

Summary of professional accomplishments

1. Name: Dorota Rucińska

2. DIPLOMAS, SCIENTIFIC DEGREES HELD:

- 2009 - PhD in Earth Sciences in the field of geography

The title of the dissertation: Extreme natural phenomena in geographic education in junior high schools and high schools.

Degree awarded by the resolution of the Council of the Faculty of Geography and Regional Studies of the University of Warsaw, dated 21 April 2009

- 2001 - Master's degree in Geography in the field of regional geography

MA thesis: The impact of ENSO on the economy of the western coasts of the Americas

Master's degree obtained on 27 September 2001 at the Faculty of Geography and Regional Studies of the University of Warsaw

3. Details on previous employment in research institutions.

University of Warsaw, Faculty of Geography and Regional Studies.

Department of Regional and Political Geography

ul. Krakowskie Przedmieście 30, 00-927 Warsaw

from 01.10.2001 to 30.09.2009 - engineering and technical position (senior clerk,

half-time) Institute of Regional and Global Studies (ISRG), Department of Regional Geography (ZGR).

1.10.2009 - 30.09.2010 - research and teaching fellow, assistant, full-time; ISGR, ZGR.

1.10.2010 - 30.09.2014 - research and didactic fellow, lecturer, full-time; ISGR, ZGR / ZGRŚ;

from 2013 I have been working at the Department of Regional Geography of the World (ZGRŚ)

1.10.2014 - 30.09.2016 - research and didactic fellow, lecturer, % full-time; ISGR, ZGRŚ.

1.10.2016 - 30.09.2018 - academic and didactic fellow, lecturer, full-time; ISGR, ZGRS.

1.10.2018 - until now - research and teaching worker, lecturer, full-time for an indefinite period, Department of Regional and Political Geography (KGRP).

4. Achievements* as defined under Art. 16 section 2 of the Act of 14 March 2003 on academic degrees and academic title, and on degrees and title in the field of art (Journal Of Laws 2017 item 1789)

Academic accomplishments is a series of articles under the collective title:

Social aspects of natural disasters and the possibility of disasters risk reduction.

Theoretical research and methodological solutions

Publications within the framework of academic achievement

The scientific achievements underlying the initiation of habilitation proceedings have been included in a collection of seven original peer-reviewed scientific publications, including five English-language journals and foreign publications.

- two articles in English published in prestigious specialist journals, included in part "A" of the Ministry of Science and Higher Education list;
- two articles in Polish in part "B" of the Ministry of Science and Higher Education list, issued by the mother's scientific center (Faculty of Geography and Regional Studies);
- two articles in English in on-line journals (one published by the home science center, Faculty of Geography and Regional Studies, the other from international conferences without scoring by the Ministry of Science and Higher Education);
- one article in the English-language scientific monograph of the prestigious publishing house (Springer).

Leading publications:

Publication 1

Rucińska, D. (2014a). Podatność społeczna na zagrożenia naturalne jako element ryzyka. Przegląd koncepcji naukowych, [Social vulnerability to natural hazards as the risk element: Conceptual review]. *Prace i Studia Geograficzne*, 55, 133-144. (MNiSW: 3 points)

Publication 2

Rucińska, D. (2015a). Kwantyfikacja podatności na zagrożenia naturalne - przegląd metod, [Quantification of vulnerability to natural hazards. *Review of methods.*] *Prace i Studia Geograficzne*, 57, 43-53. (MNiSW: 8 points)

Publication 3

Rucińska, D. (2018a). Describing Storm Xaver in disaster terms. *International Journal of Disaster Risk Reduction*, 34, 147-153.

* (IF in 2017 1,986; Ministry of Science and Higher Education in 2016: 20 points, no MNiSW index in the year of the online publication, 2018).

Publication 4

Rucińska, D. (2014b). Spatial Distribution of Flood Risk and Quality of Spatial Management: Case Study in Odra Valley, Poland, *Risk Analysis*, 35 (2), 241-251.

*(IF: 2,502, MNiSW: 40 points)

* The article is a summary of my research concept (implemented as part of the MA series) as a part of the major topic of my research. *On-line publication occurred in 2014 (IF: 2,502; MNiSW: 40 points) but it was printed in 2015 *(IF: 2,225, MNiSW: 35 points) I'm not sure how to rate this publication.*

Publication 5

Rucińska, D. (2015b). Social Aspects in Flood Risk Assessment, [In:] Romanowicz, J. R., Osuch, M. (Eds) Stochastic Flood Forecasting System. *The Middle River Vistula Case Study, Switzerland: Springer International Publishing Switzerland*, 189-198. (5 points)

Supplementary publications:

Publication 6

Rucińska, D. Lechowicz, M. (2014). Natural Hazards and Disaster Tourism, *Miscellanea Geographical - Regional Studies on Development*, 18 (1), 17-25. (MNiSW: 9 points)

My contribution to the research: I am the author of the research concept, I put research questions, I carried out a review of literature and analysis, I wrote the article. I estimate my share over 60%.

Publication 7

Rucińska, D. (2016a). Natural Disaster Tourism as a Type of Tourism, *International Academy of Science, Engineering and Technology, International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*. International Science Index, Humanities and Social Sciences, (on-line), 10 (5), 1330- 1334. (MNiSW: 5 points).

Description of the research objective of the above papers and achieved results, together with a discussion regarding their potential

Introduction

Recently, the major focus of my research have been the social aspects of natural disasters, in the context of a community potentially affected by loss, as well as loss generation and the possibility of reducing the risk of such disasters. **Identification of gaps in defining and quantifying phenomena related to the risk of disaster, except for the cognitive character, is of great application importance, especially in the local approach aimed at reducing losses caused by natural disasters. One of the methods of reducing the negative effects of natural disasters is to reduce vulnerability to natural hazards, including social vulnerability.** There are numerous theoretical studies and practical assessments of risk and its elements in the world where they occur in one of the basic approaches - the probability of a natural threat *Hazard* and *Vulnerability to these hazards* ($R = H \times V$). They are a determinant of analytical activities and strategies in risk management and its reduction, aimed at reducing social and economic losses caused by natural hazards. Analyzes are conducted in various spatial scales, in relation to the selected type of threat or to many threats comprehensively. The research uses quantitative and qualitative methods, stochastic and deterministic models, remote sensing methods and techniques and GIS (Geographic Information System) typical of Earth sciences in the field of geography.

Natural disasters are one of the current themes located at the interface between various natural and social issues. Disasters are undesirable and related to risk of losses; natural disasters are understood as random events that are difficult to predict, caused by very violent natural phenomena, they threaten the safety and achievements of society, can cause material losses and destabilize the functioning of society and the economy. These events, as well as their social and economic consequences, contribute to the release of unusual emotions and reactions of people (this topic was taken up by me in my doctoral thesis). An important issue is the assessment of losses of an event which has transformed from a threat to a disaster. Losses are usually assessed according to international disaster criteria which also includes natural disasters generated by natural phenomena. **Reducing the losses of a disaster can take place, among others through: (i) monitoring of natural phenomena, accurate assessment of natural hazards, followed by early warning and preventive actions; (ii) reducing vulnerability to natural hazards, including social vulnerability, which in its basic terms include exposure, susceptibility, flexibility and resilience, coping and adaptability, and thus through two basic elements of risk.**

Natural disasters still generate fatalities, many casualties and material losses on a global and regional scale (*Annual Disaster Statistical ... 2017*) hence, in response to them, projects of actions and adaptations to threats, e.g. by United Nations for International Strategy Disaster Reduction, UNISDR (from 1 May 2019 *United Nations Office for Disaster Risk Reduction, UNDRR*) stimulating governments to take action to minimize the negative effects of disasters, such as *World Conference on Natural Disaster Reduction: Yokohama Strategy and Plan of Action for a Safer World in 1994, Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters in Kobe in 2005, Sendai Framework for Disaster Risk Reduction (2015-2030) -2015 in 2015*) (UNISDR ,2015). The latter draws attention to the need to focus on people because of social security, which should be taken into account in accordance with the Sendai Framework for Disaster Risk Reduction, *SFDRR*. Priority actions aimed at reducing the risk of disasters - including natural disasters - at the local, regional and global level include: understanding the risk of natural disasters and strengthening risk management; investing in reducing disaster risk by building resilience and better reconstruction, considering it as a global goal, including reducing the number of fatalities and disasters, and increasing the availability of hazard information and the assessment of disaster risk reduction.

In social terms, natural disasters are characterized by a persistent high level of people killed in developing countries and people affected by disaster in countries with low and medium economic development (high economic losses are the domain of developed countries), therefore, the point linking natural disasters and vulnerability are fatalities and injured persons. While there is a reduction in the number of people injured in developed countries in the world, they are still a big problem in developing countries. On a global scale, most fatalities are caused by cyclones, while those affected - floods resulting in floods - both of these phenomena generate nearly half of the economic losses (CRED, 2018). These threats also occur in Poland (talk about floods and cyclones of the temperate zone). **The effects of dangerous natural phenomena form the basis for defining the natural disaster, and its criteria serve to identify and assess the event.** Terminology issues related to natural hazards, extreme phenomena, natural disasters and disasters have already been raised in the doctoral dissertation, the results of which have been summarized in the book (Rucińska 2012). In the selected articles (comprising the scientific accomplishments), I have developed my interests with new aspects related to risk and reduction of risk of natural disasters.

The issue of natural disasters as a potential effect of dangerous natural phenomena has been present in geographic literature for many years (Polaczkówna 1925, Bujak 1932, Szewczuk 1939, Plit 1989, Lisowski 1996, 2000, Rucińska 2012, Plit 2016). Natural disasters are sometimes called natural catastrophes (Ozga-Zielińska 2003, Kundzewicz, Kowalczak 2008,

Kundzewicz, Matczak 2010), following the example of international terminologies. The problem of natural disaster enters various geographic subdisciplines and also extends beyond geography - sometimes on their borders, starting from the behavioral approach in human geography (Walmsley, Lewis 1997), natural disasters and their risks (Hewitt 1997, Graniczny, Mizerski 2007, Ship, Kasperson 2015) or its elements, where the work on vulnerability to natural hazards was of key importance (Birkmann 2006), which also set the direction of my research. Some studies starting from hydrological issues to social issues (Biernacki et al. 2009, Działek et al. 2017). In international literature, there is the clear subject of the policy of reducing the risk caused by natural hazards (UNISDR, 2017), socio-economic effects in various spatial scales, including oceanic and climatic oscillations (Glantz 1996, 2002, Laosuthi, Selove 2007). In the context of the flood, the project (later - the concept) of leaving free space for rivers (Nijland 2007), "Making Space for Water", "Living Rivers" and "Environmental River Enhancement" (Menke, Nijland 2008) is used to manage flood risks (Flood Risk Management, FRM) and its reduction. Although this approach is substantively justified, it is not easy to implement, which is why the concepts of adaptation are also considered (Rosenzweig, Solecki 2014, Działek et al. 2017), emphasizing the application importance in reducing the risk of natural disasters. **Natural disasters combine the dynamics of natural hazards and human activity by generating secondary phenomena in the form of various social and economic problems. They prompted me to look at these problems in a universal way, independent of the genesis of the phenomena. Their common element is a person (community) participating in it or in secondary phenomena, undertaking (or not) various types of activities and individual or group activities, operating locally in a more or less organized society, making decisions and actions due to the duty to perform functions in state-owned institutions (publication 1).**

Research objective

The research problem in question was to reduce the risk of a natural disaster in the social sphere. Selected articles describe the results of theoretical research and methodological solutions concerning the social aspects of natural disasters and natural hazards (depending on the issue raised regarding the selected threat or many threats). The research covered the following issues: social vulnerability to natural hazards, selected criterion of natural disaster of social nature and unusual social activity leading to the emergence of a new form of tourism where participants are exposed to life and health threats and potentially can generate negative, secondary social consequences of a natural disaster. An important aspect of this work is also to propose a relatively simple methodological solution and adaptation of the existing model of quantification of social

vulnerability to Polish conditions in relation to flood risk. All the issues I have addressed refer to selected social aspects of a natural disaster and a risk element of a social nature that is social vulnerability. Identifying the social causes and consequences of a disaster can indirectly serve to minimize the losses of natural disasters.

The analyzes referred to the Polish conditions and selected hazards, i.e. floods and winter storms, which is a response to the world-leading hydro-meteorological threats (CRED, 2018).

The main goal of the research included in the series of publications below, comprising the scientific achievement, was:

- **recognizing the definition of social vulnerability** as a risk element, recognizing the methods of its quantification and social criteria for natural disaster in the understanding of the definition of international organizations;
- **identification of gaps related to the definition of a natural disaster within the meaning of the definition of international organizations;**
- **defining the possibilities of methodological solutions characterizing socially important features of the geographical environment, important from the point of view of local increase in safety and quality of life of the population based on the example of flood plains, using ArcGIS;**
- **an indication of the methodological possibility of estimating social vulnerability in Poland using publicly available socio-economic data based on the application of the existing model of social vulnerability using generally available spatial and statistical data;**
- **indication of ethically doubtful social activities associated with natural hazards and potential disasters** generate new or deepen the existing negative social consequences of these phenomena.

Achievement of research goals was based on detailed research questions contained in selected scientific articles. The research was of a theoretical nature and was an attempt to organize Polish terminology. They also allowed to propose concepts and methodological solutions and to indicate the possible direction of activities aimed at reducing social losses incurred during a natural disaster.

The tragic flood experiences in 1997, 2001 and 2010 in Poland drew my attention to the need for geographical spatial analyzes that could improve the security of society against natural hazards. In addition to noticing the need for social education about extreme phenomena, it became important to identify factors that deepen the weakness of society in relation to such events. I was

bothered by the following question: what is this weakness and what is it about? The discussion on the semantic scope of the following terms as: natural threat, extreme natural phenomenon, natural disaster and natural disaster in further research has been discussed in further dissertation, namely: risk, vulnerability, susceptibility, flexibility and resistance, noting different application or their replacement in some cases. Difficulties which, in the initial phase of the study, caused the different naming of risk in the French and English definitions (Manche 1987, Birkmann 2006), prompted me to conduct a query about defining risk and its elements. I was also prompted by the fact of seeing a different application in Polish source literature, the terms of "podatność" and „wrażliwość” compared to English *vulnerability*. The basis for the consideration was the recognition of the vulnerability as a risk element (risk = hazard x vulnerability) (Davidson 1997, Peduzzi et al. 2002a, Greiving 2006, Cutter et al. 2009). As a result of these works, which were initiated during the academic internship abroad in 2011, an unpublished manuscript concerning these measures was created (*Rucińska 2013). Both the manuscript and publication 1 were created for the purpose of the research project and the study I carried out under the project: Spatial diversity of susceptibility information society based selected natural threats in Poland, financed by the National Science Center (2012-2015) based on the decision of UMO-2011/03/ / B / HS4/04933,194000/ / 04933,194000 / GR, conducted under the supervision of prof. dr. hab. Piotr Werner. The main research question was: how did the definition of vulnerability evolve as *an element of risk, including social vulnerability*? **The purpose of the study (publication 1) was:**

- referring to Polish terminology and an attempt to organize it,
- characteristics of vulnerability to natural hazards,
- characterization of relations between elements of social vulnerability.

The result of the query (**publication 1**) was to identify a terminological problem around *vulnerability*. The lack of uniform recognition in various disciplines (Birkmann 2006, Więzik 2010) deepens the use and colloquial understanding. The mass tendency of written scientific articles in foreign languages does not contribute to the problem. The study allowed to place social vulnerability in the general vulnerability system, defining the theoretical relations between elements, which is important due to the same direction of vulnerability and risk (increasing vulnerability causes an increase in risk). Important issues were identified, which complicated de facto susceptibility assessment, namely: (i) the possibility of considering vulnerability in three aspects affecting it: political, cultural and economic, (ii) as well as three levels of society complexity: individual, community and institutional. The research allowed to recognize the vulnerability elements and explain the differences between them, indicating the possibility of organizing Polish terminology, where:

-
- exposure is known as exposure - referring to the quantitative parameter of the population,
 - susceptibility - capturing the specific characteristics of the population,

 - elasticity - also understood as flexibility - these are the features that enable surviving a dangerous phenomenon or natural disaster and return in a gentle way to the condition from before the crisis
 - resistance - identified by some authors with flexibility - and according to my diagnosis, these are features that allow them to not be subject to dangerous phenomena leading to death, physical and psychological loss, giving survival without material damage,
 - coping ability - features associated with actions and skills.

In this way, susceptibility is an element of vulnerability, and flexibility is only a means to an end and a transitional way to achieve resilience to natural hazards. The study allowed to determine the factors that increase social vulnerability (thus the risk of losses) are: unstable political system, undemocratic political and social system, high or increasing level of corruption, poor economic situation of the country or region, undeveloped policy of social and institutional preparation to natural hazards, undeveloped crisis management (or lack of it) and management of the return to stability, lack or undeveloped management of the natural environment (including environmental protection).

The following are the most important results of this study:

- **determining that, in the context of risk, vulnerability is not the same as susceptibility, and taking vulnerability as the main element of risk, susceptibility is part of vulnerability; vulnerability is a more general concept with corresponding specific characteristics of susceptibility;**
- **indicating the location of social vulnerability in the general vulnerability system;**
- **presentation of the theoretical relations between the elements of social vulnerability.**

Summary and practical application of research: the study has a theoretical and practical dimension. The unification of Polish terminology may contribute to accelerating the rate of social susceptibility testing in the country. **Presentation of the results of the query referring to the terminology met with the interest of other researchers** (Działek et al. 2017). The results of the study may be useful in monitoring social vulnerability in the analyzed periods and understanding spatial changes and, consequently, in creating a local strategy for reducing social vulnerability to natural hazards. **In my study, I indicated the need to assess social vulnerability and to develop a universal pattern based on national data.**

The next research stage (**publication 2**) was the recognition of the development of the concept of vulnerability and the possibility of quantifying social vulnerability based on existing concepts (I carried out the research under the aforementioned project financed by the National Science Center (2012-2015) based on the decision of the UMO- 2011/03/ / B / HS4/04933,194000/ / 04933.194000 / GR). The study showed that the concept of vulnerability evolved from the phase of equating vulnerability (Gabor, Griffith 1980), by considering social conditions (Timmerman 1981), ability to respond (Kates 1985) and coping (Hewitt 1997), after drawing on sustainability research and quality of life (Cutter 1996). There are various approaches to the quantification of vulnerability, e.g. as a system (Wood 2007, **publication 1**) or separation into physical (Felling 2003) and social vulnerability (Cardona 2006, Cutter 1996, Cutter et al. 2009). At the same time, a holistic consideration of the human-environment system is being carried out (Polsky et al. 2007; IPCC, 2001) or focused on the dominant factor, like poverty (Alwang et al. 2001), while in others - on individual types of threats (Queste et al. 2006) or many threats in a country or region (*multi-hazards index*) *creating comprehensive indicators* (Peduzzi et al. 2002b). Sometimes existing socio-economic indicators, such as Human Development Index (HDI) in the Disaster Risk Index (Adger 2006); they are useful for risk comparison (including vulnerabilities) on a global scale, due to the need for universal and available data or meters in various parts of the world. This type of quantification is fraught with generalization, thus it does not meet the needs of risk reduction on a local or even a national scale. Without analyzing the risk elements, they may suggest an incomplete similarity between countries and may mechanically place them in the same risk group. The results of the study indicate the need for caution in the case of: (i) transferring the result of quantification performed on a global scale on a regional and local scale, excluding risk elements, thus vulnerability, and (ii) selecting the meters characterizing the variables. Global indicators may cause misperception of the risk in the region. The transition to the regional and local level of social vulnerability analysis deprives us of the possibility of comparing countries, which results mainly from the availability of various measures created for a given country on the basis of data collected by national statistical offices. The results of risk and vulnerability assessment can be accepted for groups of countries building analogue systems for collecting socio-economic data with common cultural and political roots. The diversity of community features in individual countries of the world requires an individual approach.

The following are the most important results of this study:

- **indicating the leading concepts of vulnerability to natural hazards,**
- **indicating various quantification of social vulnerability,**
- indicating the difficulty of comparing social vulnerability in different countries (also at the local level) with a different socio-economic status, political and cultural conditions,
- **joining the international discussion on the diversity of vulnerability indexes, the need to estimate vulnerabilities in individual countries, using indicators for**

various spatial scales, including local ones, in order to subsequently influence the reduction of social risk,

- joining the international discussion on the importance of the spatial scale of susceptibility assessment, selection of measures and the availability of data in national analyzes.

Summary and practical application of research: the method of susceptibility assessment determines the manner of subsequent application of final results. The application of global risk indicators does not serve risk reduction activities at the national and local level. **The study confirms the suggestions of other scientists, stressing** the need for local analyzes, to monitor the dynamics of social phenomena and adapt the risk reduction policy.

The availability and quality of data, similarly - information on losses, is emphasized at subsequent conferences of global risk reduction. **Definitions of "disaster" (*disaster*) created by international organizations and institutions (EM-DAT Emergency Disaster Database, World Bank, Munich Re) also refer to the natural disaster.** These definitions, based on specific criteria, allow to identify situations requiring specific corrective or preventive actions. Naming a natural disaster determines how it is perceived in a specific way and implies taking any corrective and preventive actions (individual or administrative) that consequently serve as risk reduction.

In the Sendai (SFDRR) framework, the importance of the quality of data informing about natural disasters is emphasized because they serve to understand the impact of the threat on the geographical environment and the costs of disaster, as well as to build *resilience and resistance and, as a consequence, risk reduction*. There is also the focus on the access to information that is crucial in disaster risk management (UNISDR, 2017). The limitations of global and national databases regarding losses related to a disaster lead to misinterpretations of the event (Gall et al. 2009). **The identification of gaps related to defining and informing is one of the most important tasks for the risk reduction process.** That is why I have taken up the problem of applying the criterion of natural disaster, data quality and information on losses - with particular reference to the social criterion (**publication 3**). In order to identify the gaps accompanying the definitions of a natural disaster, I used the example of the winter cyclone Xaver in 2013 in selected European countries - Poland, Germany, Great Britain and the Netherlands. This phenomenon was recognized in the above mentioned countries as a natural disaster (*catastrophe*) (Ramos Ribeiro, **Rucińska 2017**). An important issue was to refer to Polish conditions because, while analyzing foreign literature, I noticed the omission of the effects of the event in Poland, in the context of the winter storm in 2013 in Europe. I assumed that the effects of this type of event may not be sufficiently described and presented to the public. In addition, the consequences of storms occurring in the winter season are extremely severe for the society. **I asked the following questions:** What were the social and economic effects of the cyclone

Xaver in selected European countries with a special focus on Poland, and which criteria, from the theoretical viewpoint, determined the description of the cyclone Xaver as a natural disaster? **What types of damage in the case of cyclone Xaver in 2013 in the selected countries could be considered an adequate criterion for applying the term "natural disaster"? The aim of the study was to verify which criteria according to international, generally accepted disaster definitions, authorize the use of the term „disaster” (natural disaster) in the context of cyclone Xaver in 2013 in selected European countries.**

The study found that there are three main approaches in describing the disaster, which are: (i) reference to social losses (use of absolute values or percentage), (ii) economic losses (use of absolute values or percentage proportion), (iii) administrative activities that determine the bad situation. The first two of these have been taken into account in this study. In addition, the study confirmed that the effects of this storm were serious in the analyzed countries. However, they also showed that only in some cases this event can be called a natural disaster, as defined by international definitions, due to socio-economic effects. Choosing the number of deaths as the criterion of failure, no country in question exceeded the threshold of 10 fatalities; on the other hand, selecting the affected (injured) threshold of 100 people as the criterion. It was exceeded only in the UK, based on data from the EM-DAT database.

The analysis also showed that the number of people affected by the Xaver cyclone in Poland differed depending on the data source. This situation potentially affects social communication, because the number of injured people is an argument for the need to increase efforts to prepare and adapt society to the natural threat. **Information can be misleading and lead to the belief that the natural threat is not dangerous and only a small number of people should take preventive actions.** Exemplary information: 1,400 flooded homes or 3,360 affected people in the UK; 400,000 homes without electricity or 1.1 million people affected in Poland (when data according to EM-DAT reported about 53 people) affected and did not reflect the number of 1.1 million people affected by the lack of electricity). Similarly, in the United Kingdom, the number provided by EM-DAT is 4,200 people affected, while 10,000 people were evacuated in the same group (category). **The type and reliability of available numerical data reflect losses incurred during the event. Incomplete data cannot be the basis for international and national information, education and public awareness about the risk of losses caused by the winter storm and the need to reduce the risks associated with it.**

The study allowed to establish that the use of the number of people without electricity in Poland during this event would justify the description of the phenomenon as a disaster. It results from the fact that only the United Kingdom and Poland could be classified as affected by the natural disaster, using "more than 100 people affected" as a criterion. The selected event is an example of the use of various data, illustrating the effects of the phenomenon. **On the one hand, the study revealed** the misuse of the term "disaster", on the other - misinformation in the number of people affected. In addition, the study pointed to the lack

of a clear definition of the terms describing the **social aspect of the disaster**: people affected (*casualties*), as well as the existence of two definitions of "affected people" - general (ONS, 2013) and detailed (Reinhard 2004) which was the key definition in this study.

The study also drew attention to the need to separate short-term from long-term effects (e.g. of a health and economic nature), which are usually not estimated and made public. The secondary effects should also be assessed and made public.

In Poland, there is also the lack of publicly available final data on the consequences of natural disasters (final data / quantitative assessment, not estimated data shortly after the event, which usually do not include all losses) with the separation of their impact on: state budget, private sector in financial categories and the community as well as insurers. **The following are the most important results of this study:**

- **indication of the misuse of the term "disaster" in the case of physical phenomena without an analysis of the effects,**
- **identifying the gap regarding the method of calculating the number of people affected in the definition of a disaster, characterizing the social effects of cyclone Xaver in 2013 in Poland and Great Britain,**
- **focus on social disinformation resulting from the abovementioned gaps (the hidden meaning of data describing the number of people affected by the phenomenon); the analysis revealed significant differences in the description of the number of people affected by this phenomenon,**
- **indicating the legitimacy of applying a detailed definition of casualties,**
- **indicating the need to separate the short and long-term effects in the event of a given disaster and the creation of databases that would allow addressing the total impact of disasters on the society and the local and national economy,**
- **drawing attention to the fact that data on people affected by the incident constitute an important argument of information and social education in the reduction of the risk of losses,**
- drawing attention to winter storms in Poland, which should be taken into account at all stages of risk reduction;
- drawing attention to the fact that rigid adherence to criteria for economic losses exceeding 1% of GDP of a given country or people affected by more than 1% of the population is important from the global perspective but, at the national level, leads to perceiving those damages as insignificant, hence it requires detailed research and local activities to achieve progress in reducing socio-economic risks.

Summary and practical application of the research: The study revealed that "affected people", as a criterion defining an event, are crucial in justifying the use of the term "disaster" in the case of cyclone Xaver in 2013 and the actual impact of the phenomenon

on the society was much larger and more complex. In the face of social consequences (the number of people affected), the issue of assessing the size of this group seems to be important in defining the natural disaster and in the implementation of the of Sendai Framework. **Appropriate (complaint with the meaning) use of the term natural disaster is also important due to:**

1. Estimation of intermediate losses in the context of people affected;
2. The use of specific data to describe the effects brings us closer or away from the initial assessment of social vulnerability;
3. Relevance of targeting and adjustment of help and strategy to a specific group of casualties;
4. The need to build social awareness allowing to increase resilience and build resistance to winter storms, and consequently also to other hazards.

It is equally important to estimate long-term effects (quality of life reduction, difficulties in everyday life) and creating adequate local strategies and activities in response to them.

Improving the quality of information provided to the public and institutions about the consequences of disasters is associated with the development of an international data model that can become an important impulse to create a universal standard of data collection in individual countries and then help local activities. It should be noted that an event may not be considered a disaster in national terms, while it may be considered a disaster in the national context. The question seems to be whether an event in the region of a given country causing losses on the national scale should not be reflected in international databases describing national disasters? Should the weight of regional losses exceeding the established national event criteria be recognized and called a natural disaster? The discussed topic requires continuation of theoretical and practical work.

Theoretical considerations on social vulnerability and quantification (**publication 1 and 2**) were accompanied by parallel search for the possibility of identifying floodplains: (i) hazardous areas for humans, requiring the modification of the management, (ii) and safe areas (publication 4), following the research model to locate vertical evacuation stations in the case of tsunamis (Engstfeld et al. 2010, Wood et al. 2014) **or possible resettlement to safe areas and changes in the use of high flood risk areas (publication 4)**, following the experience of Rapid City in South Dakota after the flood in 1972 Considering local research as very important in order to effectively reduce risk, I undertook research into the identification of risk areas, the identification of which should potentially be a facilitation of accurate implementation of the local risk reduction policy. This search was a response to the observed loophole in ecophysiological studies in Poland (Journal of Laws no. no. 155 item 1298) and there is no detailed reference to natural hazards (Cichocki 2006). The direction of the concept has also been marked by works indicating that the quality of life contains an element of the sense of security including natural hazards (Wojciechowski 1986), and the perceptibility of the threat and the probability of occurrence,

among others natural disaster affects the assessment of the quality of life, the environment and the landscape in which we live (Wojciechowski 2004).

The research concept that I initiated was caused by the observation of reports on the effects of floods in 1997 in the Odra valley. Poland suffered severe consequences of several floods (e.g. 1997, 2001, 2010). The analyzes were motivated by implemented Directive 2007/60/EC of the European Parliament and of the Council, as well as the demand for research in the field of local spatial planning (Cichocki 2006) and the concept of leaving space for the river (Nijland 2007). The publication of a cartographic study of the Odra floodplains after this incident (Rast et al. 2000; OderRegio, 2014). In the case of difficult (at the time) access to spatial data (Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 (called INSPIRE) obliging Poland to create a national spatial information infrastructure was completed by entering into force the law regulating this issue on June 7 2010, "Atlas terenów zalewowych Odry" (Rast et al. 2000) has become a determinant in proposing a relatively simple solution to the methodical risk analysis in this region.

The adopted research concept was implemented as part of the thematic cycle of master's thesis on the development of the Oder floodplain area I proposed and conducted. I presented the initial methodological solutions at the International Scientific Conference "Gospodarka Przestrzenna Społeczeństwu" (Spatial Management for the Society) in Poznan in 2010 and in the publication (Rucińska, Osówniak, Kacprzak 2012). Theoretical studies and the recognition of definitions (**publication 1**) and the strategy for minimizing the effects of natural disasters promoted by UNISDR have contributed to the development of the methodological solution. **The research question was: how to identify areas of the highest risk of losses as a result of floods, with particular emphasis on social losses, while indicating areas safe for the population at the local level?** Identification of such areas is crucial for reducing social losses and potential reduction of social vulnerability by limiting the exposure of residential development and land use to areas at high risk of a natural disaster. The answer to this question was based on topographic maps of flood plains and the extent of flooding of land by the Odra River in recent years, taking into account extreme floods in 1997. Thus, the research concept is located in a group of works with deterministic research methods, using GIS techniques (ArcGIS software). **The aim of the work was to propose a methodical solution allowing to indicate the spatial distribution of flood risk and the quality of spatial management (land use), identifying both the areas used in a manner justified for the safety of the population, as well as those requiring modification.** The aim was to identify key risk areas and risk-free areas from the point of view of social activities in floodplains, on the example of the neighborhoods of Wrocław and Racibórz in the Odra valley. The research was also to enable determination of the percentage share of rationally managed areas.

The assumption I made was spatial analysis using a deterministic method. The existing maps of the floodplains (Rast et al. 2000) developed based on the extreme flood in 1997. In my research, I used a literature study on my terminology (**publication 1**). **I assumed that the two variables that represent the risk are areas with the delimitation of several ranges of floods and different land use, where I considered the safety of society as the most important element.** An important move in the implementation of the study was the adoption of the existing method of class differences (Dumanowski, Plit 1985, Walewski 2006) to a new geographical problem and research problem, i.e. **risk and rationality analysis of the development of the flood plain.**

The modification of the existing **method consisted in abandoning the absolute values present in the method, which allowed to indicate (i) the areas of the highest risk and the most inadequately managed in terms of population security, (ii) the least risky areas mismanaged in terms of population security (i.e. areas for potential safe use), (iii) areas rationally managed in relation to civil security.** The advantage of the **method** in this case is the use of qualitative research (point bonitation method - widely used in geographical analyzes, sometimes criticized by users stochastic methods) and purposeful allocation of the largest number of weight points for housing development characterizing the area cumulated by the presence of population, which corresponds to the population exposure and the possibility of incurring losses (for example - material, periodic or permanent) in the form of decreasing the quality of life during the disaster and after the natural disaster in the period of return to normality, experiencing trauma, losing a job, etc.).

The study allowed to determine a convenient number of classes (i.e. 4 classes, equal number allows to divide classes evenly, and increasing the number of classes leads to increased accuracy of areas with extreme features), determine the method of land use classification, successfully test the ArcGIS method, specify the basic field: 250 x 250 m as satisfying assumption of detailed spatial analysis for the subject taken (it allowed to indicate the level of detail).

An important result of the study was, in addition to identifying extremely risky areas for people (class difference: +3), the indication of the areas with the lowest social risk (class difference: -3). The modification made it possible to indicate also two types of land (two subgroups) belonging to rationally managed losses characterized by low risk, i.e. **rationally managed and managed** in an acceptable manner, separated from the optimal "zero" class (class difference: zero; full compliance class). The result of a methodical solution is to obtain spatial identification of areas with maximum and minimum risk and rationality of use expressed in terms of quantity. The methodical solution has been verified on several sample areas in the Odra valley, which were cities adjacent to areas with a lesser degree of urbanization. The study shows that the areas rationally managed in terms of population safety and their activities in floodplains represent 36%

of Wrocław area and 15% of Racibórz area. **The following are the most important results of this study:**

- **methodological solution allowing to identify areas rationally (and acceptably) managed in the context of flood risk;**
- **indicating areas that should potentially be subject to limitation of residential development and use due to the possibility of losses, and thus should not be the purpose of development and housing construction;**
- **indicating areas safe for the population and not generating risk due to residential investments (already developed and previously undeveloped);**
- **application of the GIS technique (ArcGIS software) and creation of vector maps;**
- **percentage determination of the area with a specific quality of development, necessary for comparisons (evaluations) of changes taking place over time;**
- **enabling assessment of the quality of development of floodplains at the local level, with particular emphasis on the presence of population and social risk.**

Summary and practical application of research: Identification of areas requiring modification and management to reduce social losses, i.e. with the highest social risk (without neglecting the economic risk) is an indication for activities where the manner of land use and development should be modified, reducing in the first place the presence of residential buildings in the area of the highest flood risk. The methodical solution enables, to a certain extent, the implementation of the concept of leaving the river space by indicating the areas with the lowest risk for their development and investment.

The methodical solution allows to indicate areas rationally used, where a strong modification is not necessary. The adopted solution allows to indicate to the public the risk areas thus shaping their awareness, and the administration - to develop strategies to reduce social and economic losses in identified areas requiring modified action (e.g. adaptation of the investment to the type of place - residential construction and sensitive infrastructure facilities in safe areas; recreational areas in higher risk areas).

Estimation of the area of a given quality of floodplain management allows to make a targeted modification of the development with securing the quality of social life. This approach allows you to go from the crisis management strategy to the risk management strategy, according to the Sendai Framework.

Continuation of theoretical considerations on social vulnerability to natural hazards (**publication 1, 2**) was the search for the possibility of its quantification in Poland (presentation

during the *International Geographical Union Regional Conference, Changes, Challenges, Responsibility*, 2014). Preliminary work has resulted in the use of the vulnerability concept (Villagran De León 2006). The research area was the Central Vistula Valley (work was carried out as part of the research project: Stochastic Flood Forecasting System (on the example of the Vistula section from Zawichost to Warsaw, under the direction of prof. dr. hab. Renata Romanowicz). **I was bothered with two basic questions: Is it possible to use the existing susceptibility model for spatial analysis of social vulnerability and estimate social vulnerability to threats in Poland at the local level? The aim of the study** was to apply the selected susceptibility model in Polish conditions and to present the spatial distribution of social vulnerability in a selected area, in the smallest administrative units (communes), using publicly available data of the Central Statistical Office. The conclusions from my previous studies contributed to the study, indicating the need for such local analyzes, using reliable national statistical data collected in a systematic way. The aim was to identify the variables that characterize the social vulnerability as fully as possible in Poland and to identify the communes with the highest social vulnerability, thus constituting the weakest social weaknesses in risk reduction at the local level. Based on the theoretical basis of vulnerability (**publication 1, 2**) and the existing vulnerability model (Villagran De León 2006), I quantified social vulnerability to natural hazards in a selected area, in selected municipalities in Poland, in accordance with the need to conduct local research. I took into account the main factors determining the behavior and the ability to make decisions and social activities in the face of threats, which were: age, health, education, social status and gender. I selected 13 variables that describe the vulnerability as fully as possible and considering the theoretical relations between its elements (**publication 1**), then carrying out standardization. The value of the adopted synthetic index corresponds to the ratio of social exposure and social susceptibility to coping skills (in the commune), taking into account the characteristics of variables divided into stimulants and destimulants. To quantify social vulnerability to natural hazards, I used, among others: population density index, absolute value of people in pre-productive age (14 years and less) and post-production population (women: from 60 years upwards, men from 65 and over), health (using its reverse in the form of fatalities caused by various diseases), the number of women, data on unemployment, people benefiting from social assistance, including help for children. I also took into account such features as social migration, presence of foreign tourists and own income in the administrative unit, detectability of selected crimes, health care system (presence of hospital emergency departments and air ambulance), expenditure on safety and fire protection in the commune. Lack of generally available data of the Central Statistical Office (at the level of communes) with a percentage share of persons with higher education and a specific property status limited the analysis (higher share of people with higher education and / or social status

potentially decreases social vulnerability). I made the imaging of spatial diversity of public susceptibility using GIS techniques (ArcGIS software).

The study allowed to apply in Polish literature the vulnerability model of Villagran De León (2006) and specify that in the Central Vistula Valley communes with high and medium social vulnerability

are predominant. Usually, these are administrative units with high population density, such as the Warsaw districts of Praga Południe and Śródmieście, but also Wilanów, with a few times less population density, and a coefficient in the same range. **The following are the most important results of this study:**

- **application of the selected vulnerability model in Polish conditions,**
- **selection of thirteen variables characterizing social vulnerability to natural hazards in Polish conditions, at the local level,**
- indication of the importance of the complex of characteristics characterizing vulnerability in risk assessment,
- the fact that the adopted social vulnerability index can be used to analyze social vulnerability to other threats in Poland,
- **indication of limitations resulting from the lack of generally available data on the level of education and affluence of the local community in the commune; data on ethnic groups, e.g. Romani people, which I have already noticed in my initial research (a paper during the international conference IGU 2014),**
- **identification of municipalities with the highest social vulnerability.**

High social vulnerability is a factor increasing the risk of socio-economic losses in the event of a natural disaster. On the basis of the conducted research, I indicated the municipalities that require the development of a special risk reduction strategy, adequate to social vulnerability. In order to get a full assessment of social vulnerability, further local analyzes need to be supplemented with the data indicated above.

While conducting a broad theoretical study on natural disasters, I was looking for shortages (gaps) in the functioning of society, which may be the causes of the still growing social losses. The specificity of a natural disaster implies bearing in mind both the period preceding the event (hurricane, quake, flood) and the period after it. Understanding social vulnerability as an element of risk, which consists of actions of individuals, the local community, as well as employees of institutions or companies, I decided to take a closer look at natural threats and disasters from social activity. It was disturbing for me to see the specific interest of people in natural hazards and natural disasters for travel purposes manifested by the desire to visit places affected by natural disasters. A study of this interest led me to the conclusion suggesting continuous

(uninterrupted) interest in areas destroyed by extreme natural phenomena, such as tsunami in the Indian Ocean region in 2004 and Hurricane Katrina in 2005 supported by significant numbers of arrivals to these subjects of natural destruction, which never reaches zero. This contributed to a deeper perspective of the problem. The issue of natural hazards and natural disasters as well as specific tourism undertaken by me (**publication 6, 7**) that I initially treated as side ones

because of the conclusions important for social research on reducing the risk of natural disasters, was included in the presented scientific achievement.

The literature review shows (resulted during the study period) that the leading form of occurrence of disasters in tourism research is the estimation of losses due to destruction and loss of monuments as a tourist attraction. In the issues of risk reduction, this topic includes preparing tourists for threats, developing escape routes, and the aim of the works is to minimize losses in tourism (Backen and Hughey 2013, Tourism 2020 Project, UNEP, 2007).

In the context of my research (before obtaining a doctoral degree), it was new for me to treat the disaster affected places as the tourist destination of the Thailand coast after the tsunami in 2004, which Cohen described (2005). Other extreme events - Hurricane Katrina in 2005, earthquake in Haiti in 2010 strong Eyjafjallajökull eruption - also in 2010 and the meteorite in Chelyabinsk in 2013 (which did not cause any disaster) contributed to the activity of tourists. I assumed that **in these specific cases people were not motivated by fear of threat and disaster, and the arrival at the scene did not result from participation in a scientific expedition or willingness to help. People's irrational** (in my understanding) actions became the goal of further theoretical research, in which I put a number of questions (**publication 6**). **One of the most important issues was: whether, from a theoretical point of view, the phenomenon of interest in natural hazards and natural disasters may be one of the types of tourism, and if so, which one?** The question was justified in the sense that, if confirmed, the potential development of this type of tourism would imply taking new measures to reduce the risk of disaster. Another question was: Is the existence of such tourism an ethical problem and does this phenomenon belong to a group of other phenomena related to geographical duality? **The aim of the study was to undertake a theoretical attempt to determine the motivation of tourists and the specific features and tourist functions of this type of social activity, as well as the location of the existing social and natural process in the overall tourism structure, considering its dissimilarity and referring to ethical issues. Identifying them was the starting point for the assumption that the existence of this type of tourism is potentially an issue that should be taken to reduce the risk of natural disasters due to the possibility of generating negative secondary effects.** As a result of the study work, it was found that the interest in natural hazards and natural disasters can be called a new stage of tourist interest, caused by wide access to information and education about natural phenomena. Typically,

extreme natural phenomena they result in lower interest in a given destination; immediately after the natural disaster, there is the decrease in interest in the place of the disaster or the slowdown in the inflow of tourists. Sometimes, after the catastrophe, places of remembrance, burial, museums are created, which perpetuate the memory of the casualties and the place of their death. These places, visited in the following years, are classified as a thanatourism, as is the case, for example in the case of Ground Zero, indicated by other authors (Seaton 1996, Tanaś

2006, Sharpley, Stone 2009). However, in some cases, interest is revealed much earlier, i.e. shortly after a catastrophe or even during a natural threat - examples are hurricane Katrina (Louisiana), tornadoes in Jopli (Missouri), tsunami in Thailand in 2004 and in Japan in 2011

The research allowed to state that journeys to experience natural hazards and natural disasters fulfill a lot of theoretical tourism conditions, which can be described as: tourism of a narrow group of people characterized by atypical requirements (reminiscent of specialized and extreme tourism with difficult accessibility) which are mobile capability (efficiency) and strong motivation to implement it. The analysis made it possible to distinguish tourism from natural hazards and natural disasters due to the characteristics of the subject and forms of tourism and to establish that it is the reverse of other forms of tourism, for which undisturbed space, unspoiled natural environment and no visible signs of anthropopression are important, and the main advantage is the dynamics of phenomena or the scale of effects (including economic and social), hence the value may expire and its uniqueness is periodic. The location (destination) in this case determines the genesis of the phenomenon and the area of risk and the occurrence of destructive effects (material, social), but its limits are difficult to determine. These were the reasons for the location of this social activity in dark tourism (*dark tourism*).

The analysis of the **interest of tourists depending on the moment of occurrence of** natural hazards allowed to distinguish four periods: interest in an event in the distant past, long time after the event, shortly after the event, during natural hazards, but before the catastrophe, when dynamics of the phenomenon is important (**publication 6**). Further analysis allowed to apply the same criterion to respond to the disaster (**publication 7**).

The study showed (**publication 6**) that the discussed tourism is of a dual nature, and tourism disasters particularly cause antagonistic consequences with negative and positive functions (deepening trauma, but also give economic help and may affect the development of a destroyed area, which should rather be treated as a reconstruction). In addition, tourism of natural hazards and natural disasters raises ethical dilemmas, in particular - natural disasters - due to motivation and function, as well as due to direct social contacts with casualties, e.g. by observing or

perpetuating human suffering, poverty, diseases (including trauma) on various types of digital media. **The following are the most important results of this study:**

- **determining that, from a theoretical point of view, the implementation of a trip to the place of a natural threat and a natural disaster can meet the conditions of tourism,**
- **indicating new features that indicate this type of tourism is different from others, which are: (i) a specific travel area, (ii) travel period relative to the moment of the event,**

(iii) generating ethical problems that may result from motivation and function,
- **drawing attention to the fact that the new form of tourism (*dark tourism*), which - with the observed changes in the climate, the potential increase in the number of extreme phenomena and the possibility of traveling on a global scale - may develop.**

Summary and practical application of research: Identification of tourism for natural hazards and natural disasters revealed the area of social and economic activity, which is a potential risk aggravating factor (through the presence of additional people requiring potential protection in the area of threat, destruction or epidemics - in general - a natural disaster). In order to minimize the risk of negative consequences of a disaster, a new approach to tourism would be required that would take into account its potential direction of development. An important implication for the practice is also greater attention to the form and content of the message contained in the information on natural hazards and natural disasters, so that they do not lose the nature of information, warning or education in order to protect human life and health (reducing the risk of social losses).

The results of the theoretical study (**publication 6**) confirmed the purposefulness in further study (**publication 7**) and addressing the problem of locating tourism in natural disasters in the so-called dark tourism (*dark tourism*). It fits in in the academic discourse (Foley, Lennon **1996**, Seaton **1996**, Lennon, Foley **2000**) on the need to outline the meaning separating dark tourism from other similar activities (Sharplay, Stone **2009**). **The research question was: are there any theoretical foundations of the existence of disaster tourism for thanatourism or dark tourism? This question is important because of the need to analyze the possibility of increasing the risk of incurring social losses in the following decades, in the case of development of this type of tourism (e.g. identification of new threats and consequences).** The main goal of the theoretical study was to identify potential differences between thanatourism and dark tourism and to determine the dimension of dark tourism (*dark tourism*).

Literature review allows to state that the definitions of thanatourism refer to individual motivations

related to history and culture (Seaton 1996, Tanaś 2006, Sharpley, Stone 2009), while in the case of dark tourism the motivations are: the need for emotions (Foley, Lennon 1996), self-realization (Krippendorf 1987) and the dimension of risk and security (Pearce 1988). Cohen (1972) noticed a link between security and the choice of whereabouts, similarly to Wojciechowski (1986, 2004). In addition, dark tourism is based on location (Stone 2006) and is associated with places of death and disaster (Foley, Lennon 1996). In addition, there are four subtypes of tourism based on varying degrees of interest in death (Sharpley, Stone 2009). Considering periods that may diversify tourists' interest in natural hazards and natural disasters (**publication 6**) and taking

the time distance from the moment of greatest dynamics as a criterion, I narrowed down the considered periods to three groups, indicating subtypes of natural disaster tourism: (i) during or shortly after an extreme event ; (ii) in longer time after the event; (iii) when the event took place in the distant past in (**publication 7**). Based on Stone's darkness scale (2006) and Sharpley (2009), using the accepted criterion for the occurrence of the event, I distinguished three levels of dark tourism, which includes tourism regarding natural disasters: 1. a pale shade tourism - events distant in time, 2. gray tone - in a longer period of time from the event; 3. black shade - during or shortly after an extreme event. **The biggest risk is generated by the third, "darkest" degree, i.e. black tone of tourism of natural disasters, characterized by travels to the places of the event which are the least distant in time (generating the greatest emotions and ethical dilemmas).**

Dualism and ethical problems are related to the actors of the so-called dark tourism. I realized that the ethical issues arise with the behaviors and actions reveal the following six social relationships based on the event of a natural disaster: (i) journalists-potential tourists (information journalism becomes the inspiration for the tourists and indicates new challenges and areas becoming destination), (ii) the organizers of dark tourism - tourists (organizers benefit, directly or indirectly, from organizing or transport, organizers educate during the trip, "force" - with their presence in the area of the disaster - the response of the local or national authorities responsible for the situation and status in a given area), (iii) journalists/photographers-tourists (registration impact and affected people belongs to the journalism, however, may have a different motivation, e.g. generating benefits for your company or yourself; dissemination of news is getting help for casualties; There is a lack of acceptance by the affected registration of persons and places), (iv) the tourists - the local community (the tourists create further trauma and, at the same time, improve the local economic situation, leaving in place the disaster money for provided services) (v) the representatives of the local administration-tourists-citizens (tourists produce a kind of pressure on the authorities to take these mitigating actions at a time the tragedy, also in the future for prevention; the authorities promote tourism in the region is not known, however, how much goes to the casualties; the dignitaries shoot against the damage at the site of the disaster), (vi) relations within the various local affected communities (observed antagonistic reactions and

The research allowed to recognize the definition of social vulnerability as an element of risk and define a natural disaster from the perspective of the definition of global organizations addressing this issue. The research also allowed to propose a concept of a methodical solution indicating floodplain areas requiring changes in spatial planning in Poland and the concept of differentiation of natural disasters from other types of tourism.

The test results indicate:

1. on the legitimacy of applying a detailed definition of casualties (in the case of international definitions) and data on people affected, as they constitute an important argument of information and social education in the reduction of risk of losses,
2. on the need to separate the short and long-term effects in the case of a given disaster in order to reliably determine the consequences of an event,
3. on the concept of a methodical solution allowing identification of areas rationally managed in the context of flood risk,
4. on the possibility of assessing the quality of development of floodplains at the local level, taking into account the social aspect of flood risk, using ArcGIS techniques,
5. application of the selected susceptibility model to Polish conditions in order to assess social vulnerability to natural hazards at the local level,
6. synthetic indicator of social vulnerability based on natural hazards on selected variables that characterize Polish conditions, universal to the analysis of vulnerability to various threats in Poland.

The research has identified:

1. a gap regarding the method of calculating the number of people affected when applying the international definitions of a natural disaster and the effects of the cyclone Xaver in 2013 in Poland and Great Britain, which may lead to social disinformation and other consequences,
2. areas dangerous to people due to flooding in a selected area studied at work, which should potentially be subject to limitation of residential development instead of being the object of residential and economic development,
3. areas safe for the population not generating risks due to residential investments,
4. percentage share of areas with a specific quality of management necessary to compare changes occurring during the implementation of the risk reduction policy,
5. communes with the highest social vulnerability on a selected example in Poland requiring risk reduction activities.

Theoretical studies of dark tourism *was a response to the need for discussion formulated in the literature*. They drew attention to the potential consequences of the development of this type of tourism, such as generating ethical problems that may arise from its motivation and function. They also allowed to extract:

1. "Darkest" tourism that generates the risk of loss of life and health or deepening the negative consequences of the event,
2. social relations of several groups of dark tourism actors, potentially important from the point of view of reducing the risk of a natural disaster.

Elimination of deficiencies in the unification of Polish terminology, reliable application of the definition of international natural disaster and undertaking adaptation and modification activities at the local level, as well as monitoring activities

tourism regarding natural hazards and natural disasters may contribute to reducing the risk of natural disasters and their consequences.

References

- Adger, W.N. (2006). Vulnerability. *Global Environmental Change*, 16, 268–281.
- Alwang, J., Siegel, P.B., Jorgensen, S.L. (2001). Vulnerability, a View from Different Disciplines, *Social Protection Discussion Paper Series*, No.115, Social Protection Unit, Human Development Network, World Bank.
- Annual Disaster Statistical Review, Report 2017. UCL, CRED, USAID.*
- Becken, S., Hugheyb, K.F.D. (2013). Linking tourism into emergency management structures to enhance disaster risk reduction, *Tourism Management*, 36, 77–85.
- Biernacki, W., Bokwa, A., Działek, J., Padło T. (2009). Społeczności lokalne wobec zagrożeń przyrodniczych i klęsk żywiołowych, IGI GP UJ, Kraków.
- Birkmann, J. (2006). Measuring vulnerability to natural hazards. Towards disaster Resilient societies, UNU-EHS, Tokyo-New York-Paris, pp. 524.
- Bujak, Fr. (1932). Przedmowa, [In:] Walawender, A., Kronika klęsk elementarnych w Polsce i krajach sąsiednich w latach 1450-1586, Lwów, Instytut Popierania Polskiej Twórczości Naukowej, Warszawa.
- Cardona, O.D. (2006). A system of indicators for disaster risk management in the America Indicators for risk management. [In:] J. Birkmann (Ed.) *Measuring Vulnerability to Natural Hazards. Towards Disaster Resilient Societies*, United Nations University (UNU), Tokyo – New York – Paris, 189-209.
- Cichocki, Z. (2006). Problematyka opracowań ekofizjograficznych do projektów miejscowych planów zagospodarowania przestrzennego. Warszawa: Dział Wydawnictw Instytut Ochrony Środowiska, Ministerstwo Nauki i Informatyzacji KBN, pp. 41.
- Cohen, E. (1972). Toward a sociology of international tourism, *Social Research*, 39 (1), 164–182.
- Cohen, E. (2005). Tourism and Disaster: The Tsunami Waves in Southern Thailand. [In:] *Tourism in Science Research*, (Eds) Alejski, W., Winiarski, R. Academy of Physical Education in Kraków, University of Information Technology and management in Rzeszów, Kraków-Rzeszów, pp. 80–14.

- CRED, 2018. Economic Losses, Poverty and Disasters 1998-2017. Centre for Research on the Epidemiology of Disasters, UNISDR https://www.unisdr.org/files/61119_credeconomiclosses.pdf (Accessed 2019.02.16)
- Cutter, S. (1996). Vulnerability to environmental hazards. *Prog Hum Geogr* 20 (4), 24-29.
- Cutter, S.L., Emrich, Ch.T., Webb, J.J., Morath, D. (2009). Social Vulnerability to Climate Variability Hazards: A Review of the Literature, Final Report to Oxfam America, Hazards and Vulnerability Research Institute, Department of Geography University of South Carolina, Columbia, SC.
- Davidson, R. (1997). An urban earthquake disaster risk index. Report No. 121, The John A.
- Dumanowski, B, Plit, F. (1985). Metoda oceny środowiska przyrodniczego na przykładzie Afryki. *Prace i Studia Geograficzne*, 8, 9–44.
- Dyrektywa 2007/2/WE Parlamentu Europejskiego i Rady z dn. 14 marca 2007 r. ustanawiająca infrastrukturę informacji przestrzennej we Wspólnocie Europejskiej (INSPIRE), <https://eur-lex.europa.eu/eli/dir/2007/2/oj> (Accessed 2011.03.15)
- Dyrektywa 2007/60/WE Parlamentu Europejskiego i Rady z dn. 23 października 2007 r. w sprawie oceny ryzyka powodziowego i zarządzania nim, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32007LQ06Q&from=EN> (Accessed 2011.03.15)
- Dz. U. nr 155 poz.1298, Rozporządzenie Ministra Środowiska z dn. 9 września 2002 r. w sprawie opracowań ekofizjograficznych.
- Działek, J., Biernacki, W., Konieczny, R., Fiederń, Ł., Franczak, P., Grzeszna, K., Listwan-Franczak, K. (2017). Zanim nadejdzie powódź. Wpływ wyobrażeń przestrzennych, wrażliwości społecznej na klęski żywiołowe oraz komunikowania ryzyka na przygotowanie społeczności lokalnych do powodzi. Instytut Geografii i Gospodarki Przestrzennej Uniwersytet Jagielloński w Krakowie, Kraków, pp. 478.
- EM-DAT, Emergency Disasters Database, 2015. <http://www.emdat.be>, (Accessed 2015.06.20).
- Engstfeld, A., Killebrew, K., Scott, C., Wiser, J., Freitag, B., El-Anwar, O. (2010). Tsunami safe haven project—report for Long Beach, Washington. Department of urban design and planning, college of built environments, University of Washington.
- Foley, M., Lennon J. J. (1996). JFK and dark tourism – a fascination with assassination, *International Journal of Heritage Studies*, 2, 4.
- Gabor, T., Griffith, T.K. (1980). The assessment of community vulnerability to acute hazardous materials incidents. *Journal of Hazardous Materials*, 8, 323-33
- Gall, M., Borden, K.A., Cutter, S.I. (2009). When do losses count? Six fallacies of natural hazards loss data, *Am. Meterol. Soc.* 90 (6), 779-809.
- Glantz, M.H. (1996). Currents of change: El Nino's impact on climate and society. Cambridge University Press, Cambridge, pp. 194.
- Glantz M.H. (2002). La Nina and Its Impacts. Facts and Speculation, United Nations University Press, Tokyo – New York – Paris, pp. 264.
- Graniczny, M., Mizerski, W. (2007). Katakizmy przyrodnicze, PWN, Warszawa, pp. 198.
- Greiving, S. (2006). Integrated risk assessment of multi-hazards: a new methodology. Natural and technological hazards and risks affecting the spatial development of European regions. Geological Survey of Finland, *Special Paper*, 42, 75–82.
- Hewitt, K. (1997). *Regions of Risk: A Geographical Introduction to Disasters*, pp. 389.

- International Bank for Reconstruction and Development/The World Bank, 2013. <https://openknowledge.worldbank.org/bitstream/handle/10986/13108/758470PUB0EPI0001300PUBDATE02028013.pdf>, (Accessed 2015.06.20).
- IPCC, 2001. TAR Climate Change 2001. International Panel on Climate Change (IPCC). Cambridge University Press.
- Kates, R.W. (1985). The interaction of climate and society. [In:] Kates, R.W., Ausubel, J.H., Berberian, M. (Eds.), *Climate impact assessment*, SCOPE 27, New York: Wiley, 3-36.
- Krippendorf, J. (1987). *Understanding the Impact of Leisure and Travel*. Oxford: Butterworth-Heinemann, pp. 160.
- Kundzewicz, Z.W., Kowalczak P. (2008). *Zmiany klimatu i ich skutki*. Wyd. Kurpisz, Poznań, pp. 206.
- Kundzewicz, Z.W., Matczak, P. (2010). Zagrożenia naturalnymi zdarzeniami ekstremalnymi. *Nauka* 4, 77-86.
- Laosuthi, T., Selove, D.D. (2007). Does El Nino Affect Business Cycles? *Eastern Economic Journal*, 33, 1, 21-42.
- Lennon, J.J., Foley, M. (2000). *Dark Tourism: The Attraction of Death and Disaster*, Continuum, London 2000, pp. 168
- Lisowski, A. (1996). Antropogeniczne uwarunkowania klęsk żywiołowych. *Przegląd geograficzny*, 68 (1-2), 67-78.
- Lisowski A. (2000). Klęski żywiołowe – od pokory wobec losu do akceptacji ryzyka, *Czasopismo Geograficzne* 71 (1), 43-51.
- Manche, Y. (1987). Vers une cartography spatio-temporelle multiechelle des risques naturels en montagne [Towards spatio-temporal multiscale cartography of natural risks in the mountains]. Proceedings of the conference *Les temps de l'environnement*. Communications des Journées du Programme Environment, Vie et Sociétés Pirevs; 1987; Toulouse Centre des Congrès; 1997:305–310.
- Menke, U., Nijland, H. (2008). Introduction. Flood Risk Management and River Restoration. 4th ECRR Conference on River Restoration Italy, Venice S. Servolo Island 16-21 June 2008.
- Munich Re, www.munichre.com (Accessed 2015.06.29).
- Nijland H. Room for the Rivers Programme. Cost of flood protection measures in the Netherlands [Internet]. Paris: Programme Directorate Room for the River, Ministry of Transport, Public Works and Water Management, International Network of Basin Organization, 2007. <http://www.riob.org/IMG/pdf/roma2007nijland.pdf>, (Accessed 2012.09.06).
- OderRegio, 2014. Results, Maps. Available at: <http://www.oder-regio.org/index.php?sprache=pl&hm=resultate>, (Accessed 2014.03.03).
- ONS, 2013. Office for National Statistics, Statistical bulletin: Families and Households, The UK, 2013. <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/bulletins/familiesandhouseholds/2013-10-31#household-siz>, (Accessed 2017.09.10).
- Ozga-Zielińska, M. (2003). *Wielka Encyklopedia PWN*, Warszawa.
- Pearce, D. (1988). The spatial structure of coastal tourism: a behavioural approach, *Tourism Recreation Research*, 12 (2) 11–14.
- Peduzzi, P., Dao, H., Herold, C. (2002a). Global Risk And Vulnerability Index. Trends per Year (GRAVITY) United Nations Development Programme. Bureau of Crisis Prevention & Recovery (UNDP/BCPR).
- Peduzzi, P., Dao, H., Herold, C. (2002b). Global Risk And Vulnerability Index. Trends per Year (GRAVITY). Phase II: Development, analysis and results, The "GRAVITY-Team", United Nations Environment Programme, Global Resource Information Database - Geneva, UNEP/DEWA/GRID-Geneva.
- Pelling, M. (2003). *The Vulnerability of Cities. Natural Disasters and Social Resilience*, Earthscan Publications, London.
- Plit, F. (1989). Geografia klęsk żywiołowych – nowa gałąź geografii? *Przegląd geograficzny*, 61 (1-2), 115-120.

- Plit, F. (2016). Dezintegracja polskiej geografii. Wizja subiektywna. [In:] Malik, W., Suliborski, A., Wójcik, M. (Eds) *Podstawowe idee i koncepcje w geografii, Nowe i stare perspektywy oraz ujęcia w geografii na przełomie XX i XXI wieku*. 9, 47-59. WUŁ. Łódź.
- Polackówna, M. (1925). Wahania klimatyczne w Polsce w wiekach średnich. *Prace Geograficzne* (wydawane przez prof. E. Romera), 5. Książnica – Atlas. Lwów – Warszawa.
- Polsky, C., Neff R., Yarnal B. (2007). Building comparable global change vulnerability assessments: The vulnerability scoping diagram, *Global Environmental Change* 17, Elsevier, 472–485.
- Queste, A., Lauwe, P. (2006). User needs: Why we need indicators, [In:] J. Birkmann (Ed.) *Measuring Vulnerability to Natural Hazards. Towards Disaster Resilient Societies*, To-kyo: United Nations University, 103-114.
- Ramos Ribeiro, R.R., Rucińska, D. (2017). Analysis of physical factors of the windstorm. Xaver in Poland: post-hazard review, *Weather*, 72 (12), 378–382. DOI: 10.1002/wea.2983.
- Rast, G., Obrdlik P., Nieznański P., (2000). Atlas obszarów zalewowych Odry WWF-Deutschland: WWF-Auen-Institut.
- Reinhard, M. (2004). Natural Disaster Risk Management and Financing Disaster Losses in Developing Countries, Verlag Versicherungswirtschaft, Karlsruhe, pp. 312.
- Rosenzweig, C., Solecki, W. (2014). Hurricane Sandy and adaptation pathways in New York: Lessons from a first-responder city, *Global Environment Change*, 28, 395-408.
- Rucińska, D. (2012).** Ekstremalne zjawiska przyrodnicze a świadomość społeczna, Wydawnictwa Wydziału Geografii i Studiów Regionalnych Uniwersytetu Warszawskiego, Warszawa, pp. 219.
- ***Rucińska, D. (2013).** Mierniki i metod oceny podatności (wrażliwości) społecznej na zagrożenia naturalne - przegląd literatury. Niepublikowany manuskrypt. 27.09.2013 r. Warszawa, pp. 99. Opracowanie zrealizowane w ramach projektu badawczego: Zróżnicowanie przestrzenne wrażliwości społeczeństwa informacyjnego na wybrane zagrożenia naturalne w Polsce, finansowanego przez Narodowe Centrum Nauki; NCN 2012-2015, koordynator prof. dr hab. Piotr Werner WGiSR UW, UMO-2011/03/B/HS4/04933.194000/GR.
- Rucińska, D., Osówniak, J., Kacprzak, A. (2012).** Racjonalność zagospodarowania obszaru potencjalnie narażonego na powódź na przykładzie Wrocławia, [In:] Kantowicz E., Roge-Wiśniewska M. (Eds) *Cywilizacja a środowisko – wyzwania i dylematy*, Wydział Geografii i Studiów Regionalnych UW, Warszawa, 91-117.
- Seaton, A.V. (1996). Guided by the dark: From thanatopsis to thanatourism, *International Journal of Heritage Studies* 2 (2), 234–244.
- Sharpley, R. (2009). *Shedding light on dark tourism: An introduction. The darker side of travel: The theory and practice of dark tourism*, [IN:] Aspect of Tourism Series, (Eds) Sharpley, R., Stone, P. R. Bristol: Channel View Publications, pp. 288.
- Sharpley, R., Stone, P. R. (2009). Aspect of Tourism Series (Eds) Bristol: Channel View Publications, pp. 288.
- Ship, P., Kaspersen R. (Eds) (2015). *World Atlas of Natural Disaster Risk*. IHDP/Future Earth-Integrated Risk Governance Project Series, BNUP, Springer, pp. 368.
- Stone, P. (2006). A dark tourism spectrum: Towards a typology of death and macabre related tourist sites, attractions and exhibitions, *Tourism: An Interdisciplinary International Journal*, 52 (6), 145–160.
- Szewczuk, J. (1939). Kronika klęsk elementarnych w Galicji w latach 1772-1848, *Badania z Dziejów Społecznych i Gospodarczych*, 35, Lwów.
- Tanaś, S. (2006). Tanatoturystyka – kontrowersyjne oblicze turystyki kulturowej, *Peregrinus Cracoviensis*, 17, 85–100.
- Timmerman, P. (1981). Vulnerability, resilience and the collapse of society. Environmental Monograph 1. Toronto: Institute for Environmental Studies.
- Tourism 2020 Project: *Don't risk it! a guide to assist regional tourism organisations to prepare, respond and recover from a crisis*. http://icrtourism.com.au/wp-content/uploads/2013/11/2_Dont-Risk-It-for-RTOs.pdf (Accessed .2015.03.10).

- UNDP, 2007. United Nations Environment Programme 2007. *Disaster Risk Reduction in Tourism Destinations. Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms in Coastal Settlements in Asia - Demonstration in Tourism Destinations, United Nations Environment Programme*. United Nations Environment Programme, Project supported by the European Union, through its Asia Pro Eco IIB – Post Tsunami programme.
- UNISDR, 2015. *Sendai Framework for Disaster Risk Reduction 2015-2030*. <https://www.unisdr.org/we/inform/publications/43291> (Accessed 25.09.2015.09.25)
- UNISDR, 2017. United Nations International Strategy for Disaster Reduction, Margareta Wahlstrom, United Nations Special Representative of the Secretary-General for Disaster Risk Reduction. <https://www.unisdr.org/we/inform/disaster-statistics>, (Accessed 19.09.2017.09.19).
- Villagran De Leon, J.C. (2006). *Vulnerability. A conceptual and methodological review*. Studies of University Research, Counsel, Education, No. 4/2006—Publication Series of UNU-EHS
- Walewski, A. (2006). Methods of examining the nature-man relationships in Warsaw regional geography. *Miscellanea Geographica*, 12, 119–123.
- Walmsley, D.J., Lewis G.J. (1997). *Geografia człowieka. Podejścia behawioralne*, PWN, Warszawa.
- Więzik, B. (Ed.) (2010). Hydrologia w inżynierii i gospodarce wodnej, Monografie Komitetu Inżynierii Środowiska, 68 (1), pp. 463.
- Wojciechowski, K. H. (1986). Problemy percepcji i oceny estetycznej krajobrazu, UMCS, Rozprawa habilitacyjna, Wydział Biologii i Nauki o Ziemi, 28, Lublin.
- Wojciechowski, K. H. (2004). Miejsce postrzeganego krajobrazu w całościowym ujęciu jakości życia. [In:] Śladkowski W. (Ed.) *Annales Universitatis Mariae Curie-Skłodowska, Sectio B*, 59 (13), 213–229.
- Wood, N. (2007). Variations in city exposure and sensitivity to tsunami hazards in Oregon: U.S. Geological Survey Scientific Investigations Report 2007-5283, pp. 37.
- Wood, N., Jones, J., Schelling, J., Schmidlein, M. (2014). Tsunami vertical-evacuation planning in the U.S. Pacific Northwest as a geospatial, multi-criteria decision problem, *International Journal of Disaster Risk Reduction*, 9, 68–83.

Discussion of other scientific-research (artistic) achievements Most of my other scientific and research works oscillate around the main field of research chosen by me and presented as part of the scientific accomplishments (**publications 1-7**). These include:

- Continuation of the study on the possibility of analysis of hazardous areas due to flood and safe risk, using the land use model taking into account social risks (**publication 4**), using public spatial data from satellite sources Copernicus Land Monitoring Service (Corine Land Cover and High Resolution Layers) and Open Street Map (Porczek, **Rucińska**, Lewiński 2018). The preliminary investigation showed that none of the data sets is sufficient to perform an analogous survey using raster data. This is due to several reasons: no set of data in the grid, classification of elements not coinciding with the adopted scale for the survey, resolution not allowing correct identification of necessary objects or lack of some elements of land use, or incomplete description of objects. The solution is to process them in the software, GIS. The obtained results are promising for further research.
- Searching for methods of estimating social susceptibility to natural hazards in order to

describe the spatial diversity of social susceptibility to natural hazards in Poland was carried out as part of a research project led by prof. dr. hab. Piotr Werner: Spatial diversity of the susceptibility of the information society to selected natural hazards in Poland, financed by the National Science Center (2012-2015) based on decision UMO- 2011/03/ / B / HS4/04933,194000/ / 2015, / GR (Werner, Magnuszewski, **Rucińska**, Porczek 2015, Werner, **Rucińska**, Iwańczak 2015a, 2015b). My contribution concerned the review of the concept of risk and vulnerability to natural hazards. The material constituting the contribution to the project was the preparation of an unpublished manuscript (**Rucińska** 2013*)

- Ethical issues related to natural disasters are a different matter. The manifestations of social susceptibility and indifference accompanying the natural disaster have been presented in the collective monograph (**Rucińska** 2017a). In the context of a natural disaster, heroic help and altruism are observed alongside concentration on one's own interests, the desire to satisfy curiosity and the experience of emotions. Geographical and philosophical duality are associated with the phenomenon under discussion. A commercial approach to life, strongly anchored in Machiavellianism and the emergence of new social phenomena with a perspective require the formulation of ethical principles that are a reference to existing attitudes and behaviors, clear and adequate to contemporary social phenomena. The ethics research is being continued.
- Other works belong to the group of issues of the human-environment relationship. These include: characteristics of the negative economic effects of oceanic and climatic oscillations El Niño-Southern Oscillation (**Rucińska** 2010), including in agriculture (**Rucińska** 2009a). I am developing the topic in cooperation with students as part of master's theses (examples are Marlena Mróz 2012*, Przemysław Sitkowski 2018*).
- A publication presenting the use of photography for the purpose of protecting the natural environment (**Rucińska** 2009b) is a manifestation of the combination of scientific, artistic and educational activities.
- The thread of shale gas exploitation belongs to the issues of the human-environment relationship. The study has not been published, only a few papers at scientific / thematic conferences and international debates in the country and abroad (at the Universities of the University of Cape Town in South Africa (scientific conference) and at Stanisław Staszic AGH University of Science and Technology in Kraków and at my alma mater (University of Warsaw) (student debates).

Apart from the publications of the main scientific achievement, after obtaining the PhD I have published in total: 8 peer-reviewed articles in scientific journals including: 4 in English and one on the list of MNiSW "A", IF, and 3 in Polish; 4 chapters in books in Polish; excluding two

publications referring to the achievement of a doctoral dissertation (see a page 34); I have made 6 scientific reviews for 5 foreign / renowned magazines, and 3 reviews for international Polish periodicals (in English); I have made 2 reviews of books in English - including 1 for Springer publishing house. In addition, I have had 8 presentations at international conferences, including 7 in English (excluding the conference on my PhD dissertation) - 4 of them received reviewed scientific abstracts, such as conferences: IGU 2014; 3rd Disaster Risk Reduction (2017); ICEPST 2016 World Academy of Science, Engineering and Technology (2016), 26th Society for Risk Analysis - Europe Annual Conference (2017). The results of the research were also the following: referred to 3 national scientific and presented in the form of posters of the next 3 conferences (including two international ones, in English). In addition, have I participated in 16 conferences or seminars (including 5 international ones). I have edited 4 scientific publications (in Polish and English).

References

- Porczek, M., **Rucińska**, D., Lewiński, S. (2018). Using raster and vector data to identify objects for classify in flood risk. A case study: Racibórz, *E3S Web of Conferences*, 29, 1-13. DOI:10.1051/e3sconf/20182900026
- Rucińska**, D. (2009a). El Nino – La Nina Swing – Spatial Diversification of Impact on Corn Fields. [In:] Wilk, W. (Ed.) *Global Change: Their Regional and Local Aspects. Proceedings of The 6th Polish- Czech-Slovak Geographical Seminar*, University of Warsaw, Faculty of Geography and Regional Studies, Warsaw, pp. 242-246.
- Rucińska**, D. (2009b). Fotografia przyrodnicza jako narzędzie edukacji - od estetyki po dynamikę. [In:] Okołów, G. (Ed) *Edukacja na terenach chronionych. Edukacja jako narzędzie ochrony przyrody*, Kampinoski Park Narodowy, Izabelin, pp. 113-134.
- Rucińska**, D. (2010). Przestrzenne zróżnicowanie ENSO, *Prace i Studia Geograficzne, Przyroda-Człowiek-Region*, 44, 115-138.
- ***Rucińska**, D. (2013). Mierniki i metod oceny podatności (wrażliwości) społecznej na zagrożenia naturalne - przegląd literatury. Niepublikowany manuskrypt. 27.09.2013 r. Warszawa, pp. 99. Opracowanie zrealizowane w ramach projektu badawczego: Zróżnicowanie przestrzenne wrażliwości społeczeństwa informacyjnego na wybrane zagrożenia naturalne w Polsce, finansowanego przez Narodowe Centrum Nauki; NCN 2012-2015, koordynator prof. drhab. Piotr Werner WGiSR UW, UMO-2011/03/B/HS4/04933.194000/GR.
- Rucińska**, D. (2017a). Klęska żywiołowa – przejawy wrażliwości i obojętności. [In:] Mysona Byrska, J., Synowiec, J., (Ed.) *Obojętność i wrażliwość w życiu publicznym*. Uniwersytet Papieski Jana Pawła II, Wydawnictwo Naukowe, Kraków, 9, 187-206.
- Werner P., Magnuszewski A., Rucińska D., Porczek M., 2015, Zróżnicowanie przestrzenne wrażliwości społecznej na zagrożenia powodziowe w Polsce, *Prace i Studia Geograficzne*, 57, 67-74.
- Werner, P., **Rucińska**, D., Iwańczak, B. (2015a). Zintegrowany miernik wrażliwości społecznej na zagrożenia naturalne w Polsce, *Prace i Studia Geograficzne*, 57, 21-42.
- Werner, P., Rucińska, D., Iwańczak, B. (2015b). Zróżnicowanie przestrzenne wrażliwości społecznej na wybrane zagrożenia naturalne w Polsce, [In:] Karolak-Michalska, M., Kopciuszewska, E., Petryk, W. (Eds) *Społeczno-gospodarcze aspekty bezpieczeństwa Polski - wyzwania i zagrożenia*, Wyd. Szkoły Wyższej im. Bogdana Jańskiego, Warszawa, pp. 76-90.

*Marlena Mróz. (2012). *Wpływ Oscylacji Południowej El Nino na plony kawy w Kolumbii*(praca magisterska; opiekun pracy: dr Dorota Rucińska)

*Przemysław Sitkowski. (2018). *Wpływ Oscylacji Południowej El Nino na zbiory kukurydzy w Republice Południowej Afryki w latach 1980–2016* (praca magisterska; opiekun pracy: dr Dorota Rucińska)

Scientific achievements before obtaining PhD

Starting from my studies (**1996/1997-2001**) / **1997-2001**), my scientific interests focused on the relationship between man and the environment. Obtaining a master's degree was related to: the implementation of the original subject on the impact of oceanic-climatic oscillations (El Nino Southern Oscillation, ENSO) on agriculture in selected American countries along the Pacific coast; publication of results and conclusions from research (**Rucińska 2003**). I continued with

the publication on potential areas of ENSO's impact on agriculture (**Rucińska 2005**).

By gradually changing the direction of my research interests, I took up the subject of social awareness of extreme natural phenomena. In my PhD dissertation

(i) I deliberated on the conceptual scope of the terms: natural hazards, extreme phenomena, natural disaster and catastrophe; (ii) I conducted diagnostic surveys at Warsaw schools to learn about the perception of dangerous natural phenomena by young people, (iii) then I confronted the perception of natural hazards with the content of geography teaching programs in schools. Selected stages of research were in the form of chapters in books (**Rucińska 2006a, 2006b, 2007a, 2007b**).

A separate work was the analysis of the problems undertaken in over 600 master's theses written in 1955-2004 at the Department of Regional Geography (**Rucińska, Walewski 2004**).

Until the PhD degree: I published 7 articles reviewed in scientific journals / chapters in books, including 4 on issues taken in doctorate; I attended 11 scientific conferences, including 8 discussing issues included in my doctoral dissertation (including 2 posters); regardless of them, I participated in other conferences as a listener / participant. In addition, I published two publications at a later date (after 2009 on PhD results: 1 monograph and 1 article in English, summarizing these studies (Rucińska 2011, 2012).

References

- Rucińska, D. (2003). Związki między ENSO a gospodarką na zachodnich wybrzeżach Ameryk, *Afryka Azja Ameryka Łacińska*, 80, 149-166.
- Rucińska, D., Walewski, A. (2004). Kształcenie w Zakładzie Geografii Regionalnej, *Prace i Studia Geograficzne*, 34, 57-67.
- Rucińska, D. (2005). Oddziaływanie ENSO na rolniczą działalność człowieka – potencjalne obszary badawcze, [In:] *Hydrograficzne i meteorologiczne aspekty badań wybrzeża Bałtyku i wybranych obszarów Polski*, Uniwersytet Szczeciński, PTG Oddz. Szczeciński, Wyd. Oficyna IN PLUS, Szczecin, pp. 34-38.
- Rucińska, D. (2006a). Problematyka zagrożeń naturalnych w nauczaniu geografii – od idei do praktyki, [In:] *Idee i praktyczny uniwersalizm geografii. Dokumentacja Geograficzna*, Wyd. IGiPZ PAN, Warszawa, 33, 354-357.
- Rucińska, D. (2006b). Zjawiska o charakterze ekstremalnym i katastrofalnym w edukacji szkolnej, [In:] Kostrzewski, A., Czerniawska, J. (Eds) *Przemiany środowiska geograficznego Polski Północno-Zachodniej. Forum Geografów Polskich*, UAM, Poznań, pp. 251-262.
- Rucińska, D.(2007a). Problemy klęsk żywiołowych w podręcznikach szkolnych. Edukacja a przeciwdziałanie skutkom żywiołów, [In:] Szkutnicki J., Kossowska-Cezak U., Bogdanowicz E., Cerana M. (Eds) *Cywilizacja i Żywioły*, Polskie Towarzystwo Geofizyczne, IMGW, Warszawa, pp. 279-285.
- Rucińska, D.(2007b). Percepcja zagrożeń przyrodniczych przez uczniów szkół warszawskich, [In:] Strzyż M., Zieliński, A. (Eds) *Region w edukacji przyrodniczo-geograficznej*, Wyd. IG AŚ im. Jana Kochanowskiego w Kielcach, Kielce, pp. 119-125.
- Rucińska, D.(2011). Social education on extreme natural events in view of extreme floods and landslides in Poland, *Prace i Studia Geograficzne*, 48, 173–185.
- Rucińska, D. (2012). *Ekstremalne zjawiska przyrodnicze a świadomość społeczna*. Wydawnictwa Wydziału Geografii i Studiów Regionalnych Uniwersytetu Warszawskiego, Warszawa, pp. 219.

