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THE IMPORTANCE OF ENVIRONMENTAL INSURANCE AS AN ECONOMIC AND FINANCIAL INSTRUMENT

Jarosław W. Przybytniowski*

Abstract

The purpose of this article is the risk analysis of causing the damages to the ecological environment, potential environmental risks, the costs of restoring polluted environment to its original form, as well, look at the importance of environmental insurance through the prism of environmental protection against pollution. Thus, the study attempts to answer for the following questions: What causes a threat of damage to the environment? What is to look at insurance and what is the ecological importance of economic insurance as an economic - financial instrument in environment protection.

Key words: ecology, environment, environmental risks, risk, damage, insurance

Introduction

The risk of causing damage to the environment¹ is a new challenge for the insurance market in Poland. New feature in the insurance market is protection against the costs arising from the need to: reduce the negative impact on the environment, restore the environment to its original state and to prevent damage to the environment or its repair. Corrective actions in the environment are in fact costly and long. Ignoring this issue by the company may result in significant financial setbacks for the company or even a bankruptcy.

The essential task of the study is the risk analysis of causing the damages to the ecological environment, potential environmental risks, the costs of restoring polluted environment to its original form, as well as taking a look at the importance of environmental insurance through the prism of environmental protection against pollution. Thus, the study attempts to answer the following questions: What causes a threat of damage to the environment? What is to look at insurance and what is the ecological importance of economic insurance as an

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¹ The Act from 30 April 2007 about the prevention of damage to the environment and their repair (Dz. U. of 2007 No 199, pos. 1227)

economic–financial instrument in environment protection?

1 Ecological disaster and its causes

Ecological disaster is a change to the environment, species or population in a way that prevents its survival. Disasters can be divided into: caused by the nature activity (floods, fires, cyclones, hurricanes, etc.) and human activity (industrial pollution, power plants accidents, fires, oil spills). In other words, the ecological disaster is a permanent, irreversible damage or destruction of the environment, having a negative impact on human life.

There are at least several reasons that cause that the attempts to stop the process of destroying the environment has yet failed despite various efforts. These reasons are mainly economic, demographic and social.

Scientists studying the causes of environmental disasters mainly exchange: global warming (climate change) and the development of the industry. This can be seen in increasing the risks associated with storing and transporting harmful waste. It also happens that the human mistake or lack of responsibility is the cause of an explosion or breakdown of the equipment, such as nuclear reactors or cisterns transporting harmful chemicals.

2 Legal protection of the environment

During the formation of the European Community (EC) it was concluded that the environment and its protection should not be dependent on political decisions, which in the absence of relevant legislation on the allocation of environmental tasks effectively limited the realization of subsidiary idea.

For the effective implementation of environmental policy it is necessary to create a modern and internally consistent system of environmental protection law. This system must meet some basic requirements. First of all it is the compatibility with the Constitution, the Polish international obligations (including the requirements of the European Union), social acceptability, environmental effectiveness, and economic efficiency.

The superior principle in regard to the environmental policy in Poland is the principle of sustainable development. The Constitution includes a provision stating that “The Republic of Poland shall safeguard the independence and integrity of its territory and ensure the freedoms and human and civil rights and safety of citizens, safeguard the national heritage and protect the environment, guided by the principle of sustainable development”. Sustainable development

is shaping and improvement of quality of life for present and future generations through proper maintenance of balance between different types of capital: economic, human and natural.² (Piontek, 2000)

Environmental impact assessment (EIA) is one of the key legal instruments of environmental protection. It comes from the American law about national policy towards the environment (NEPA - National Environmental Policy Tac. Of 1969³).

In the European Union (EU), issues related to environmental impact assessment are regulated by the following Directives:

2. Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment;
3. European Parliament and Council 2001/42/EC of 27 June 2001 on the assessment of certain plans and programs on the environment;
4. Council Directive 92/43/EEC of 21 May 1992 on the protection of natural habitats and wild fauna and flora. The latter (Habitats Directive) refers only indirectly to the EIA.

In Polish law, assessment has become one of the main parts of the law on sharing information about the environment and its protection, public participation in environmental protection and environmental impact assessment (Chapters IV-VI⁴). The provisions relating to EIA, and related to the ecological reviewing and impact of the project Nature 2000, remain recorded in the amendment to the Environmental Protection Law⁵.

3 The risk of environmental disasters

The problem of disasters has an interdisciplinary character. In the literature we can find four terms defining the natural events causing damage: natural hazards, natural calamities, natural disasters and random events. (Lilly et al.,

² Polish integration with the European Union and the implementation of the constitutional principle of sustainable development, in: M. Burchard-Dziubińskiej (ed.), Polish integration with the European Union in the field of environmental protection - the problems, benefits, risks

³ This Act became law on January 1, 1970 (Public Law 91-190), 42 U.S.C. 4321 and 4331-4335

⁴ Act of 3 October 2008 on the sharing of information on environment and its protection, public participation in environmental protection and environmental impact assessment (Dz.U. of 2008 No 199, pos. 1227)

⁵ Act of 27 April 2001 Environmental Protection Law. (Dz.U. of 2001, No. 62, pos. 627, as amended. d.)

1986) Man often takes various risky activities, faced with a variety of random events, in which it exposes his life, property, and also the environment. Webster's dictionary defines risk as "a threat, danger, or exposure to loss or damage." (Brigham - Gapenski, 2000)

It may be assumed that the risk is a threat that the facts may be worse than expected. If we assume for praxeology that people are guided in their activity objectives as future, anticipatory states recognized as desirable, we can conclude that the risk is a threat to their targets, which become in effect the risk of uncertain states, but with a certain probability of occurrence.

The size of major industrial accident hazards as measured by the number of upper tier establishments (UTE), enable to make comparisons between respective EU countries. Determined threat potential situates Poland in the top ten countries of the European Community (EC). These data come from report of the European Commission (EC) adopted on 17 August 2007, assessing progress in implementing the Seveso II Directive⁶ in 2003-2005 period. The risk of major industrial accidents in Poland on 31 December 2009, according to data from the General Inspector of Environmental Protection (GIOŚ), UTE was 167 (an increase of 6 in comparison with the end of 2008). While the number of establishments increased risk (EIR) - 193 (a decrease of 9), and the total number of establishments subject to the provisions on preventing major industrial accidents (UTE + EIR) was 360, an increase of 4 in comparison to the end of 2008⁷ - 356). Total number of events, which in 2009 occurred on Polish territory, was the 143. Major part, 20 events occurred in the Kujawsko - Pomorskie region, and the least, only one in Lubuskie and Lodz regions.

⁶ European Union Council Directive 96/82/EC (Seveso II) of 9 December 1996 on the control of major accident hazards involving dangerous substances. On 16 December 2003 amendment / supplement was released in the form of Directive 2003/105/EC. In both directives a new concept was adopted and new requirements for safety management systems and planning in emergency situations formulated. The name of the Seveso is connected with the village in Italy, where in the chemical factory producing pesticides and herbicides in 1976 occurred the powerful explosion as a result of which was industrial accident.

⁷ About successful completion of individual objects or their combination (installation or establishment) to the category UTE or EIR determines, in accordance with the rules, the type and amount present in the establishment dangerous substances as defined in the criteria for eligibility. Regulation of the Minister of Economy of 31 January 2006, amending the regulation on the types and quantities of hazardous substances, which find in the establishment decide on successful completion of it to the establishment of high risk or high risk establishment of a major industrial accident (Dz.U. nr 30, poz. 208)

Table 1. Total number of establishments presenting tripping hazards occurrence of a major industrial accident in the years 2002 – 2008

Kind of establishment	2002	2003	2004	2005	2006	2007	2008	Number of establishments in 2002-2008 (average size)	Share in % (average size)	Number of incidents establishments in the years 2002 - 2008 (size medium)	Adjusted ¹ a failure rate - (size of the average in %)
EIR	187	183	188	193	199	208	195	193	17,6%	21	≈ 11
UTE	152	150	148	149	157	158	161	154	14,0%	59	≈ 17
No seves establishments	727	722	738	720	743	791	817	751	68,4%	268	≈ 37
Together	1066	1055	1074	1062	1099	1157	1173	1098	100,0%	348	(≈ 27)

¹ Failure rate is the ratio of the number of major industrial accidents occurring in factories or in non-seves establishments and the number of suitable plants. Adjusted index takes into account the estimated number of individual summary of the installations in UTE category

Source: own study based on: Michalik J. S., Gajek A. (2011), *Principles of qualifications plants nie-sevesowskich threatening major accident used by the Inspection of Environmental Protection and the State Fire Service*, www.ciop.pl/ 39886, p. 13

In the table above are presented data based on information from GIOŚ from the years 2002-2008 related to number of establishments posing a threat of a major industrial accident in 2002-2008.⁸ Failure rate (medium size) in non-seves establishments stands at about 37%, while for seves establishments it is about 11% (EIR) and 17% (UTE), giving an average of 14%. Based on the presented analysis, non-seves establishments are characterized by more than three times higher failure rate than seves establishments.

⁸ Major industrial accident - a major accident in the establishment. The Act: Law on Environmental Protection (Dz.U. No. 224 item. 1341), Art. 3 points. 23, 24

The risk of causing damage to the environment is a new challenge for the insurance market in Poland. One of the most important and most commonly used methods of risk financing is insurance. Thus, an important issue for further considerations is to define what exactly is a risk of environmental damage? There is no clear definition. Ecological damages and risk assessment of their occurrence, their probability and size of the damage depends on many factors that change over time and in place.

When we are talking about the probability of damage to the environment we should remember an environmental risk factor: the quantity or intensity, usage and utilization, as well as the applicable safeguards. In another way, we will talk about size of the damage. At this point we have to keep in mind from where the threat “flows”. What are its size, scope, as well as the affected area and the quality of the environment? It is also important to know what is the value and functions of affected environment for people. Based on the above considerations, we can say that the definition of environmental damage focuses on two basic levels: factors threatening the environment and environmental elements that may be harmed. Condition of the environment is a state of some environment area, the general chemical and biological parameters, landscape which are characterizing this area. This definition includes some indicators such as soil quality, abundance and quality of plants and animal populations, terrain, and many other factors.

4 The importance of environmental insurance

The principal value in the policy of the Third Republic of Poland is a human being⁹, so he also will be a primary value of the national environmental policy. This means that the health of society as a whole, comfortable of environment in which they lives and works, local communities and the life and health of every citizen are a major, indisputable criterion in the implementation of environmental policy at every level:

- 1) in the workplace and residence,
- 2) on the local, regional and national levels.

The new National Environmental Policy is intended to satisfy the increasing human needs, both material and related to the quality of its surrounding environment.

⁹ Look at Constitution of Poland, articles 5 and 74

Human and his activity are closely coupled with the natural systems (air, water, soil, ecosystems, biological resources, biodiversity). Maintaining a balance in this system requires a consistent and cumulative management of both, access to environment resources and the liquidation and preventing the formation of the negative environmental impacts of economic activity (environment protection) as well as rational use of natural resources. This should be reflected in the appropriate management structures at national, regional and local government, with the appropriate division of powers.

In this place it is also important that among the business sector, directly or indirectly using the environmental resources, and introducing the changes, it is necessary to promote and create conditions for the development of pro-environmental management systems, focused on the systematic elimination, and if it is not possible, minimization of adverse impacts on the environment and its resources. Only in this case we can talk about ensuring the ecological security.

Ecological safety of society and economy requires not only the introduction of certain instruments against the adverse environmental impacts of economic activity, but also to secure adequate disposable water resources, that meet quantitative and qualitative criteria, maintain the agricultural production area with the desired parameters, increasing country's forest cover and increase the protected areas.

What then, is environmental security? Under this term we can understand:

- 1) clean air, healthy water and safe food, and
- 2) opportunities for recreation and leisure, as well as the continued presence of all wild species ascertained at the present.

Environmental responsibility is a prevention of the so-called public risk (public hazard), relating to, among others, disasters, including natural disasters.

According to the author natural disaster is associated with the forces of nature, technical failures caused by human activities, which a man is unable to predict and overcome. To natural disasters we can include disasters related to the four elements - air, water, fire and earth. Disasters which are related to it: a hurricane, flood, fire, earthquake, or drought, which deprives the human of his or her property, health and life.

Insurance for climate change¹⁰ (Przybytniowski, 2010) is not possible in itself. Instead, we can insure the identified events that are closely related with climate change. As we know, natural disasters cause much higher damage to property and persons than a single incident. Insurance companies, therefore, focus more attention on the former.

Overall, natural disasters in 2010 caused losses equal to 109 billion U.S. dollars¹¹. This is three times more than in 2009. UN disclosed that the highest costs incurred China and Chile. Earthquake with a magnitude 8.8 on the Richter scale, which took place in Chile in February cost the country \$ 30 billion. Mud landslides and floods, which hit China last year, caused losses of 18 billion dollars. A much less expensive was worst catastrophe of the previous year - an earthquake in Haiti. Although it claimed 316 000 lives of people, the losses caused by them were valued by the government in Port-au-Prince for 8 billion dollars. Slightly more expensive were floods in Pakistan, the cost of it was amounted to \$ 9.5 billion.

Please note that all types of disasters increases:

- 1) the flow of goods and services at international level;
- 2) the circulation of money, currency movements becomes more prominent.

As you can see from the above analysis, environmental insurance is an important economic - financial instrument of environment protection. The purpose of this instrument is primarily: improvement of the environmental area, as well as influence on the dynamics of growth of the State. The indirect task of business insurance should be to raise awareness of entities and people interested in the occurrence of catastrophic risks, and direct - to reduce financial risk in the areas of occurrence of those disasters. (Jedrzyjczyk, 2010, pp. 49-72)

It will be implemented by encouraging the use of preventive measures in the form of conducting an appropriate insurance policy.

¹⁰ Prospects for the development of agricultural insurance against climate change, [in:] (ed.), Zielinski Zb., The Role of IT in the economic and social sciences. Innovations and implications of interdisciplinary PITWIN, Higher School of Commerce in Kielce, Kielce, pp. 92 – 105

¹¹ The cost of each disasters was calculated on the basis of statements of government and insurance companies communications.

Summary and conclusions from the study

The purpose of the article was the risk analysis of causing the damages to the ecological environment, potential environmental risks, the costs of restoring polluted environment to its original form, as well as to take a look at the importance of environmental insurance through the prism of environmental protection against pollution. Thus, the study attempts to answer the following questions: What causes a threat of damage to the environment? What is to look at insurance and what is the ecological importance of economic insurance as an economic - financial instrument in environment protection? In addition, this article is used to organize the knowledge about used technological processes, methods of prevention and the potential environmental impact of companies, as well as insurance as an economic - financial instrument in environment protection.

The insurance practice, scientific publications treats the ecological security very narrowly. This tightening consists in treating insurance as a source of environmental damage compensation (Lenart – Pietrewicz, 1999, p. 13). There are no notable insurance roles in assisting the expansion of market by entities involved in eco-development. Insurance is seen mainly as an instrument:

- 1) providing compensation for damages,
- 2) the financial impact of environmental degradation are not seeing the possibility of including them in the process of development entities whose economic activity prevents the formation of disturbances in the ecosystem.

Organized activities (including insurance) in order to effectively achieve its objective require precise identification and risk analysis with special reference to the threats that put human, his life, property and the environment in danger. The idea of prevention and organized risk management has emerged as a result of the birth of modern economic thought, particularly in relation to business management using modern technologies. The pursuit of profit maximization has forced on the company boards not only insurance, but also the need of professional, planned and organized prevention in order to prevent losses arising in consequence of the completion of the risks of environmental disasters. Risk assessment identifies threats and vulnerabilities. It must be based on enough broad-based analysis to cover key internal and external factors. Risk management will determine the acceptable level of risk and would help to choose the right tools associated with the risk of environmental damage,

taking into consideration the type of events that after activating become disasters, natural disasters or catastrophes, accidents, failures of civilization.

Resources:

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