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PROFESSIONAL PAPER

Insurance Sector and Climate Changes in Serbia

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ABSTRACT – *Climate changes have a strong negative impact on the insurance sector, which is reflected in the slow development of the insurance sector and in the transfer of the greater part of risk on the state and individuals. The difference between collected and paid premiums on the basis of incurred losses is rapidly decreasing, which leads to the fact that insurance market is less and less capable of absorbing the losses associated with climate changes, which then has negative repercussions on the availability of insurance services at an affordable premium. The question of establishing potential long and short-term effects of climate changes on business activities of insurance and reinsurance companies represents a priority and its ultimate objective is to find ways to minimize risks and losses.*

The problem of climate changes represents an important social problem in today's civilization. At the same time, it is also an ecological problem, but also economic, political, social, cultural, health, etc. It is a global ecological problem, hence we can speak about global climate changes which affect states, nations, continents regardless of where they are and how responsible they are for creating and sustaining these changes

KEY WORDS: *insurance sector, effects of climate changes, risk and loss minimization, social problem, ecological problem, adaptation*

Climate changes

The problem of climate changes represents a topical social problem in today's civilization. At the same time, it is an ecological problem, but also economic, political, social, cultural, health, etc. Today, in modern scientific thought, both in humanitarian and in natural sciences, there is not one important scientific paper, article or a book, in which they deny the existence of climate changes. Even more, there is not one inconsistency when it comes to the fact that what we have is a global ecological problem, hence we can talk about global climate changes which affect states, nations, continents regardless of where they are and to what extent they are to blame for creating and sustaining these changes. It is about

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dramatic climate changes in which the altered nature does not choose its victims. It is evident that there is a certain inconsistency in sciences and it refers to the influence of anthropogenic factors on the occurrence of climate changes. Regardless of these inconsistencies, the future of modern civilization, human race, nations, but also flora and fauna, is to a great extent determined by how climate changes will further develop and if the human race, which has directly or indirectly caused them, can reverse the situation from being directly beneficial for them into being beneficial for the nature and natural world.

There is a simple solution for the problem of climate changes, but the consequences of that solution in its idealistic meaning, the crash of industries, is not the solution that can bring welfare to our civilization, but rather it can create economic and political global catastrophe. On the other hand, catastrophic scenario, where high atmospheric temperatures are destroying everything around us, is very close to the previous idealistic meaning. Destroyed climate causes destruction of economy, agriculture, hence it creates the ambience of political instability. Wherever we look, a catastrophe is inevitable if we approach the problem of climate changes from the point of exclusiveness and stubbornness. To alter traditional understanding of politics, even the economy, towards ecology and ecological problems, i.e. to break from traditional, rigid and narrow-minded understanding of climate problems and its influence on social and natural development is the solution that can represent a winning combination. That winning combination is in fact the creation of two ways, two strategies, for solving climate changes, where both paths are each other's alternative but also backup. The word is about mitigation (reducing climate changes) and adaptation (adjustment to changed climate conditions). The objective of mitigation is to restrict climate changes by reducing emissions of greenhouse gases. On the other hand, adaptation refers to adjustment of ecological, social and economic systems as a response to real or expected climate changes and their effects and processes. It refers to changes in processes, practices and structures made to mitigate potential losses or benefits brought by climate changes. Strategy of adaptation to climate changes is the one which is understood as a necessary response of the international community to the existing problems brought by climate changes. Adaptation strategies are of great importance for the states that are particularly vulnerable to the consequences of climate changes because if they don't manage to adapt it can lead to "significant losses, social disturbances and population transfer, and even to sicknesses and mortality rate".

The matter of adaptation is mostly the subject of scientific researches which rely solely on the theoretical concept without trying out those theories in practice, or the concept of adapting to climate changes is observed as totally separated from adaptation which is the research subject in other disciplines. In that sense, adaptation consists of three unities: theoretical part, as a response to risks and vulnerability assessment; political response to the problem of adaptation to climate changes (policy), and practice, i.e. involvement of relevant actors in the process of adaptation to climate changes. Every research of the problem of adaptation to climate changes brings a question if the adaptation to climate changes, which is today dominantly led through certain solution policies concerning influences climate changes have, especially on developing countries, by analyzing relevant political instruments and approaches in the framework of the Convention and theoretical approaches which are related to the adaptation to climate changes.



In the last ten years, beside the fact that a large number of theoretical approaches and policies in the area of climate changes have been developed, the majority of them referred to only one approach defined by the Convention, i.e. mitigation. Adaptation, i.e. adjustment to changed climate conditions has become the subject of an increased interest only since the beginning of the 21st century. Even in the majority of those papers, the matter of adaptation is approached to from the perspective of natural or social sciences, while multidisciplinary and interdisciplinary approaches are lacking.

Even though developing countries are most affected by climate changes, the matter of adaptation has mostly been the subject of developed countries' interest. We should also bear in mind that the matter of and the approach to adaptation and sustainable development is not the same for developed and developing countries.

On Western Balkan territory, the matter of climate changes has been the subject of interest of decision makers and interested parties in the last few years, while in papers this problem has mostly been researched from the perspective of natural sciences. Sociologists and political scientists, when they address the matter of climate changes, they usually do that in the context of negotiation process and new global regime on climate changes. The question of adaptation in general is the subject of research papers in many disciplines, but is rarely observed from the perspective of adapting to climate changes.

The concept of adaptation is yet to be researched in Serbia.

Adaptation to climate changes as a concept which exists on the international level is at the same time an integral part of the concept of sustainable development in developing countries. There has been a word about economic, political and financial possibilities of including the project of adaptation to climate changes in developing policies of developing countries. What is possible are certain controversies in accepting and incorporating adaptation to climate changes in traditional understanding about the final domains and efficiency of the sustainable development concept as a global response to ecological, political, social and economic challenges of the modern era.

The problem of climate changes cannot be easily defined in the framework of only one science, be that natural or social sciences. Bearing in mind causes and consequences of this social and natural problem, as well as the survival of the natural world and civilization, we have to think about the context and basis in which this problem can be scientifically thought through. Political and economic causes of climate changes expressed in traditional, materialistic and quantitative indicators most definitely implicate that social sciences, like sociology, political sciences, economics, social and political ecology, take their own part in researching the phenomenon of climate changes and their future social consequences, but we shouldn't put aside possible contribution of natural sciences which, unlike social sciences, can exactly determine and even predict the dynamics of climate changes and changes affecting our flora and fauna.

Influence of climate changes

Risks brought upon by climate changes are real and their influences have been more and more present. OUN estimates say that all its urgent appeals in the last few years have

concerned climate. In 2007, UN Security Council held its first debate on climate changes and how they affect the international security.

Science on climate changes is now better understood. Intergovernmental panel on climate changes shows that, even if by 2050 the emissions would have decreases to half of the 1990 level, we could hardly avoid a temperature increase of 2^o C above the pre-industrial level. That kind of temperature increase will represent a serious security risk which will only get worse if the temperature increase continues. Effects of these climate changes are that icebergs and glaciers are melting down and extreme weather catastrophes are becoming more frequent and intense. Investments in mitigating climate changes, as well as methods of adaptation to what is inevitable, should keep up with responses to international security threats brought upon by climate changes.

There are estimates that the recovery of climate changes could cost the world economy up to 20% of the world GDP per year, while expenses of efficient joint action could be limited to 1%.

Climate changes are best understood as a multiplier of threats that worsens the existing trends, tensions and instabilities. Key source is that climate changes threaten to burden the states and regions which are already weak and conflict prone. It is important to admit that those risks are not only of humanitarian nature, rather they include political and security risks that directly affect European interests. Moreover, in accordance with the concept of human security, it is clear that many questions referring to the influence of climate changes on international security are mutually connected and that they seeks comprehensive political answers (Grozdanic et al, 2013).

EU is now found in a unique position to give answers to the influence of climate changes on international security, bearing in mind its leading role in development, global climate policy and a wide range of tools and instruments it has got. Security challenge makes Europe stronger due to its comprehensive approach to conflict prevention, crisis management and post-conflict renewal, but also because of the fact it is the chief advocate of effective multilateralism.

EU climate strategies

On January 10th 2007, the European Commission introduced new energy policy and climate change policy. This package of measures unites different prepositions given to the EU Council in order to establish the objectives of future energy and climate change policies. Key elements of this package are: *establishing the objective of reducing emission of greenhouse gases, strengthening the emission trading scheme, increasing energy efficiency, greater use of renewable energies and greater support to new technologies.*

As one of the leading greenhouse gases emitters, but also one of the creators of the agenda of global climate policy, EU has taken a specific obligation to reach the agreement on new global climate regime for the period after 2012. If it is necessary to reach a solution under the contract on the international level for decades to come, the bases must be set as soon as possible. In a debate on climate policy, we still haven't reached an international consensus, we haven't even managed to form a strong coalition capable of taking on a unique action on a global scale. This is causing serious concerns bearing in mind the reports



of the International panel on climate changes, whose estimates of global climate remove any doubt in regards to the seriousness of the situation and the assessment of possible risks and possible harmful consequences (Droge, 2010).

EU member states' governments have pledged to reduce the emission of greenhouse gases for at least 20%. When assessing EU climate strategy, it is important to differentiate between its effects inside EU and outside EU. EU Council has emphasized that the set objective of 20% is a minimal level which will be increased to 30% during international negotiations as soon as other industrialized countries have reached a consensus on having the same objective. Intensifying the objective concerning reduction of the emission of carbon dioxide is an imperative, especially because it will strengthen the credibility of EU climate policy. One important objective is also the reduction of global warming to an average level of 2° C. To fulfil these tasks won't be an easy job because based on the so-far indicators and bearing in mind the differences in economic development in the world, by the end of 2050 industrialized countries should have reduced their emissions of carbon dioxide by up to 80%. EU is currently responsible for 1/6 of global emissions of carbon dioxide and 1/5 of greenhouse gases in industrialized countries (Annex I to the Kyoto protocol).

The EU Emissions Trading System is the basic managerial mechanism in EU, and it is used to ensure compliance with the objectives to reduce emission of carbon dioxide. This system demands companies to abide to emission levels they have planned. Increase in energy security (by increasing the share of renewable energies) and increase in competitiveness on the international markets (strengthening efficiency and innovations) are the desired side effects. Taking part in this Emission Trading System does not only offer reliability in planning, but it also sends an important message to other countries. Giving certificates for fulfilling EU's task can have an important role on the international level if the countries individually accept these binding objectives. EU could be the leader in this and like that encourage other states to follow. The system of allocating and trading emission certificates should be transparent in order to prevent distortion of competition and endangering the safety of fuel distribution (Ganter, 2010).

It is possible to establish increased energy efficiency by determining sectorial levels – strengthening the development of new technologies and developing consumer standards for electrical appliances and vehicles. Great potential for energy savings is the improvement of existing facilities - isolation of buildings. International cooperation in this area is very important both on the technological level and for formulating innovation policies. In order to increase energy efficiency, EU Council believes that it is essential that the suggested measures be introduced not only by the EU states, but also by other countries. In such a way, developing countries and industrialized states would be offered the possibility of a planned cooperation in traffic, construction and energy sectors, and development of common standards in the reduction of energy consumption could also be promoted.

In the field of supporting technological strategies, EU has to support renewable energy, wherein there are clear differences in certain technologies. While the costs of hydro energy and wind energy, as well as some aspects of biomass production, are almost competitive, others, such as solar, geothermal and ocean energy are lagging far behind. Those who create policies should here estimate whether to spend available resources on promising but expensive technologies with an open date (like solar) or on alternative technologies with a

potential to be launched on the market in near future. The European Commission does not have a mandate to intervene in making national decisions on energy mix: member states have a sovereign jurisdiction over their energy supplies. This doesn't include Council's approval on binding objectives of the share of renewable energy in energy mix and it indirectly affects energy mix at the level of the member state.

Increasing the share of renewable energies and promoting the development of technologies based on them will help European companies sustain their competitiveness on the constantly growing market. In the long run, tendency to achieve these objectives will stabilize or even reduce dependency on fuel imports.

EU is an important player in the arena of global climate policy. The basis of its climate strategy is offering exceptional incentives to other states to participate in emission trade and technological cooperation.

It is necessary to immediately take measures in order to increase the emission of greenhouse gases and mitigate the influence of climate changes. Nevertheless, even if we would take the necessary measures to reduce emission, it seems that the increase of average global temperature of 2° C is inevitable, which will result in the rise of sea level, increase of natural catastrophes, desert increase. One more probable consequence will be a greater number of conflicts concerning insufficient natural resources, like food and water in many parts of the world. Most of the developing countries don't have financial resources and alternative ways of making money to adjust to these changes. Even though they are the least responsible for climate changes, countries of the global south are the most vulnerable to their influence, and Western Balkan countries fall under that category. Therefore, developing countries are asking the industrialized world to face the historical responsibility and to give suggestions for mitigating consequences of climate changes. Adjustment is identified as one of the key elements for strengthening the future answer to climate changes. Deliberation on adaptation policies is in fact a conversation on who pays for what financial mechanisms and who can keep up with the expected costs, but also on how financing is distributed. New political possibilities for collecting resources for adaptation are being imposed as further elements for reducing consequences of climate changes, and those are: carbon tax, auction of emission allowances, taxing international air traffic and initiative for climate insurance.

Policy of climate changes and challenges in Serbia

Due to the region's climate, agriculture—in particular the production of crops, fruits and vegetables has traditionally been a crucial contributor to the national economies, providing the income basis for a high proportion of the population and employment for many, being also the second highest contributor, after the energy sector, to national greenhouse gas (GHG) emissions. (Radovic Markovic ,et.al. 2013,p.1).

Serbia stands out in terms of progress in climate change policy as it was stated in the EC Report on progress. Serbia ratified UNFCCC in March 2001, as non-annex and party and Kyoto Protocol in January 2008. Ministry of Energy, Development and Environment Protection (MEDEP) is the focus on the point for UNCFCCC and Kyoto protocol. Since the ratification of UNFCCC, Serbia has made significant efforts to fulfil requests of the



Convention. Preparation of the two-year update report has started, an obligation towards UNFCCC, and Developmental guidelines for the Nationally Appropriate Mitigation Action plan (NAMA) are ready. First national communication with UNFCCC was carried out in 2010 and the government is currently working on the second communication.

Preparation of the Climate Change Strategy and Action Plan predicts the inclusion and examination of the basic needs in terms of adaptation to climate changes and with the aim to define a sustainable path towards the reduction of GHG emission by 2020 and 2030. Regulations in certain sectors, including energetics, waste, air, transport and industry, are making contributions in terms of mitigating climate changes, while policies in the forestry sector cover certain adaptation measures. When it comes to traffic and with the aim to once again establish an efficient international railway system, Serbia has worked on road repairs, on the increase of quality and efficiency of the river transport and it stopped producing leaded petrol. The country is ready to invest in waste technology, while in agriculture the use of biogas for the production of heat and energy for local consumption in large cattle activities is the key step towards the reduction of agricultural emissions. In terms of forestry and land usage, the optimum strategy is afforestation.

National program for environmental protection (2010) and Sustainable development strategy (2008) believe climate changes are an important challenge in the battle to protect our environment. Energetics Development Strategy until 2015, Strategy for Scientific and Technological Development and Strategy for the Forestry Development are also developed and refer to the importance of mitigating and adapting activities of economic development in energetics and forestry. In 2010, Serbia adopted the first Action plan for energy efficiency (LOCSEE – RS 2013). As a contracting party of the Energy Community, Serbia has ambitious plans until year 2020 including the 27% share in renewable energy resources, as well as 10% share in bio flues in the transport sector. Objectives for energy efficiency are similar to those of other contracting parties (9% until 2018).

Insurance sector and climate changes in Serbia

Climate changes have a really strong impact on insurance sector and it is reflected through a slowing development of insurance sector and in transferring a greater portion of risk on the state and individuals. The difference between the premiums collected and premiums paid on the basis of incurred losses has been decreasing which leads to the fact that insurance sector is becoming less capable of absorbing damages regarding climate changes and which then has negative repercussions on the availability of insurance services under an affordable premium. According to one scenario (UNEPFI, 2006, pp. 15) which takes into consideration previous scientific findings on the influence of climate changes, the influence of climate changes on insurance companies could be catastrophic. Namely, if we don't take any measures regarding the reduction of the emission of greenhouse gases, insurance industry will be faced with the problem of inadequacy to determine insurance premiums, by 2025 certain markets will have been non-insurable (like it is occasionally happening in coastal areas of the USA), by 2035 property insurance will have become extremely limited and by 2045, when it is estimated that at least once a year there would be losses whose total costs would surpass one trillion dollars, many insurance companies

would have become insolvent. Climate changes are no longer just a mere theoretical question, they represent a factual state which is already making a significant impact on the business activities of the global insurance sector, and based on the study by Ernest & Young (Strategic Business Risk, 2008) climate changes represent the most important risk insurance companies will be faced with in the years to come (Njegomir et al, 2009).

According to all indicators, parallel to the process of global warming came a significant increase in the value of damages conditioned by the achievement of catastrophic occurrences, especially those caused by weather conditions.

According to a definition, risk in insurance depends on possible danger of harmful events actually happening, on the exposure and susceptibility of the insured property and individuals to adverse events and on insured values. Changes in any of these three components can cause risk increase or decrease. Increase in the amount of losses for insurance is conditioned to a great extent by socio-economic changes such as increasing concentration of values as well as increase in concentration of population in areas affected by catastrophic events, increase in insured values as a consequence of growing population, values of insured assets, liberalization of insurance market and greater presence of insurance, changes in insurance coverage as well as an increased probability of occurrence and intensity of adverse consequences of catastrophic events. By analysing all the parameters in the previous period we can come to a conclusion that the increase in the amount of damages for the insurance company is not caused exclusively by climate changes, but they have an important influence because trends of catastrophic events caused by natural forces are keeping up with trends of global warming.

It is evident that natural catastrophes caused by weather extremes (such as floods, droughts, storms) have been more intense, while if we observe in the long run, realization of natural catastrophes caused by geophysical factors (such as earthquakes, tsunamis, volcano eruptions) is constant. Even though it is hard to precisely quantify the existing and future effects of climate changes on damages caused by natural catastrophes, it is evident that the trend of extreme catastrophic events, as well as their more frequent occurrence, which is caused by climate changes, is conditioning greater damages for insurance market.

In terms of the influence of climate changes on insurance sector, one of the biggest problems is the occurrence of hurricanes that hit the coastal region of the USA. What supports the reality of climate change influence on the occurrence of hurricanes is the data that 10 most devastating hurricanes, both for the human race and the insurance sector, have happened in the last 10 years. For example, year 2005, which was the year of hurricanes in the US, which is characterized by the highest number of named hurricanes ever, caused damages estimated at around 87 billion dollars, and it was a burden insurance market had to bear. Wherein, the catastrophic hurricane Katrina caused economic damages in the amount of 125 billion dollars, out of which 62 billion dollars were covered by insurance (Schadenspiegel, 2007). This hurricane season led to a change in the paradigm for insurance companies and was reflected in numerous factors, including record hurricane damages, changed perceptions in terms of hurricane activities, change in the domain of modelling risks and changes in estimating the necessary capital by rating agencies, which consequently led to a changed approach to strategies for capital management and the way of determining premiums. Scientific assumptions are that the probability of hurricanes happening is related



to long-term changes in sea surface temperature which normally appears in cycles with the duration from 20 to 50 years.

Sector of property insurance is the most susceptible to climate changes, especially in terms of influence on generating natural catastrophes, and it has so far suffered the most severe consequences of these changes. Climate changes do not only affect property insurance, but also other types of insurances, and one might say all business operations of insurance companies. After catastrophic events, people can initiate compensation claims against architects, engineers, designers and other individuals working in construction industry if they didn't, when designing and constructing building facilities, take into consideration new weather conditions caused by climate changes, and were noted in Europe and had a direct influence on people's health and lives. Floods, droughts, storms, heat waves and rainfalls followed by hailstone caused by climate changes have a strong impact on the insurance of agriculture and forest households. Thanks to more intense winter storms in the last few years that caused the implementation of more restrictive terms and tariffs of insurance premiums, a limited offer of insurance coverage for forest households already exists in Europe. Climate changes also have an impact on the insurance of motor vehicles, both on compulsory and car insurance. It's been established that there is a direct link between the number of traffic accidents and weather conditions, because 18% more accidents happen in warmer days (TOPICS geo, 2004). Extreme weather conditions are causing damages to vehicles due to tree falls, roof parts falling, hailstone rainfalls, floods.

Climate changes, beside their influence on insurance business, have a large impact on the change of investment climate. Influence on investment strategies of insurance companies is very important, and it in reverse has influence on their long-term financial profitability and solvency. It affects not only both sides of insurance companies' balance sheet, assets and liabilities, by generating adverse events, but they also affect the value of the property through the reaction of financial markets. Share and real estate markets, as well as corporate bonds, are under the greatest influence of climate changes. Value of the company whose business activities or products are susceptible to climate changes can be threatened, which can cause sudden market shocks because climate factors are not integrated into market prices. Due to this, performances of investment portfolios of insurance companies can be threatened. By applying creative risk protection strategies as well as by investing in sectors and companies which in a responsible manner react to climate changes, insurance companies can not only protect and improve performances of their investment portfolios, but they can also improve their market reputation and encourage companies to limit negative influences on environment, which in the end is in the interest of insurance companies. That is why many insurance companies, such as AIG, Swiss Re and Allianz are placing their resources into projects concerning the development of the use of renewable energy resources, into the improvement of energy efficiency, in waste management projects, recycling and afforestation (Njegomir et al, 2009).

Influence of climate changes on insurance companies is reflected in the risk they take from their policy holders and in their investment activities and they represent risk only for the insurance sector. On the other hand, climate changes, if adequate adaptation steps are applied, will bring numerous possibilities for the promotion of insurance companies' business.

Examples of innovative solutions applied in insurance companies are: insurance policies for hybrid drive motor vehicles alternative fuel vehicles (Sompo Japan Insurance), insurance policies for motor vehicles that have a lower emission of harmful gases (Tokyo Marine & Nicshode), development of insurance policies for motor vehicles on the principle pay-as-you-go that imply premium payments depending on how much we use the motor vehicle in question (insurance company AGF, member of the Allianz group), insurance policies for windmill fields (in 2006, AXA group collected premiums in the amount of 14 million dollars thanks to these insurance policies) (Mills, 2007).

Climate changes cause fundamental changes in the domain of the probability of adverse events realization as well as the change of insurability conditions of certain risks and they also have the potential to affect how we determine insurance premiums (bigger insurance premium in areas exposed to catastrophic events but also stimulatory insurance premiums for policy holders who achieve positive effects on the reduction of global warming), funds and solvency provision policy (Vujovic, 2009).

We can say with certainty that climate changes affect business activities of reinsurance companies in a similar way they affect insurance companies. Bearing in mind that the role of reinsurance mostly boils down to taking over the liability for covering rare but extreme events, climate changes have a more emphasized impact on the business of reinsurance companies. That is why reinsurance companies were the first to point out to global warming and they gave support to researchers who dealt with gaining statistically reliable medium-term and long-term weather forecasts. In today's conditions, reinsurance companies are faced with two alternatives: to eliminate certain risks from the reinsurance coverage, which is unacceptable considering that in those conditions the insurance coverage would also be omitted or to increase reinsurance premiums which would lead to impracticability in the realization of insurance. Scarcity in reinsurance capacity that inevitably goes along the effects of climate changes demands the finding of new solutions in insurance risk management. That is why reinsurance companies are striving to apply more sophisticated risk modelling and more disciplined risk taking but on the basis of supporting research on climate changes phenomenon and adaptive measures such as seasonal hurricane predictions, understanding of new industries' sensitivity, research in the aim of using possibilities of new markets. One of the innovative solutions is the application of an alternative transfer of insurance risk to the capital market as well as the role of the state in ensuring insurance and reinsurance coverage. Public attention has recently been directed towards finding adequate forms of partnerships between the public and private sectors wherein the state should be the partner and not a substitute for the private insurance sector.

Conclusion

Strengthening of institutions, capacities and policies in the field of climate changes are very important in Western Balkan countries. Analyses of institutional structures and political and economic sectors should be integrated in the evaluation of potential climate change strategies in order to mitigate or adapt. It is also of crucial importance to improve the participation of civil society through activities of raising awareness because this area is currently incomplete. Even though efforts to get in harmony with the standards and acquires



of EU concerning climate changes are constantly made, there is a heightened focus within public institutions on applying climate activities in the international arena. The problem is that some of these activities are not directed in a unique way or are incomplete, hence they demand further coordination, cooperation and financing as well as a long-term vision. Many projects (e.g. LOCSEE) are giving significant contributions and benefits to the region in terms of progress towards integration and in trying to coordinate low-carbon strategies with inter-sectorial focus in EU.

Key question in the period to come will be how to manage effects of climate changes. This question shall primarily have to be solved by insurance and reinsurance companies that are directly threatened by the consequences of global warming and which will have to deal with the challenges of developing and implementing strategies and business solutions in the context of managing risks caused by climate changes as well as with the need to continually seek solutions for the problem of increasing capital to cover all risks. Climate changes, that most definitely bring changes in terms of risk insurability, don't only affect insurance companies that deal with the problematic of insuring catastrophic risks, mostly property, but they also affect insurance companies that offer services of life, health and liability insurance. In the long run, investments of insurance companies are threatened by negative consequences of global warming.

Insurance business is a specific business and by its nature it is a cyclic one. Given the fact that in the last few years of the 20th century there was a decline in premiums, and frequency and intensity of losses were growing, it became inevitable that insurance companies would have to consolidate, integrate or to increase premium rates depending on the risks given.

Globalization impact makes the world closer and closer and as the events in one country extremely affect the events in another country, it has become clear that today we have the need for more versatile insurance policies. Insurance liberalization is today visible in many countries.

Since the concentration of greenhouse gasses is constantly increasing, also thanks to the globalization, it is evident that we should no longer ask the question if the climate changes will occur or not, but at what speed the consequences of these changes will be materialized and how severe they will be. Even if the emission of greenhouse gasses would stop at today's value, some consequences would still be inevitable.

We cannot predict with certainty what kind of climate to expect in the future. For those reasons, smart risk management tells us that we have to take actions that enable mitigation and adjustment to global warming because not taking any actions is a lot more expensive than taking some kind of actions.

Based on long-term analyses of large natural catastrophes it's been confirmed that the damage trend has been increasing. This is a consequence of a large socio-economic development that covers the increase of value concentration, population increase and industrialization of areas exposed to bad weather conditions.

Insurance industry has to actively start with the adaptation process if it wishes to survive and start the following activities:

- There have to be more scientific research papers related to climate changes and larger investments of time and money, such as, for example, considering the

questions of climate changes and extreme weather conditions from the perspective of insurance, predicting how climate changes will affect finances etc.

- Insurance and reinsurance companies have to take a different stand in issuing insurance policies by looking forward into the future and not only relying on the existing statistical data, like it's been so far. Price lists and models for allocation of capital have to be updated regularly so that they be the reflection of the most modern scientific proofs, and not only of extreme ones, like it was the tendency in the past.
- In the period to come, insurance and reinsurance companies have to consider risks they agree to insure more objectively. Risks being products of probability and intensity. And they have to do that by applying more developed scientific methods when identifying, analyzing, measuring and controlling those risks.
- Society has to place bigger pressure on governments in order to ensure more restrictive laws related to construction, where that is necessary, and also to make these conditions as related as possible with the terms and regulations of the insurance policy. Insurance companies should cooperate with governments and agencies for help in case of accidents because that is the only way to reach proper solutions.
- In the long run, people dealing with strategies will want to consider future insurability of risks related to bad weather conditions. If insurance companies are prevented from collecting the risk (e.g. due to some regulations) or if insurance companies are in any other way prevented from doing so, such as the market pressure, it can happen that risks from weather conditions that are insurable today become un-insurable tomorrow.

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