technology Innovation

Since climate change is an important factor to be taken into account with regard to the mid-term development of the insurance industry, efforts should be made to create more appropriate insurance products that will be suitable to local context. One of the possibilities is to implement a set of incentives for prevention or sufficiency solutions, such as the following:

- Improved energy performance—offering discounts for clients applying energy-efficient technologies can be easily applied in the process of insuring businesses;
- Improved systems for protection from different perils (freezing water, snow melting, and so on);
- Automobile insurance—applying discount for low-carbon vehicles;
- Flood liability—providing incentives to companies operating and maintaining rainwater run-off infrastructure to improve maintenance; and
- Food product liability—promoting the use of self-cooling technologies as far as deliveries are concerned.

Improving Cooperation between the Insurance Sector and the Government

The insurance industry can contribute significantly to current and future government efforts to tackle the risks and consequences of climate change. Risk management in a broad sense is the core business of the insurance industry, and, as such, the industry has a clear strategic and economic interest in addressing the problems around climate change.

The insurance sector can also encourage climate adaptation among businesses and households in a well-defined context. Price signals in an insurance market may drive households to accelerate some of the actions, such as improve the local drainage system, and still secure a sound link between risks and premiums.

National governments have a significant role to play in respect to governance and regulatory oversight of the insurance market (Gurenko, Itigin, and Dumitru 2008). Increasing climate risks will remain manageable for the insurance industry only if governments assume responsibility to plan ahead the necessary adaptation measures. National adaptation strategies should be followed by long-term public spending plans, including prioritization for national, regional, and local authorities. Financial constraints on public budgets might underline new forms of public private partnerships as a good alternative to secure progress in the necessary adaptations to climate change in some countries.

The insurance industry and governments should join forces in reviewing and analyzing financial aspects under a more extreme climate change scenario to secure a continuing well-functional private insurance market with easy and affordable access for businesses and individuals. Additionally, by promoting certain climate-friendly behavior for businesses and individuals, the insurance industry and governments could strengthen their partnership to achieve better results.

Applying insurance practices as a tool for climate change risk management can greatly contribute to improved climate change adaptation. A combination of private sector, public sector, and public-private partnership solutions is often an answer. Sometimes countries may choose to share a layer of risk with the private insurance market for a variety of assets, usually public infrastructure. Private sector solutions can be “traditional indemnity products,” for which insurance payouts are made proportionate to the loss, or “parametric products,” which establish preset parameters for extreme events to determine insurance payout levels. In the latter case, no loss adjustment—which, as a rule, is very time-consuming—is needed, as payout levels are agreed in advance for a particular trigger level. However, parametric products bear significant “basis risk.” This technical term describes the potential mismatch between the defined trigger level (for example, wind speed or amount of precipitation) and actual loss occurrence. That said, the rapid money flows in parametric (or index products) make them very attractive for all stakeholders

6.2 Deploying Insurance Instruments

Increasing Compulsory Disaster Insurance

There is a common trend of underestimating the risk of insurance events related to climate change, typically leading to a low level of preparedness on the part of the society to deal with the financial consequences of such events. In addition, sometimes an adverse selection—that is, the fact that only the most vulnerable segments of the society would buy insurance products—is another factor that results in low insurance penetration rates. Yet another factor in this regard is the possible lack of sufficient resources in the insurance market should a major catastrophe occur. One way to overcome these challenges is compulsory disaster insurance. This measure typically directly contributes to the creation of a wide insurance set and significantly improves further risk distribution and redistribution. In addition to compulsory insurance at some minimal level, an insurance pool can be created in order to increase the possibility for risk absorption in case of a major catastrophe event. This pool may have a supplementary function to the compulsory coverage.

Protecting Low-Income Population

Due to the price of insurance premiums, market solutions are not always entirely applicable to all segments of the society, especially the low-income portion of the population, in which case, a government response is needed. Examples of government approaches are as follows:

- Designs aimed at overcoming barriers and linking the solutions to broader social goals;
- Services that complement risk transfer for the low-income sector; and
- Public support to enable participation of the low-income sector.

Insurance-related measures can be driven by the public sector and employed to promote a spectrum of public priorities through the following:

- Protecting priority sectors and households from climatic stressors;
- Ensuring reliable provision of public services; and
- Identifying threats early and allocating resource provisions to address them.

Introducing Forecast Insurance

A new class of insurance product for transferring climate risk is forecast insurance. Insurance plays an important role in encouraging risk reduction by forcing policyholders to internalize the cost of risk. Forecast insurance takes this a step further by providing decision makers with means to make loss-reducing adjustments ex ante. If early indications of an upcoming climate-related trend are being forecast, such insurance would quantify a range of losses that such a trend might imply in a particular region, and a coverage policy could be established much in advance. Forecast insurance is a novel type of index insurance that carries all the benefits of a contingent claims instrument, with the additional benefit of enabling decision makers to respond to early information and adjust in real time. Therefore, forecast insurance not only pays for business interruption and direct losses, it also provides resources that can post-fund adaptive management that actually reduces immediate losses and builds resilience over time. This added feature makes forecast insurance particularly relevant to efforts concerning climate change adaptation and resilience.

Creating Disaster Insurance Pools

Creating a catastrophic pool requires mutual consent and collaboration between insurers and the government. Creating a public-private partnership mechanism could help overcome the challenges related to the ability of the insurance sector to cover losses.

There are two approaches to resolve problems associated with catastrophic risks. The first is the so-called mixed approach, involving government and private insurance companies, which aims at monitoring mandatory insurance against catastrophic risks and increasing public participation in the implementation of this type of insurance. The second approach relies mainly on the private insurance market to provide coverage and deals with damages resulting from catastrophic risks. Typically, the second approach is preferred in very well economically developed countries, where the population enjoys financial stability and a good insurance culture.

In Bulgaria's context, a catastrophic pool could only be achieved through the joint efforts of the government and insurers to create an effective mechanism for fair and full compensation to the citizens who have suffered damages due to catastrophic risks. Moreover, to ensure the program's inclusiveness, the catastrophic pool should be shaped not only by the interests of the government and insurance industry but also by the scientific community, local consumer organizations, and the Office of Insurance Supervisor (Gurenko, Itigin, and Dumitru 2008).

While one-size-fits-all insurance pool design does not exist, existing international experience can provide valuable lessons. The role of the government, local private insurers, and reinsurers is clearly determined in the institutional structure of the catastrophic pool in EU countries. In these countries, catastrophic insurance schemes have been established through the enactment of a legal framework, defining the insurance approach and providing incentives for purchase of insurance policies. Policy makers determine the solidarity in the premium structure and design the structure of the partnership insurance program. The main issue related to applying such insurance program is the type of the program—whether it is voluntary or compulsory. The other issue has to do with the level of coverage. In other counties the level of coverage is determined taking into account the premium level, administrative costs, reinsurance premiums, coinsurance, and so on.

Box 1. Catastrophic Insurance: International Experience and Lessons Learned

Catastrophic Insurance in Turkey

The Turkish Catastrophic Insurance Pool (TCIP) was established with support from the World Bank after the 1999 Marmara earthquake. The Turkish insurance market has existed since Riunione Adriatica diSicurta (RAS) was established in 1862. In 2003, Turkey had the lowest rate of non-life insurance penetration compared to peer countries in terms of gross domestic product (GDP) per capita. The institutional structure of the TCIP is corresponds to the role of the government, insurers, reinsurers, and reinsurance brokers. The TCIP's insurance coverage terms and conditions were developed, and premium rates for different risk classes were established. The affordability constraints and the extent to which the premium rates should be allowed vary based on location and age of insured dwellings, and the level of solidarity in the premium structure. The Turkish government played a central role in creating the TCIP. The General Directorate of Insurance (GDI) of the Turkish Treasury

- Developed and approved the TCIP's regulatory framework;
- Provided major inputs in the program's institutional design;
- Was instrumental in conducting an active public information campaign; and
- Ensured that at least minimal enforcement mechanisms were established.

The result of the Turkish Catastrophic Insurance Pool was an increased penetration rate.

Catastrophic Insurance in Romania

The Romanian program for catastrophe insurance (PRAC), a project financed by the World Bank, resulted in a new law in the Romanian legislation (nb. 260/2008). The basis for this law was international experience in the field, with the difference that most pools were created "post-event" (best example being Turkey). The Romanian catastrophic pool covered risk of flooding and earthquake.

Catastrophic Insurance in France

French legislation foresees standard property insurance to include coverage for catastrophic risks. In connection with this insurance coverage, insurers should collect from the insured an additional premium in an amount determined by the government (currently 12 percent of the property insurance premium). According to the French government, 95–98 percent of the French population has signed up for that comprehensive insurance and thus benefits from coverage against catastrophic risks. Insurers in France are free to stop reinsuring catastrophic risks or to reinsure them by private reinsurer or the so-called central reinsurance fund (Central Reinsure Fund), a company funded by the state and authorized by law to conduct reinsurance of catastrophic risks. The central reinsurance fund offers unlimited reinsurance coverage and is guaranteed by the French government when the central reinsurance fund is not able to make all payments.

Catastrophic Insurance in Spain

Coverage of catastrophic risks in Spain is provided by a special consortium owned by the state. The consortium covers catastrophic risks that are not covered by insurance in the private sector, or in cases where the insurance company cannot fulfill its obligation to pay damages related to catastrophic risk. Under Spanish law, the coverage of catastrophic risks is included in

standard insurance policies. Although Spanish law does not mandate compulsory insurance, most people have compulsory insurance because it is a requirement of mortgage loan agreements. As a result, the majority of real estate in Spain is insured against catastrophic risks. As in France, Spanish insurers collect additional premium as a percentage, calculated by the consortium of premium standard property insurance. Unlike in France, where insurers can use the funds raised for reinsurance by the Central Reinsurer Fund or private reinsurance companies, in Spain, every month insurers need to transfer additional premiums collected by the consortium, because they receive a commission of 5 percent, which is deducted from the amounts due by their taxes. The Spanish government guarantees unlimited coverage when funds do not reach the consortium. Although in Spain insurance against catastrophic risks may be made by private insurance companies, the country's consortium provides almost all the coverage of catastrophic risks.

Catastrophic Insurance in Switzerland

Swiss law requires insurers to include coverage of catastrophic risks in addition to fire insurance coverage. In Switzerland, there are special laws on procedures that should be followed in the construction of buildings in areas prone to natural disasters. As in France and Spain, each insured entity pays an additional premium to cover catastrophic risks, which is part of the premium corresponding to the fire insurance. Most property owners in Switzerland are required to have fire insurance on holdings of real estate property. As a result, most buildings in Switzerland are insured against catastrophic risks. Moreover, according to information from Swiss insurers, the majority of the population has included insurance for goods, located in the property, although the inclusion of such insurance is voluntary. The Swiss government, unlike the French and Spanish ones, does not cover damages from natural disasters in case of shortage of funds. However, Swiss insurers have developed programs for co-disaster risks. Private insurance companies in Switzerland have created a special insurance pool, whose goal is to coinsure with respect to catastrophic risks. In some parts of Switzerland, property insurance may be offered by insurance companies that are owned by the state. These insurers have created special reinsurance partnerships in connection with catastrophic risks. All insurance companies owned by the state may reinsure catastrophic risks using a special reinsurance society or private reinsurance company of its own choosing.

Catastrophic Insurance in Italy, Germany, and the United Kingdom

The governments of Italy, Germany, and the United Kingdom do not provide any guarantee or financial insurance against catastrophic risks. In Italy and Germany, insurance against catastrophic risks is voluntary and is provided by private insurance companies against payment of an additional premium. As reported by insurers from these countries, a small part of the population is insured against damage from catastrophic risks. In the United Kingdom, insurance against catastrophic risks is usually included in standard property insurance; almost all residents have signed them. Even though Italy, Germany, and the United Kingdom now have national programs for catastrophic risks, such programs are expected to be further developed, especially in relation to flood risk.

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Annex. Survey on the State of Bulgarian Insurance Market in the Context of Climate Change–Related Risks Coverage

In an effort to obtain the insurance companies' views, a survey was prepared and sent to all non-life insurance companies in Bulgaria. The survey consisted of 48 questions divided into three sections. The first section dealt with the current state of the insurance market in the context of the climate change–related risks coverage.; the second focused on the policies that are being implemented by the insurance companies; the third covered questions on policies, measures, and practices that could be implemented in the future.

According to Bulgarian Financial Supervision Commission data, there are 18 non-life insurance companies, out of which 7 responded to the team's request to fill out the survey. While the sample responses cannot be viewed as an utterly accurate representation of the entire industry's views, the gathered information is estimated to be sufficient to draw basic conclusions about the Bulgarian insurance market as a whole.

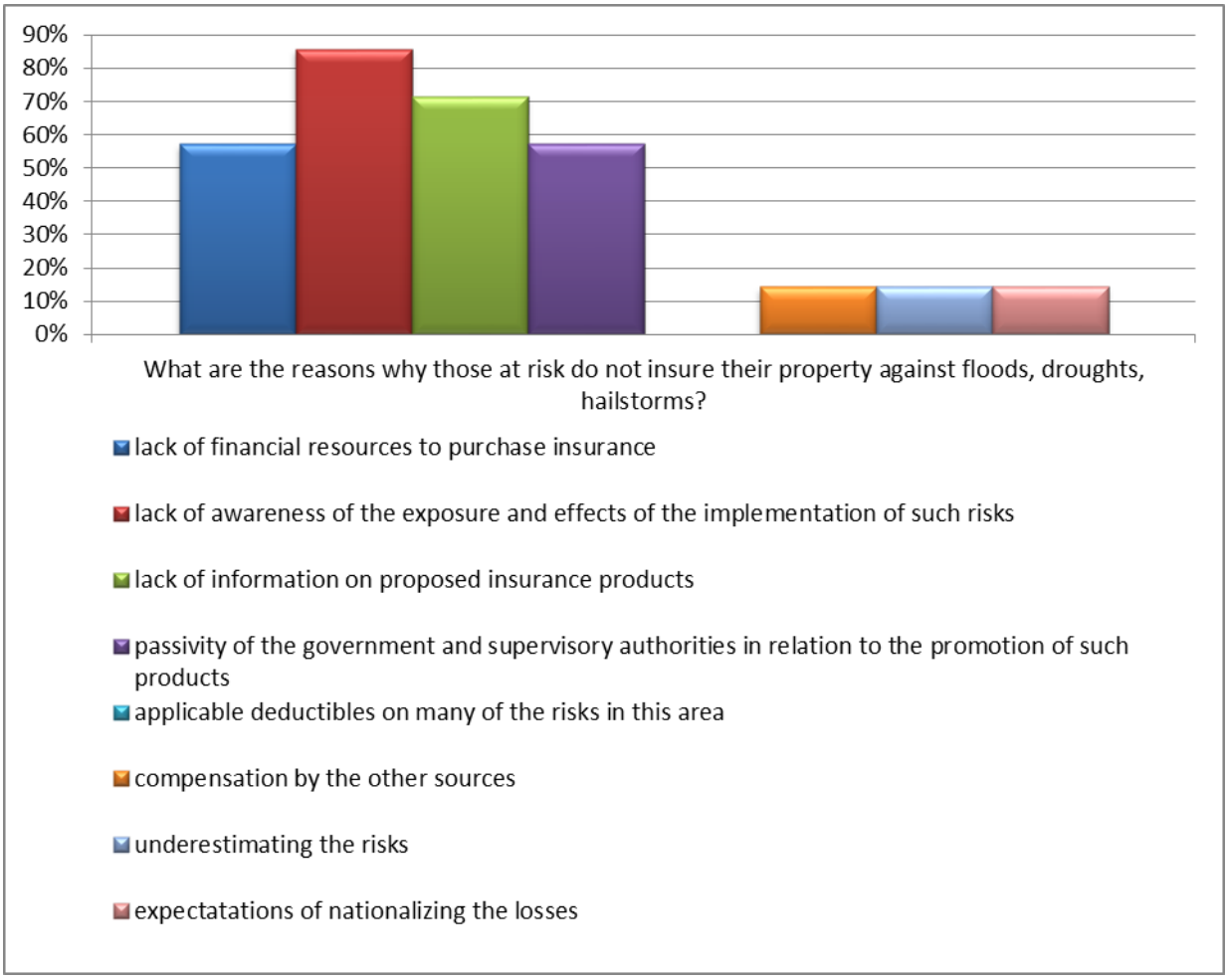
I. Assessing the Current Role of Insurance Sector in the Context of Climate Change

A majority of the responses (57.1 percent) identified the insurance companies' contribution to the reduction of climate change–related risks and adaptation to climate change as low. Furthermore, the insurance companies stated that the rate of penetration of insurance products for climate change–related risks protection is limited to less than 20 percent, while as much as 57.1 percent of companies claimed that such rate is less than 20 percent.

The most important factor identified to lead to a very limited penetration rate of protection against climate change–related risks was the insufficient insurance market penetration and density. The other reasons, according to insurers, are the relatively low level of insurance culture and insufficient collaboration with the government, as well as the lack of joint insurance programs. Yet another factor for the low penetration rate identified was the lack of appropriate information campaigns, which was pointed out as an important factor by 57.1 percent of the insurers.

Of the surveyed companies, 85.7 percent emphasized that lack of awareness on the exposure and effects of climate change–related risks is one of the main reasons why people tend not to insure their property against such risks. This response corresponds entirely with the above-mentioned opinions concerning the lack of insurance culture. The second most important factor was lack of information about proposed insurance products, which was pointed out in 71.4 percent of the responses. Insurance premiums (pricing) and the government and supervising authorities' inaction in relation to the promotion of such products were pointed out as the next most important factors, each supported by 57.1 percent of the responses.

Figure A.1. Factors for Non-Insurance of Property

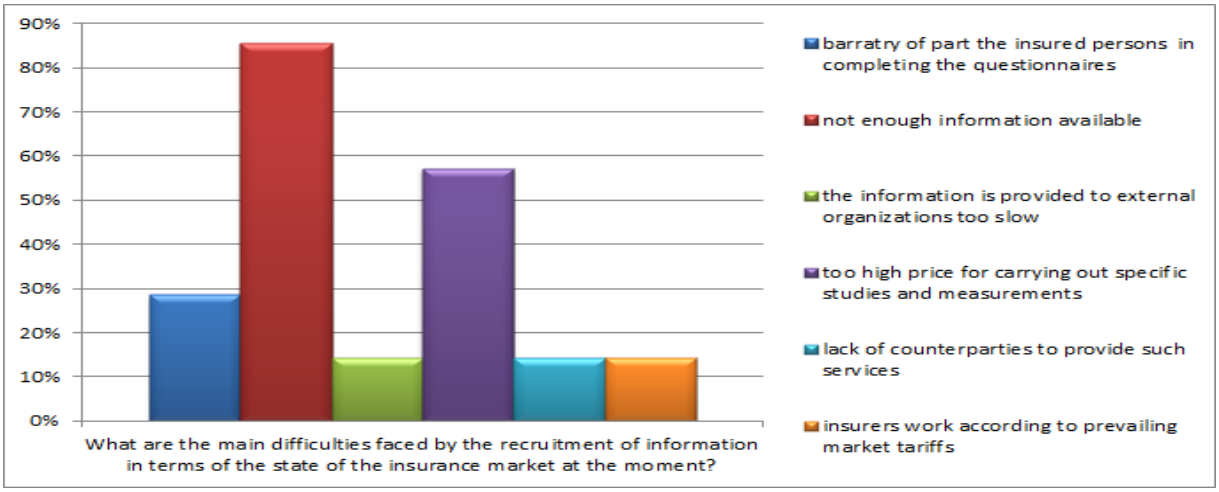


Source: Responses of insurance companies to a questionnaire on the topic.

II. Insurance Sector's Current Practices and Policies

One of the main challenges that insurance companies face in running their business is collecting reliable and topical data about the insurance set. Of the companies responding, 85.7 percent considered the lack of information available for the purposes of risk assessment and pricing as the most important barrier. Furthermore, 57.1 percent stated that research studies and tailor-made surveys needed for product development could be too expensive. The other significant factor, quoted by 28.6 percent of the companies, is related to the lack of willingness among the insurance holders to complete the questionnaires. Only 14.3 percent of the companies saw the lack of counterparties providing data as being a problem, which implies a rather limited demand for such information services.

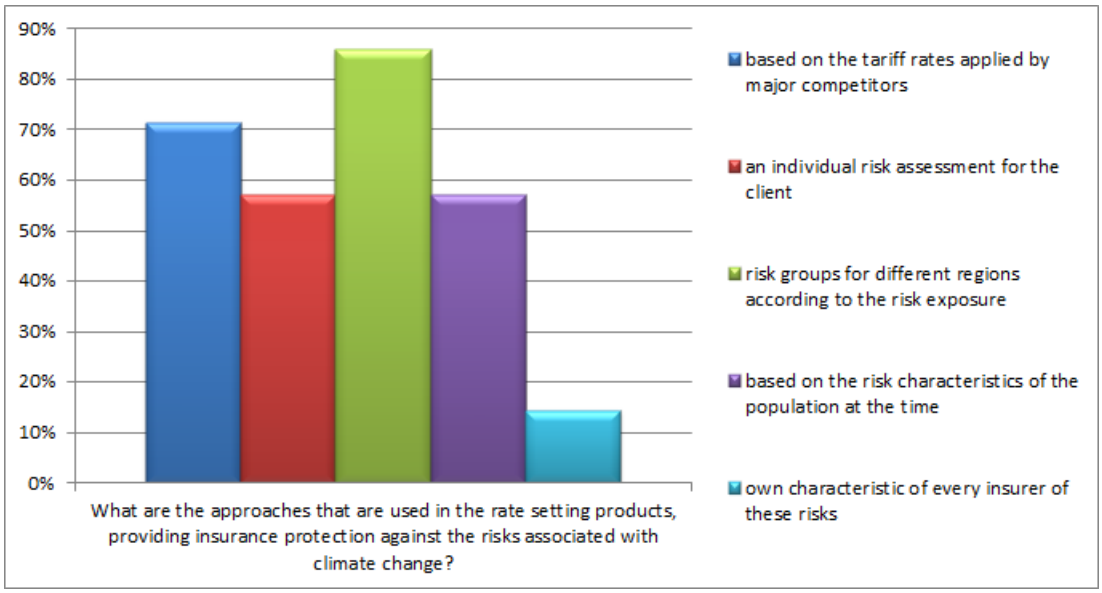
Figure A.2. Main Difficulties for Insurers in the Process of Information Gathering



Source: Responses of insurance companies to a questionnaire on the topic.

Based on the survey responses, insurance companies tend to assess risks and price them using at least two different approaches. Some of them use specific methods, like their own estimations of the risks. Of the companies responding, 85.7 percent pointed out that the main approach in setting premiums is the division of risks into groups for different regions according to their risk exposure. This approach is complemented by observation of the tariff policies applied by the major competitors, which implies price competition. In addition, 57.1 percent of the insurance companies also tend to use individual risk assessment for each client and set premiums based on the risk characteristics of the insurance set at the time.

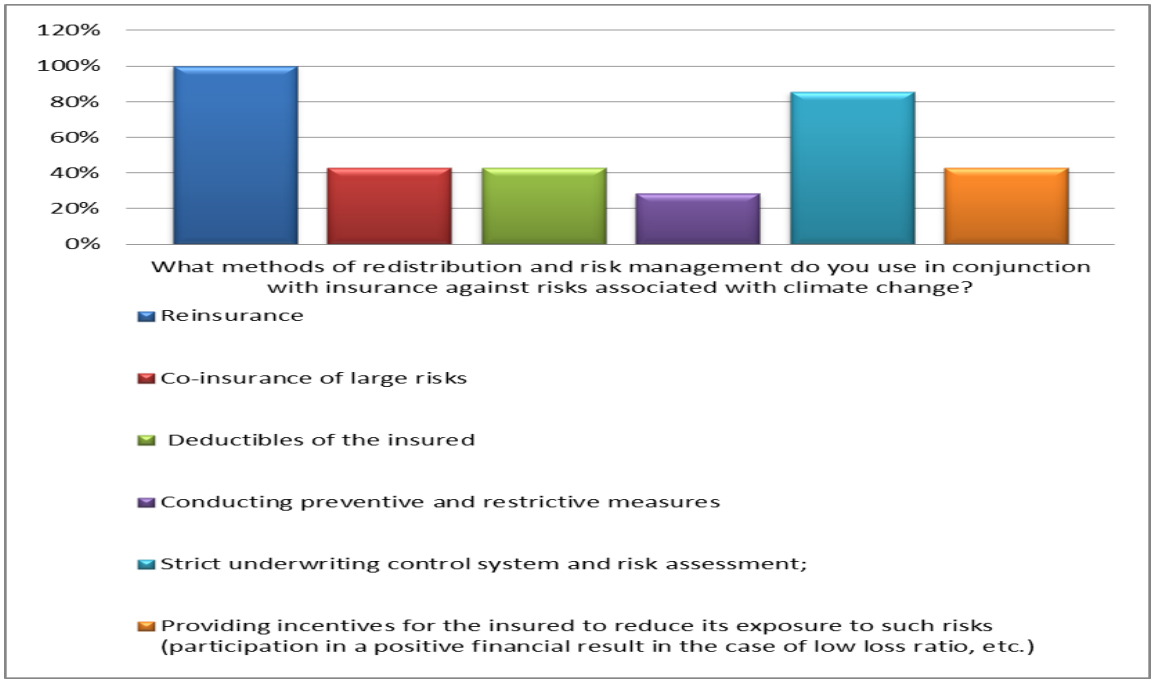
Figure A.3. Approaches Used for Setting the Rates for Protection Against Climate Change–Related Risks



Source: Responses of insurance companies to a questionnaire on the topic.

In terms of the methods for risk management and risk distribution, all participants in the research unanimously identified reinsurance as the most common and most effective approach for risk management and further distribution of written risks. Strict underwriting control system and risk assessment was pointed as another common method that is being applied by 86 percent of the participants in the survey. Coinsurance, deductibles, and incentives for the insured persons are options with similar attractiveness for the insurance companies (43 percent of the participants).

Figure A.4. Methods of Risk Management and Risk Distribution for Dealing with Climate Change–Related Risks

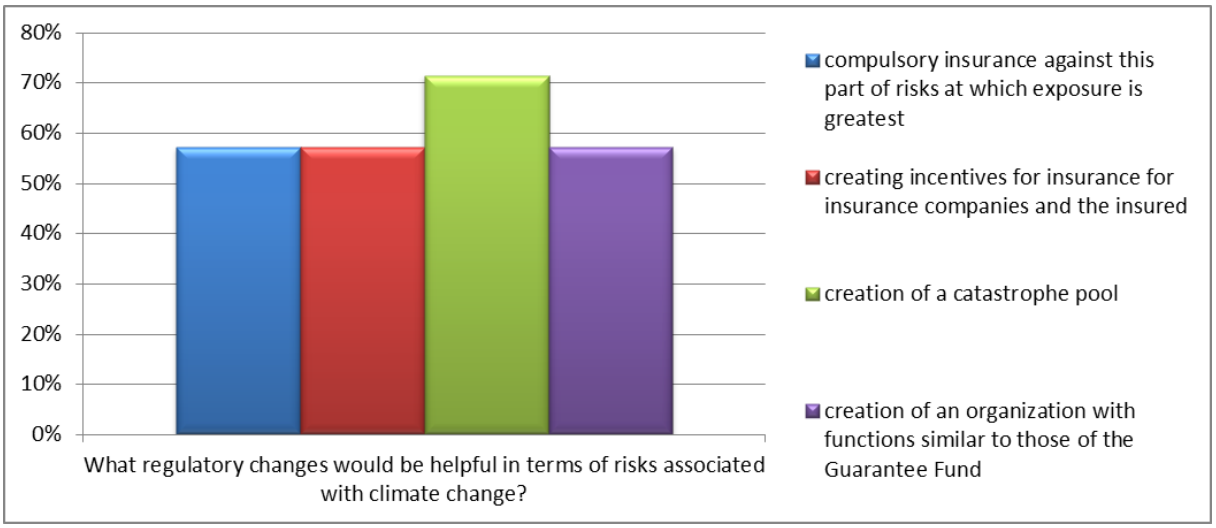


Source: Responses of insurance companies to a questionnaire on the topic.

III. What Role for Insurance Sector in the Future?

One of the most important ideas that a vast majority of insurance companies (71.4 percent) overwhelmingly supported was the creation of a catastrophe pool. The other beneficial measures, stated in 57.1 percent of responses, included compulsory insurance against some of the risks with greatest exposure, legal incentives for insurance companies and customers of their services, and creation of an organization with functions similar to those of a guarantee fund. The results concerning the expected cost effectiveness of a catastrophe pool were similar to above stated. Of the companies responding, 57.1 percent demonstrated the view that this would be cost-effective, while 28.6 percent disagreed.

Figure A.5. Regulatory Changes Aimed at Better Management of Climate Change–Related Risks



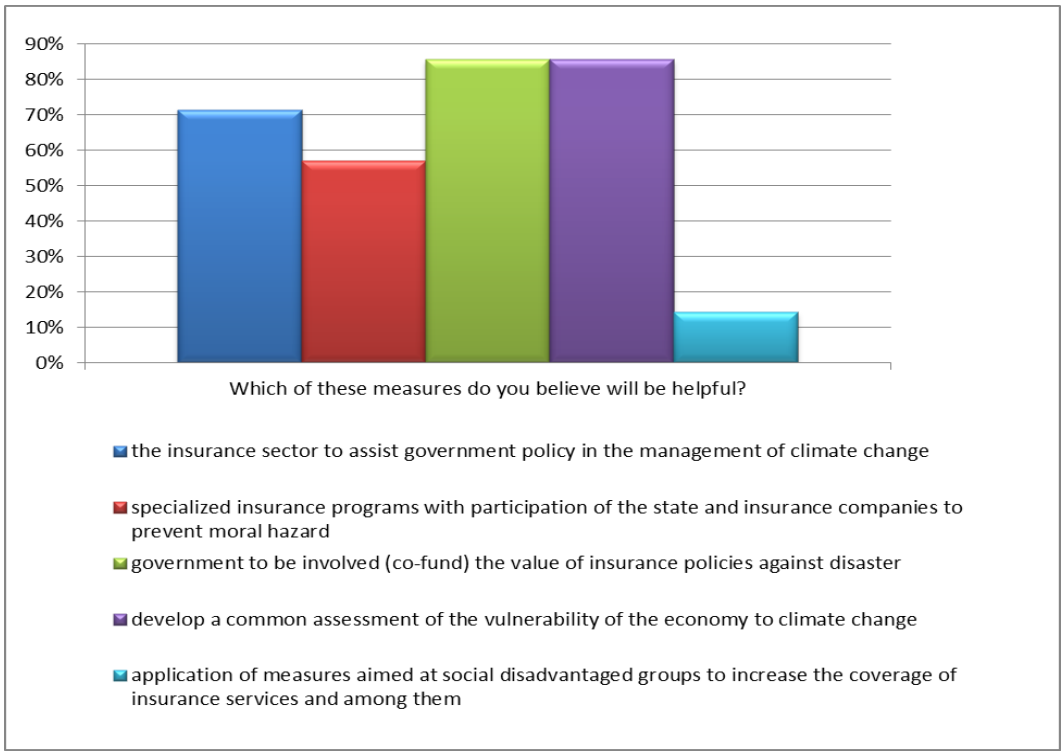
Source: Responses of insurance companies to a questionnaire on the topic.

The surveyed companies agreed that there is a need for better cooperation with other organizations involved in climate change issues. One hundred percent of responses emphasized that cooperation with the Ministry of Environment and Water, Ministry of Agriculture and Food, State Fund for Agriculture, and others should be improved. Other important organizations that were seen as relevant stakeholders in this regard are banks and disbursing funds as well as international organizations.

The two most important recommendations for climate change adaptation that the insurance companies made were that the government should participate in the financing of the insurance fund for disasters, by covering part of the insurance premiums. In addition, a need to develop a common assessment of the climate change vulnerability of the economy was emphasized.

The insurance sector also stated its readiness to assist the government in terms of policy implementation related to climate change. Of the companies responding, 71.4 percent pointed out that the insurance sector should be an active participant in the development and implementation of such policies, while 57.1 percent stated that specialized insurance programs should be developed to avoid moral hazard issues through cooperation between the insurance companies and government agencies. On the other hand, the social aspect of such policies was not seen as an issue of major concern for insurers, as only 14.3 percent proposed measures aimed at poorer social groups.

Figure A.6. Recommended Measures by Insurance Companies



Source: Responses of insurance companies to a questionnaire on the topic.