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# **ECOLOGICAL RISKS AS EVALUATED BY LATVIAN RESIDENTS**

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# INTRODUCTION

## **Topicality of the Research Theme and Its Practical Significance**

Development processes of the modern society are denoted by the concept “risk society” by many theoreticians of social sciences. Though the shape of the very concept is not clearly determined yet and is still disputable, the research on different aspects of the risk society and risk problems in general is nowadays one of the most topical subjects in the field of social sciences in general. It is not surprising since risk acknowledgement, risk analysis and evaluation as well as their avoidance or their removal, at least, is vitally important for the humankind in general and every person individually.

One of the risk groups generated by the contradictory development of the risk society itself is ecological risks, and they are various. The same instruments that were created by the society in order to improve the life quality and that were associated with progress for a long time have now become their opposites. Vast ecological catastrophes caused by natural processes as well as activities of men are the most characteristic threats of the current century.

It is necessary to take into account that while living in an industrial environment people, in the name of gains, have to live with potential risks; and people have to understand that almost every aspect of their lives has impact on the environment. Any activity can cause ecological issues in future (Beck, 1991).

Though, any activity or event causes counter-reaction, as well. The counter-action to the industrial world crisis and growing ecological cataclysms that are characteristic of a risk society is the ecological awareness - changes in ecological awareness (O’Sullivan & Taylor, 2004: 10–13).

There exist numerous objective factors that affirm the increase in ecological risks, but it is not followed by appropriate reaction of people –

manifestation of the ecological awareness – in reducing the said risks. This makes one focus on the analysis of the content of the ecological awareness components characteristic to the Latvian population, and the study of their interconnection and influencing factors.

Within the framework of the doctoral thesis, the author wants to understand whether the Latvian population, while living in a particular environment, acknowledges the probable risks and sees the potential of ecological risks in different driving processes of the national economy and general progress, whether people are ready to invest time and means in environmental support and protection, as well as whether they actively use their knowledge on ecological risks. Having performed this analysis, the author will be able to present the content assessment of the characteristic components of the ecological awareness characteristic to the Latvian population, the interaction of these components, and their influencing factors. At the same time, more complete understanding of the ecological awareness level and content will allow for more efficient engagement in risk management.

The doctoral thesis has practical significance. It can be used as both theoretical and methodological material for the development of the academic lecture course “Risk Society”, and its value is increased by the wide amount of materials gathered on the problems of ecological risks in relation to Latvia and the fact that the material is gathered across vast period of time.

### **Novelty of the Doctoral Thesis**

Up till now Latvia has participated in different international research projects in relation to environmental issues. Several cases of local level research on ecological issues in the country can be noticed. The analysis of ecological problems lies in the centre of the current research, and it stresses the specifics of ecological risks. The research conducted within the framework of the doctoral

thesis provides input into the development of the theoretical approach to the risk society, and empirical research in Latvia, as well as into the analysis of ecological awareness of the Latvian population by marking the subject-matter of the risk society and ecological risk research:

- The theoretical part of the doctoral thesis presents wide sociological analysis of concepts “risk” and “risk society”;
- The analysis of the theoretical paradigm of the risk society sociology has been conducted focusing attention on the manifestations of ecological risks;
- Thematic analysis and systematisation of the empirical research conducted until recently on ecological risks and environmental problems in Latvia in general has been performed;
- The novelty of the empirical research is related to the evaluation of the ecological awareness of the Latvian population on the basis of the analysis of the environmental problems.

## **Research Basis**

In order to determine the opinion of the Latvian population on the environmental problems and ecological risks caused by these problems as well as on the participation in activities of environmental protection, it was necessary to perform a series of measurements on the attitude of residents – to determine individual attitude, self-evaluation of knowledge, readiness to participate in activities of environmental protection, etc. Due to this reason, a poll was used to gather information and a *research instrument* – a partially standardized questionnaire (see Appendix 1 to the doctoral thesis) – was created in the third chapter of the doctoral thesis.

The questionnaire was prepared in the Latvian language and then translated into Russian, taking into account the ethnic structure of the Latvian population. The research selection was created so as the survey would include different social and demographic groups of residents. When calculating the selection, five demographic indicators were taken into account: gender, age, nationality, regional distribution, and division of populated area types.

The quantitative research was conducted on the whole territory of Latvia: in Riga, Pieriga, Kurzeme, Zemgale, Vidzeme and Latgale. In order to obtain survey data representing opinions of the target groups, the author created a representative selection corresponding to the general totality (Latvian population) on the basis of the statistical data on the number of the Latvian population. The statistical data on the general totality of the survey are obtained from the Population Register of the Office of Citizenship and Migration Affairs under the Ministry of the Interior of the Republic of Latvia (*LR IeM PMLP*).<sup>1</sup> A calculation was made in order to determine the selection volume with the statistical error within the limits of 3.5%. According to these requirements, when the amount of the general totality is 1 679 691, the calculated selection was set to  $n=800$ . The actual selection was  $n=813$ .

According to the goal and objectives of the research, the age group limits for the general survey cluster were set – from the age of 18 till the age of 74 including. The survey was conducted with the help of phone interviews, and with the one person who answered the call.

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<sup>1</sup> Data of the Population Register of the *LR IeM PMLP* on September 7, 2011 (the research centre SKDS).

## **Theoretical Frame of the Doctoral Thesis and the Basic Concepts**

Similarly as in the 19<sup>th</sup> century, the feudalism was replaced by the industrial society when influenced by modernization (it includes a set of complex processes in the fields of economics, politics, social and cultural sphere), in the same way nowadays the industrial society has grown into the risk society (Giddens, 1994). Both Ulrich Beck and Anthony Giddens – the two most noticeable spokesmen of the modern social thought – believe that the idea of richness creation characteristic to the industrial modernity has been obscured by the idea of risk prevention, the awareness of social classes has been replaced by the risk awareness, but in the conditions of elevated life risk the understanding of processes has become the basic accelerator of the social transformation. In other words, theoreticians assert that social, political and institutional reforms are required to facilitate transition from the industrial modernity (that was centred on the production of material wealth) to the reflexive modernity (that is focussed on production of knowledge, prevention of risks and environmental preservation) (Ekberg, 2007: 347). When the industrial society changes into the risk society, the concept of “risk” becomes topical and conceptualized. In 1990’s, U. Beck announced that during the globalization process the industrial society changes into a global risk society. He believed that the problems of the risk society are not limited only to hazards in relation to the environmental pollution. The risk society is characterized by complete disappearance of time, territorial and social boundaries (Beck, 1992b: 136). The term “risk society” was introduced at the end of 1980’s in order to characterize the society threatened by the modernization and human activity, as well as the way how the society reacts to these risks. The term is mostly associated with the works of the German sociologist U. Beck and the English sociologist A. Giddens. As viewed by U. Beck, during the latter years the world lives in a



risk society; in this age the smallest possible cause generates the greatest possible disaster. U. Beck also points that in the modern progressive world the public production of material wealth is closely linked to the production of risks. The problems and conflicts in such a society overlap with problems and conflicts that result from the overproduction, identification and distribution of scientifically and technologically created risks (Beck, 1992a: 122).

Like the industrial society, the risk society is not sustainable. U. Beck considers that it endangers the use of natural resources by depleting them too quickly and not letting them to restore, but waste and pollution created as the result of industrial manufacturing cause damage to the environment and prevent it from regeneration (Beck, 1999: 102).

In the situation when the society is subject to various conscious and unconscious risks and is forced to find solution to different threats and to reduce the influence of negative effects of the development and progress on the lives of people and the environment, it is not easy to determine sources of ecological risks (Giddens, 1996: 86). Yet it must be noted that correct, balanced combination of social, political, and economic components can provide for an opportunity to protect the environment from the hazard and to improve considerably the ecological situation in general.

The concept of U. Beck's risk society is based on the formation of new "risk awareness" under the influence and in the context of technical and social changes (Wilkinson, 2001b: 2). It is possible to anticipate that the ecological risks and health risks created by technologies as well as the introduction of new manufacturing methods in the industry and agriculture, for instance, wide usage of pesticides, will prevail in the public discourse of the risk society (Block, 2008: 757). Public knowledge intertwines with problems of scientific competence in different ways (Lidskog, 1996: 3 1). Due to this reason, besides the development of risk control methods, it is necessary to perform analysis on how the society engages in the active forms of knowledge formation. Such

uncertainty and agitation are related not only to the especially dangerous risks – let us mention the catastrophe of Chernobyl –, but also to local problems, for instance, provision of safe drinking water directly from a faucet (Mol, 1993: 431).

In order to further investigate the changing character of risk and different attitudes to risks in a risk society, U. Beck and A. Giddens have studied changes in the understanding of causes and effects of ecological and economical risks. These transformations include the transfer of stress from risks related to nature to risks related to technique and technology; the transition from the realistic approach to risk to the approach of social constructivism; the increasing gap between the actual and expected risk, as well as changes in risk distribution (Beck, 1992b).

Taking into consideration the said interpretation of the examples of a risk and a risk society, there is no doubt that in the age of globalization Latvia also deals with such society qualities and development tendencies to which the concept “risk society” can be attributed. The theoretical substantiation of the doctoral thesis consists of the theoretical approaches of three most important risk society theoreticians – U. Beck, A. Giddens, and N. Luhmann. It is important to note that one does not speak about three different approaches, but about three risk society interpretation models as it is possible to establish several common features that go through the works of all the said sociologists in analysis of risk and risk society. In order to achieve the goal of the doctoral thesis, namely, to study the content and interconnection of the characteristics of the society’s ecological awareness, the conceptual structure of the thesis is set in the way that a certain module of quantitative research corresponds to each component of the ecological awareness. The conceptual structure of the doctoral thesis is represented in the Figure 1. Thus, the content of the three components of the ecological awareness – anxiety, readiness for action, and knowledge – is duly interpreted by analyzing the opinion of the Latvian population on the

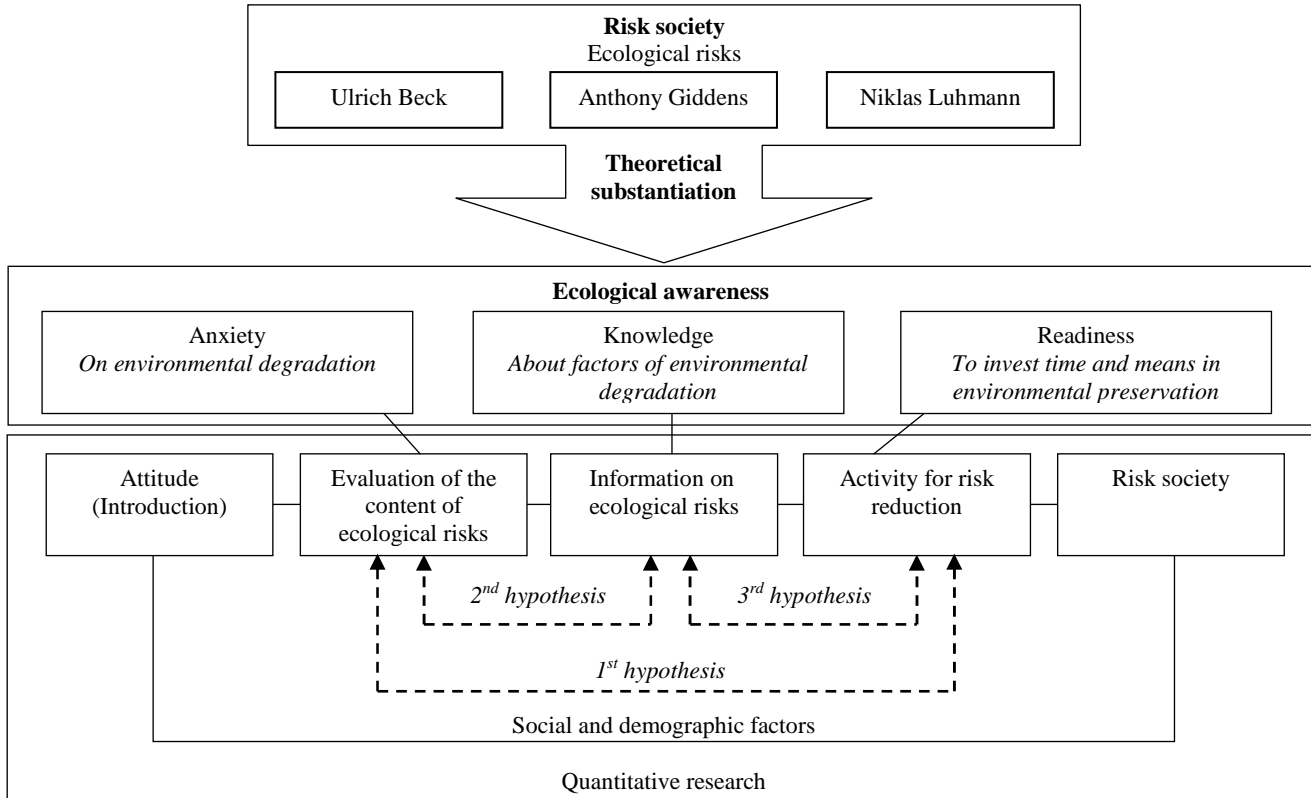


Figure 1. Conceptual structure of the doctoral thesis

evaluation of ecological risks, level of knowledge on ecological risks, and activities for risk reduction.

In the doctoral thesis, the author has used four key **concepts** and analyzed them profoundly in the following chapters. Their **definitions** are provided below.

**Risk** (*risks, hazard, danger*) – risk is the result or the final product that is produced every day by taking decisions, and that is caused by consequences of such decisions. It is important to note that in the thesis, when using the concept “risk”, an equivalent meaning is attributed to the use of concepts “hazard”, “threat”, and “danger”. In the theoretical literature, for instance, Nicholas Rescher distinguishes among these concepts; A. Giddens, in his turn, has attributed one meaning to all of them, justifying it by a fact that a risk can also be treated as danger of future damage. The necessity to carry out this equalization of concepts was also proven by the pilot survey conducted for the quantitative research of the doctoral thesis, when respondents provided responses more effectively if a question was asked using the concept “risk” as well as the concepts “hazard” “threat”, and “danger” (Giddens, 1991; Beck, 1992b, 1995; Rescher, 1983; Luhmann, 1994).

**Risk society** – the result of the development of an industrial society, development process where the society constantly generates risks that are unpredictable and common, thus, any activities in a risk society should be evaluated from the position of risk probability (Beck, 1992b; Luhmann, 1994).

**Ecological awareness** – awareness that almost every aspect of human life has impact on environment, and this phenomenon is characterized by evaluating anxiety of residents or their worries on environmental degradation, their readiness to devote time and invest means in environmental preservation and improvement; knowledge about the factors degrading the environment and their prevention (Kalniņa & Meņšikovs, 2003; Christopher, 1999; Leff, 1978; Sanchez & Lafuante, 2010; O’Sullivan & Taylor, 2004; Uhl, 2003).

**Ecological risks** – risks caused to a society, a person and environment by the totality of ecological factors; these risks are related to the environmental pollution as the result of deliberate activities of people as well as the result of uninformed, ignorant (caused by the lack of knowledge) activities. Those are the consequences of the harm done to the environment that endanger the conditions of people's work, household activities and rest, and their health, have significant influence on the quality of their life (Beck, 1995b; Giddens, 1990).

## **Research Goal**

The **goal** of the doctoral thesis is to examine the ecological awareness of the Latvian society on the basis of the representations of the Latvian residents on evaluation of ecological risks.

## **Research Objectives**

1. To perform complex analysis of the key concepts used in the research – *risk*, *risk society*, *ecological risk*, *ecological awareness* – and notions associated with them (ecological anxiety, etc.), to analyse and systematize theories of risk perception.

2. To study, summarize and analyse theoretical aspects and characteristics of a risk society.

3. To acknowledge and systematize the research in the field of environmental problems and ecological risks conducted in Latvia at the end of the 20<sup>th</sup> century – beginning of the 21<sup>st</sup> century, and to present their thematic analysis.

4. To evaluate ecological risks determining the concern of the Latvian residents about environmental degradation.

5. To determine and assess the knowledge level of residents, to analyze its role in the process of ecological risk awareness on the basis of a survey.

6. To determine and analyze the readiness of the Latvian population for actions to reduce the emergence of new ecological risks and reinforcement of the existing ones.

## **Research Hypotheses**

1. The evaluation of the content of ecological risks provided by the Latvian population and the activities of the Latvian population in risk reduction have poor interconnection.

2. The knowledge level of the Latvian population on ecological risks and the evaluation of the content of ecological risks provided by it have poor interconnection.

3. The knowledge level of the Latvian population on ecological risks and the activities of the Latvian population in risk reduction have poor interconnection.

The research hypotheses were put forward on the basis of assumptions on the interrelation and interaction of ecological awareness components. The graphical representation of the hypotheses can be seen in the Figure 1.

## **Research Methods**

The research methods include the document analysis (study and analysis of literature and previously conducted quantitative surveys); the survey using a partially structured questionnaire. The survey was conducted with the help of phone interviews. The research questions were analyzed using the

descriptive analysis, correlation analysis, and the standardized residual analysis, Pearson's  $\chi^2$  test, rank correlation coefficients (*Kendall's tau b*, *Goodman* and *Kruskal tau* coefficients), as well as modelling of connections and statistically significant regularities using the *logit* analysis model of the log-linear analysis and the method of model selection analysis (Крыштановский, 2006; Алтон, 1982, Acton & Miller, 2009).<sup>2</sup>

## **Structure of the Doctoral Thesis**

The doctoral thesis consists of an introduction, three chapters, conclusions, a list of bibliography sources, and eight appendices.

The introduction substantiates the subject topicality, the basic concepts used in the thesis are defined, the theoretical substantiation of the thesis is outlined, the research object and subject are defined, the goals and objectives of the thesis are set in the introduction.

The first chapter is divided into two subchapters. The first subchapter is devoted to the analysis of the theoretical paradigm of the risk and risk society. The theoretical approaches by Niklas Luhmann, Anthony Giddens, and Ulrich Beck to the solution of the risk and risk society issues are examined. The second subchapter deals with the analysis of different theories of risk perception.

The second chapter is made of two subchapters. The first subchapter focuses on the division of risks and basic approaches to the risk analysis as well as provides for theoretical grounds of the ecological risk analysis in the empirical part. In the second subchapter, the author performs analysis of different studies carried out until recently in Latvia that focus on the

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<sup>2</sup> For the explanation of all the methods and terms, see chapter 3 of the thesis.

environmental problems, environmental protection, social processes generating ecological risks as well as the very ecological risks in Latvia.

The third chapter is devoted to the analysis and interpretation of the data obtained during the empirical research. It consists of six subchapters.

In the *first subchapter* the author describes the research methodology, including the set of research instruments, survey methods, selection characteristics, non-respondent characteristics, the system of statistical error assessment, as well as the data gathering and processing. This subchapter also includes the social and demographic description of the selection.

In the *second subchapter* the attention is paid to the general opinion of people on the environment and other risk problems identified in Latvia. *The third subchapter* identifies the ecological risks of Latvia, it also provides for the evaluation of the ecological risks and the indicators of life processes causing ecological risks. *In the fourth subchapter* the author interprets the data on the evaluation of the risk society features by the residents, but in the *fifth subchapter* the knowledge level of the Latvian population on the environmental problems, ecological risks and life processes causing ecological risks is analyzed. *The sixth subchapter* deals with the analysis of the behaviour of the Latvian residents in order to reduce the influence of negative effects on a human being and the surrounding environment.

The conclusion provides a summary of the information obtained during the research.

The doctoral thesis contains 160 pages. The thesis was developed on the basis of 170 bibliographical sources. The theoretical analytical material is supplemented by eight appendices.



# **1. THEORETICAL DESCRIPTION OF RISK SOCIETY**

## **1.1. Concept of Risk and Risk Society in Modern Sociology**

Though the term *risk society* is mostly associated with the works of the well-known social theoreticians U. Beck and A. Giddens, the idea of the risk society is also developed in works of other sociologists, social and cultural anthropologists, economists, physicists, and representatives of other branches of science.

In the risk society, there exist many conscious and unconscious risks of technological and social origins: global warming, environmental pollution in the result of the operation of industrial objects or accidents in such objects, use of toxic chemical substances, management of hazardous waste, etc. Production of risks takes place in all the fields of public processes: economic, political, and social environment. It is necessary to provide various and efficient solutions that could ensure adequate management of risks. Due to this reason the society encounters necessity to evaluate and to calculate the risks created by it, for instance, determining probability of technical / technological accidents or catastrophes is very important for ensuring the management of different technical / technological systems.

Cognition of the risk society is interesting to many branches of science, and it contributes to the understanding of the risk society as well as allows developing new research directions, besides that, different approaches permit to provide for more precise definition of a situation and to take decisions on practical risk management. The specifics of the risk research are determined by the research subject of a particular branch of science, by different scientific approaches and methods. Sociology, too, has its particular approach, and the

present doctoral thesis is devoted to the analysis of particular aspects in the context of the risk problems.

### **1.1.1. Description of Conceptual Approaches to Risk**

Risk is treated as “systematic interaction of society with threats and hazards evoked by processes of modernization” (Beck, 1992b: 21).

Down the ages, state authorities have tried to reduce, prevent, or control risks in direct way, one of the government functions, too, has long time been related to the protection of residents from the hazards against which they cannot protect themselves (see TeBrake, 1975; Covello, 1985: 41; Grier, 1981: 3; Hägerstrand, 1985: 13; Hammer, 1980: 23; Handler, 1979; Kunreuther, 1973: 12; Pfeffer & Klock, 1974: 215).

In sociology, there exist two wide directions for interpreting risk as a social phenomenon – the realistic one and the socio-cultural one. Within the framework of the **realistic** approach, risk is interpreted in scientific and technical terms. Risk is treated as objective and cognizable fact (potential danger or damage already inflicted) that can be measured independently from the social processes and the cultural environment. The **socio-cultural** direction of the risk analysis accentuates the social and cultural context that constitutes basis for the risk perception and consideration.

Historians of the risk sociology distinguish three relative approaches in the socio-cultural direction: (1) cultural-symbolical that was developed by the British anthropologist Mary Douglas and her colleagues, (2) theory of the risk society that is represented by U. Beck and A. Giddens, and (3) modern “calculative rationality” that is based on works by Michel Foucault. The first approach was focused on the problems of interrelation between “personality” and “other” by showing particular interest in how a human body is both

symbolically and metaphorically used in the discourse and practice in relation to risk problems. The second approach focuses on micro-social changes that are caused by risk production in the stage of late modernity. Those are processes of reflexive modernization/modernity, criticism of the consequences of the previous stage of modernity and individualism, consequences of destroying traditional values and norms. The followers of the third approach are little interested in “what risk actually is” as they believe that the “truth about the risk” is constructed by human discourse, strategies, practices and institutions. They examine how different risk concepts create specific norms of behaviour that can be used in motivation of individuals for free participation in self-organizing processes in a risk-creative situation (Lupton, 1999: 25, cit. from: Яницкий, 2001: 2).

At the same time it is necessary to distinguish between directions of riskological research – the moderate one and the radical one. The followers of the moderate direction believe that a risk is objectively existing danger that is always mediated by social and cultural stereotypes and processes. The representatives of the radical direction declare that there exists risk perception, not the risk itself that is always a product of the historically, politically and socially determined world perception (Яницкий, 2001: 2).

During a hundred of years, sociology has walked a long way from the study of numerous separate risks and situations subject to risk to the understanding that the society itself is a risk generator. In the middle of 1980's, the studying of risks became more complex and chaotic: the risk analysis, obviously, lacked any central focus (Short, 1984: 711, cit. from: Яницкий, 2001: 4). The world-renowned Russian sociologist О. Yanitsky (*Олег Яницкий*) believes that it was necessary to create certain comprehensive concept that would study and interpret risks and the risk society. In two last decades of the 20<sup>th</sup> century such comprehensive concepts were created by Niklas Luhmann, Anthony Giddens, and Ulrich Beck (Яницкий, 2003).

### 1.1.2. Sociological Risk Theory of Niklas Luhmann

The sociological risk theory of the German sociologist Niklas Luhmann (1927–1998) is directly linked to the criticism of the rationality of the modern society. He states that the risk behaviour of the modern society cannot be incorporated in the “scheme of rational/irrational” at all. Luhmann stresses that we are living in a complex, functionally differentiated society, and this complexity is only growing since the 18<sup>th</sup> century. The decision taking has become more multi-branched and impersonal, absolute safety does not exist, and each decision potentially brings along some risk possibility.

N. Luhmann emphasises the role of social sciences in solving risk problems, indicates that the risk evaluation and readiness to take risks is not only psychological, but, primarily, social problem. In the foreground of the social sciences comes the question: who takes decisions, what is the most important in determining whether one should take / not take risks, etc. (Луман, 1994: 137).

Luhmann defines the concept of risk by differentiating risk and hazard. The differentiation envisages that there exists uncertainty or insecurity (*Unsicherheit*) in relation to the damage possible in the future. Here, two possibilities open. One possibility – the possible damage can be regarded as the consequence of decisions, i.e., it is attributed to the decision; in this case one speaks about the risk, namely, about the *risk of decision*. The other possibility – the damage reasons may be external, namely, they belong to the surrounding world. In this case one speaks about danger (Луман, 1994: 150).

Sociology, as Luhmann puts it, must put forward a question on “how the society explains and corrects the deviation from the norm, failure or unpredicted coincidence [...]. The explanation of the disturbance cannot be entrusted to coincidence: it is necessary to show that this disturbance has its

own order, its secondary normality, so to say. Risk is the opposite side of the normal form, and “only by focusing on the opposite side of the normal form, we can identify it as a form” (Luhmann, 1993), namely, the normal processes of the society can be apprehended by studying the way how the society tries to comprehend its failures in the form of risk.

### **1.1.3. Approach of Anthony Giddens in Risk Interpretation**

The British sociologist Anthony Giddens (b. 1938), when analyzing modernization processes and its transition to the highest (reflexive) stage, was addressing those social environment structure elements, transformation of which causes risks. Living in the age of „late modernity” means living in the world of coincidences and risks. The notion of risk occupies the central place in the society that parts with the past with its traditional ways of activities and is open for the unexplored future (Giddens, 1991: 111-112). This statement is equally attributed to the risk in institutionalized environment as well as other fields (Яницкий, 2001: 7).

Giddens links the exploration of the risk and risk society with reflexivity – one of the central notions of his theory that he defines as uninterrupted acquisition, acquiring of new knowledge, which becomes the basis for the social organization and self-identity (Giddens, 1990).

Modern society is subject to risk, whether we want it or not; even inaction can cause risk. When analysing the mechanics of risk production, A. Giddens stressed that modern society is mostly structured by the risks created by people themselves. These risks possess a range of different characteristics. First of all, the modern risks are related to the globalization in the meaning of their “long-distance influence” (nuclear war). Second, the risk globalization is an increasing number function of interdependent events (for instance, international division of labour). Third, in the modern world, there exist

different institutionalized risk environments, for instance, investment market, a world, from the condition of which the wellbeing of millions of people depend. The risk production is dynamic: information on the risk is risk itself as “breaches” in cognition processes cannot be converted anymore – as it was before – into the “reliability” of religious or magic knowledge. Fourth, the modern society is oversaturated with knowledge on risks that is a problem itself. Fifth, Giddens indicated that there is significant lack of expert knowledge as a tool of risk elimination in social systems. Finally, he introduced the concept of *risk environment* of modern world that is significant for further reasoning, and distinguished its three components: (1) threats and danger that are caused by the modernity reflexivity, (2) hazard of violence against people that results from the war industrialization, and (3) threat of appearance of the sense of purposelessness, uselessness of human existence that is created by efforts of people to align their individual existence with the reflexive modernization (Giddens, 1990:102-106, 124).

#### **1.1.4. Ulrich Beck: Explanation of Risk Concept**

One of the widest and conceptually completed concepts of the risk society belongs to the German sociologist Ulrich Beck (b. 1944). U. Beck considers that risk is not an extraordinary event; it is not “consequence” or “by-product” of public life. The society constantly produces risks; furthermore, this production takes place in all the spheres of public life – economic, political, and social one. Risks are inevitable products of decision-taking (Beck, 1992, 1994, 1995).

Risk, as seen by U. Beck, can be defined as systematic interaction of the society with threats and dangers that are induced and produced by the modernization (Beck, 1992b: 22). Risk is a modern notion that embodies the

notion of control and takes into consideration the decision-taking (Beck, 2002: 40). From the moment when the industrialization began, there has been constant reduction of threats of famine, epidemics or natural disasters, but “new risk types” have emerged (nuclear weapons, chemical and biotechnological industry, etc.).

Risks – unlike hazards of previous ages – are consequence that is related to the menacing power of modernization and the insecurity and fear caused by it (Beck, 1992b: 45). “Risk society” actually is a new society development paradigm that is related to the fact that the “positive” logics of the public production prevailing in the industrial society, i.e., accumulation and distribution of wealth, is more and more overlaid (displaced) by the negative logics of production and risk spreading.

U. Beck stresses that in the risk society, when producing wealth, the bad is produced, too, – risks that have their own logic and which we are not accustomed to. In the creation of the ideology and politics of the modern society, a very important role is given to science, production of knowledge. The theory of the risk society postulates that the role of science experiences considerable changes in the public life and politics when the risk (especially megarisk) production is expanded. The majority of risks that appear in the course of science and technique modernization, especially the most dangerous ones (radioactive and chemical pollution, uncontrollable consequences of gene engineering) are not perceived directly by human senses. These risks exist only as knowledge on them. The specialists that are responsible for determining the risk level of new technologies and technical systems as well as the mass media that distribute knowledge on them “acquire the most significant social and political positions” (Beck, 1992b: 23).

One more problem is the political interpretation of technical and natural sciences. This knowledge cannot be used directly in the political process – it is necessary to make its translation into the language of the political

dialogue and decisions. This translation is made by politically engaged scientific society that “turns into a factor that legitimates the global industrial pollution as well as overall destruction of the plant life, health of animals and humans and their destruction” (Beck, 1992b: 59). An institute of experts is created that acquires autonomous political significance since this institute determines what is dangerous and to what extent. The very experts determine the risk level socially acceptable to the society. (Beck, 1995a: 15; Яницкий, 2001: 9).

Other viewpoints of the risk society theory are important as well. First, one has to revise the normative model of the society basis. The normative ideal of the previous ages was equality; the normative ideal of the risk society is safety. The social project of the society acquires clearly negative and defensive character – not the achieving of the “good”, as it was before, but the prevention of the “bad”. Second, in the risk society, new social communities are created that take down the old social partition walls. U. Beck believes that those will be communities of “risk victims” where the solidarity based on agitation and fear can create powerful political forces. Third, the risk society is politically unstable. Constant tension and fear from hazards start winging the political pendulum from overall danger and cynicism till unpredictable political activities, the distrust to the existing political institutes and organizations is increasing (Beck, 1992b; Яницкий, 2001).

U. Beck isolates three different conflict axes in the world risk society: ecological conflicts that are global in their essence; global financial crises that can initially be “individualized and nationalized”; global terrorism threats that are rapidly actualized after the events of the September 11, 2001, in the USA. The fact that these risks are global does not mean that the world becomes uniform or that all the regions and cultures are now equally subjected to unified body of uncontrollable risks in the field of ecology, economics, and power. No, the global risks are distributed irregularly, they are revealed in different ways,



they differ in various historical contexts as well as cultural and political models (Beck, 2002: 41–42).

The approach of the “risk society” developed by U. Beck explains how modern society solves different risks that are produced by it and that differ considerably from the risks that were faced by the world a century ago. The works by U. Beck have earned wide scientific interest and international recognition, but at the same time they have received quite elaborated criticism in one or another aspect. Similarly as A. Giddens is being criticized for confidence in expert knowledge, U. Beck is being criticized for the revaluation of the role of science in the creation of the society’s risk awareness.

## **1.2. Approaches to Risk Perception**

As soon as a researcher puts forward an aim to determine the risk for an individual or a group (especially a socially acceptable risk for the whole society), the complexity of this task is revealed since any system of risk calculation is related to personal preferences, culture, and political context. A classical example of this problem analysis is the work “Risk and Culture” by Mary Douglas and Aaron Wildavsky (Douglas & Wildavsky, 1982, Яницкий, 2001).

M. Douglas and A. Wildavsky conclude that one has to establish a certain scale of priorities for threats, and not carry out simple enumeration of risk-evoking objects. One has to carry out risk ranging and assessment in order to know what risks should be dealt with and in what order. This requires preliminary agreement on criteria of such assessment (Douglas & Wildavsky, 1982: 3). As there is no (and cannot be) one single correct risk concept, there exists no way how to make everyone accept it. From here arises the main theoretical conclusion of the research by Douglas and Wildavsky: “Risk can be

considered as the joint-product of the coordination between the knowledge on the future and the more desirable perspectives.” “When the knowledge is determined, but the harmony complete,” the authors continue, “when there is an agreement on aims, and all the alternatives (together with their realization possibilities) are known, it is possible to create a programme for implementation of the best solution. In this case the problem has technical character, and the solution is related with calculation. This means that the solution can be found in research [..]” (Douglas & Wildavsky, 1982: 4; see also Яницкий, 2003: 12).

The risk perception for Douglas and Wildavsky is a social process, and questions on risk acceptability must be considered taking into account social aspects. The choice of the risks, which people are worried about, depends on the forms of the social life that are preferred.

From the risk perception theories, the mostly wide-spread one is the *knowledge theory*: it is based on the idea that people perceive technologies, etc. as dangerous since they know about their danger. Another conventional condition for the risk perception is derived from the *personality theory*. According to their orientation, individuals either take risk in steady enough way, or try to avoid it whenever possible (Wildavsky & Dake, 1990: 167; MacCrimmon & Wehrung, 1988; Mitchell, 1983). As A. Wildavsky indicates, the third body of explanations of hazard perception by a society can be interpreted with two versions of the *economical theory*. The first one – the rich ones take risk linked with technique more willingly as they receive greater benefit from it and are in some way protected against the undesirable consequences. In their turn, the less wealthy, supposedly, feel quite the opposite (Wildavsky & Dake, 1990: 167). In the second – “post-materialistic” – version the substantiation is deployed in the exactly opposite way: due to the reason that the life standards have risen, the rich people are less interested in what they own (abundance) and what has ensured them with it (capitalism), but more

interested in what they would like to keep and obtain (intimacy in social relations, better health) (Inglehart, 1977). Other explanations on the society's reaction to potential hazards lie in *political theories* where arguments on risk are regarded as the fight of interests for a strategic position or party privilege, etc. The political model of the clash of interests links conflicts with the different social status of people in the society (Wildavsky & Dake, 1990: 167). In such an approach to the risk perception the hope for explanation is transferred to social and demographic characteristics: gender, age, belonging to a particular social class, liberal or conservative views and/or belonging to political parties (Cotgrove, 1982; Nelkin & Pollack, 1982; Wildavsky & Dake, 1990: 167). In its turn, in the *cultural theory of risk perception* the social relations are represented as different models of human interrelations – hierarchical, egalitarian and individual models (Вилдавски & Дейк, 1994: 270).

Latvia is not an isolated island, and we, too, can be affected by dangers arising from local society as well as global processes. Due to this reason it is important to determine to what extent the Latvian population acknowledges its place in the global risk society, to what extent residents are aware of ecological risks, as well as what strategies should be more appropriate for putting forward in reducing these risks.

## **2. CONCEPT AND RESEARCH OF ECOLOGICAL RISKS**

### **2.1. Ecological Risks in the Theoretical Concept of the Risk Society**

#### **2.1.1. Nature Socialization: Origins of Ecological Risks**

In the course of society development wider and deeper “nature socialization”<sup>3</sup> takes place – involvement of nature, namely, natural systems, in the life of society and people (though this often happens according to human needs, not possibilities of nature); reorganization of nature after the needs of people (often not taking into account the possibility of the nature to “withstand” this socialization); disruption of the proportion in the environment by light-minded attitude towards the proportions set by the very nature (for instance, the natural ability of waters to get clean etc.). One should note the dual nature of the nature socialization. The nature socialization has made many processes of social development simpler, but at the same time it has revealed the second edge of this process – various ecological risks. Still, as it is highlighted by U. Beck, the society receives the evaluation of the risk, including the ecological risk, or the socially acceptable level with the mediation of experts (Beck, 1995b), and the scientific society has to ensure the so called translation of the risk level to wider society.

#### **2.1.2. Actualization of Ecological Risks: “New Ecological Paradigm”**

Some of the first ones to be interested in the natural or environmental sociology in the late 1970’s were Americans William Catton and Riley Dunlap

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<sup>3</sup> The nature socialization is defined as the increase in the universal use of nature and the increase of the general responsibility of people for its conservation (Яценко, 1999)

(Catton & Dunlap, 1979). In the last decades of the 20<sup>th</sup> century the sociology has also turned to environmental awareness. Flaws appeared in the anthropocentric, socio-centric, and “optimistic” approach to the study of public phenomena that were filled in by the synthetic approach.

At the end of the previous century, several important principles were formulated in sociology. One of them: the social risk is created not only by social, but also natural / environmental factors. Due to this reason nature and society are not separated anymore, a symbiosis, socialized environment exists. This principle in modern sociology is represented by the “new ecological paradigm” (NEP) where “external” ecological (environmental) limitations set to the human activity are thus interpreted as the social factors, i.e., as internal social regulators of the public life (Dunlap & Van Liere, 1978: 10). Catton and Dunlap have also established four NEP (*New Environmental Paradigm*) guidelines (Catton & Dunlap, 1980: 34).

In the table 2.1 of the doctoral thesis, the author presents detailed evaluation of (1) the NEP with the representation of the environmental realism ideas in the studies carried out in 1970’s and published at the end of the said decade, as well as (2) environmental constructivism that has been developing since 1990’s together with U. Beck’s, A. Giddens’, and N. Luhmann’s conclusions on the risk society that are considered to be the most significant directions of sociology dealing with the research of environmental problems. R. Lidskog has provided for a concise comparison of the two directions (see Table 2.2 of the doctoral thesis).

### **2.1.3. Model of Ecological Risk Perception and Evaluation**

In the risk society, it is vitally important to know how people perceive and evaluate risks, including ecological risks. In literature the attention is paid

to two directions in the risk research and perception: (1) study of differences in riskogenic activities, and (2) study of the individual risk perception. Representatives of the first movement believe that the term *risk perception* is not quite accurate – basically, a risk cannot be perceived, only the results of decisions can be perceived. Thus, there is actually no term *objective risk* (Singleton & Hovden, 1987: 26, from Гришаев, 2002: 26).

The followers of the second movement offer the following risk definition: “Risk – it is an undetermined situation where one or several outcomes are not desired” (Merkhofer, 1987: 2). Consequences may appear on different levels of the social system – as deterioration of the human health in the parameters of the environmental state or the development of the very system. In order to present more accurate definition of the risk concept, the process of the risk generation is explained where three components are predominating: (1) the risk source, namely, hazard, (2) the hazard manifestation, and (3) the effect or the result of the hazard manifestation. The risk is directly related to hazards – created either by nature or a man (Schaefer, 1978; Гришаев, 2002: 30).

Hazards, their manifestation and the results or effects determine the risk volume with the evaluation of the hazard consequence probability and their level. The risk perception “adds” a supplementary component – evaluation of the possible consequence significance provided by individuals or the whole society. All the components together create the so called “risk chain” or the process of risk generation.

When summarizing the analyzed theoretical approaches, it is possible to draw the following conclusions: any hazard has a particular cluster of effects that is expressed in particular conditions; any life process of the society that takes place while using natural resources, creates risk that, in its turn, changes the existing basic guidelines of the society and causes problems for further successful course of life processes; nature socialization facilitates the existence

of the society, yet human interference in the world of nature provokes appearance of ecological risks; the appearance of NEP activated the significance of ecological problems, popularized the view that the environmental protection must become a priority if compared to economic growth; in sociology, the risk analysis is characterized by risk description as well as the explanation of their nature and development; the main fields of risk analysis are ecological risks and risks caused by social processes by focusing on the activation of the public thought in questions of the analyzed risks and “healthy alarmism”.

#### **2.1.4. Ecological Awareness and Ecological Behaviour: Views and Actions**

In order to characterize the attitude of people towards the environment, the concept *ecological awareness / natural awareness* is used in the theoretical literature. The meanings of both concepts are close, but not identical. In this subchapter the views of several researchers on the ecological awareness will be examined and compared, its detailed characteristic will be provided (Michael Christopher from the University of Hawaii at Hilo, Canadian scientists Edmund O'Sullivan and Marilyn M. Taylor, biology professor from the University of Pennsylvania Christoph Uhl, a.o).

In its narrower sense, the ecological awareness is attributed to specific psychological factors that are related to the disposition of an individual to participate in activities directed to environment (pro-environmental activities), while in its wider sense it includes psychological, value and behaviour factors – views, attitudes, knowledge, activities determined by knowledge and values, etc. From analytical point of view, an ecologically aware (environmentally oriented) person is a person who is characterized by wide-range environment-

oriented activity and who represents particular values and viewpoints (Sanchez & Lafuente, 2010: 732).

The ecological / environmental awareness can be conceptualized in four dimensions: emotional, dispositional, cognitive, and active.

Latvian sociologists V. Meņšikovs and A. Kalniņa, when describing the ecological consciousness or ecological awareness of the Latvian population, distinguish three components: 1) concern of environmental degradation; 2) readiness to invest time and means in environmental preservation; 3) knowledge on environment-degrading factors (Kalniņa & Meņšikovs, 2004: 49). The author of the present doctoral thesis, while creating the concept of the scientific work, uses the three-component definition of the ecological awareness proposed by her Latvian colleagues, as well as the ecological awareness is understood as holistic approach to the reality, understanding that actually every aspect of human life has impact on environment (see also Christopher, 1999; Leff, 1978; Sanchez & Lafuente, 2010; O'Sullivan & Taylor, 2004; Uhl, 2003).

In the research of environmental protection and ecological questions, it is possible to note specific subjects (including ecological risks) more profound cognition of which provides opportunity to understand the existing tendencies and formulate the possible consequences. In order to evaluate the influence of ecological risks, it is important not only to obtain the subjective evaluation presented by the Latvian population, but the objective indicators characterizing it must be examined, as well. In this context, the author of the thesis has focused more profoundly on the views of Marcus Hadler and Max Haller (Hadler & Haller, 2011) on the types of a person's behaviour in (public and private) environmental protection. The attention is focused also on social and demographic indicators of individual level that influence the resident habits in the environmental behaviour.



This chapter also deals with questions in relation to ecologically-competent behaviour in the sphere of consummation, studies on the ideal behaviour of people in environmental protection have been analyzed, and it is compared with their environment-friendly views as the things said by people do not always coincide with their actions (Schlossberg, 1990; Roberts & Bacon, 1997: 89; Ajzen, 1989; Dalton, 1994; Gillham, 2008).

## **2.2. Research on Ecological Problems in Latvia**

**Study of environmental problems in the general research context in Latvia.** In the second half of the 20<sup>th</sup> century, when environmental problems obtained more and more important place in the life of the society, public opinion researchers and sociologists started carrying out researches to determine the society's level of information in the field of ecological risks and environmental protection. At first, the surveys documented the society's level of information, as well as assessed the shift in interests of environmental protection in different categories (different education, age, place of residence) of residents (Albrecht, 1975: 560). Further research allowed also analyzing more attentive attitude of residents to environmental protection, the level of their ecological awareness and its relation to everyday habits in environmental protection.

In order to evaluate the previous studies on the opinions of the Latvian population in relation to problems of environmental protection as a possible risk, 12 studies were chosen that are either completely devoted to the questions of environmental protection, or treat its individual aspects (the list of the studies is presented in the table 2.3. of the doctoral thesis).

Having carried out unidimensional analysis of the said studies, the author determined the respondent attitude towards ecological problems in Latvia in long-term. The data analysis is subdivided into six sub-subjects that

are treated in the following sections. Substantially the questions that are included in the question modules studied in the third chapter of the doctoral thesis are summarized and analyzed there.

To provide more profound understanding of particular questions, a comparison with other countries of the world has been made.

**Topicality of environmental questions evaluated by residents as one of the basic indicators of the ecological awareness.** The information gathered during the research was related to the topicality of environmental questions as evaluated by residents. As the awareness of the responsibility of the whole world as well as of each country and each person for the nature protection grows, residents place the questions of environmental protection on the list of those important questions to which particular significance shall be attributed. This awareness of the environment as a significant factor is also one of the indicators of resident ecological awareness (Dunlap & Van Liere, 2000; Capra, 2003; O`Sullivan & Taylor, 2004; Kalniņa & Meņšikovs, 2004). Data show that the opinion of the Latvian population does not differ considerably from the public opinion of a great part of European countries.

In general, it is possible to conclude that the Latvian population cares for the questions of environmental protection, and residents are worried about the possible consequences that may be caused by human intervention into the nature. People express the opinion that the environmental protection occupies significant role in their lives and the life of country in general, yet, when linking support to the environmental protection with possibly slower economic growth, the support for the environmental protection becomes lower.

**Identifying questions of environmental protection: concern about ecological risks.** When analyzing the research data, the author assessed whether and to what extent the residents describe the ecological situation as risky or threatening, since one of the indicators of the ecological awareness is the concern of residents about the environmental situation (Dunlap & Van

Liere, 1978). The research data show that the Latvian population is concerned about the environmental situation. The residents perceive the ecological situation as potentially threatening, and they express their concern about the future of the planet in relation to the ecological situation and the hazards to the nature caused by people.

In the research “Human Safety in Latvia”, the respondents were asked to express their opinion on 32 possible causes of danger. When summarizing the respondent answers, it is possible to conclude that four out of ten causes that threatened people the most are related to environment (see Latvia. Human Development Report 2002/2003).

**Readiness of residents to solve possible ecological crisis: evaluation by society.** In this section one of the first widest studies in the field of ecological risks in Latvia is analyzed – the research of 1999, conducted by the scientists from Daugavpils Pedagogical University, “Nuclear Energetics and Human Living Conditions” that was connected with the analysis of the ecological risks created by Ignalina NPP (Lithuania) and their influence on the life quality of the residents of surrounding territories. It was determined that the majority of residents and experts in Latvia acknowledged the hazardous influence of the NPP on the environment: 89% of the respondents of Daugavpils region believed that the NPP threatened the environment, 88% indicated that the NPP also endangered human health. The greatest danger to environment, according to the opinion of the respondents, is caused by air pollution (this answer was given by 71% of residents); the second place was attributed to the radioactive emission (64%) (Meņšikovs & Peipiņa, 1999: 5).

The research showed the necessity to develop the ecological awareness that in general means not only concern about the condition of the environment, but also sufficient level of knowledge on the particular risk so that corresponding action models could be developed. It can be concluded that the

majority of the residents cannot determine their public behaviour and specify it adequately according to the actual ecological situation in the region.

**Level of the resident knowledge on questions of environmental protection.** An element characterizing the ecological awareness is the level of the resident knowledge on environment-degrading factors, and it foresees knowledge in the questions of environmental protection in general. During research, respondents indicate that the environmental questions are important to them, but they admit that their level of knowledge on environmental problems and environmental protection questions in general is not good enough, there is also absence of exact information on the possible danger level and actions to take in case of possible hazardous consequences. If the level of the resident knowledge on the environmental risks and possibilities of their prevention or coexistence with them increases, the chances for their active and deliberate participation in the management and prevention of these risks will increase, too.

**Input of the society in the environmental protection measures: evaluation by residents.** When questioned about active measures for environmental protection, a great part of the Latvian population wants to delegate the main responsibility for the environmental pollution to the big companies and countries (international organizations). The residents are ready to accept responsibility in such environmental protection measures that do not require considerable financial investments or active participation.

**Activity of the residents in the environmental protection: everyday habits and public activities.** When evaluating the data, it is necessary to consider not only the opinion on the topicality of environmental questions declared by the residents, but also their everyday habits and readiness to change them in order to improve the quality of the surrounding environment.

Data show that even greater and greater part of the Latvian population considers that resident role in the improvement of the measures for environmental protection can be significant. The residents also ascertain their

readiness to correct their everyday habits for the benefit to the nature if it will require no additional investments or comparatively small financial or participation investments: for instance, waste sorting, choosing environment-friendly goods, support to the products of local manufacturers.

The analyzed surveys present good insight into the opinion of the Latvian residents on environmental problems, the resident concerns and their knowledge on these questions in general, when looking from the point of view of unidimensional analysis. Having analyzed the studies where the environmental questions have been characterized, the author has identified and summarized the data that create the idea on the ecological problems in Latvia and their perception. Still, in order to perform wholesome analysis of the ecological awareness of the Latvian population, it is necessary (on the basis of foreign and Latvian research traditions in this field) to create a system of indicators that would permit to measure and characterize the ecological awareness and behaviour characteristic to the Latvian population, as well as to examine the interaction of the ecological awareness and the behaviour. The interconnection of these data could be verified with the help of multidimensional analysis, but the results obtained will allow developing appropriate instruments for the implementation of the state politics that, in its turn, will help to increase the ecological awareness of the residents, thus systemizing and fixing traditions of ecologically responsible behaviour.

### **3. RESIDENT EVALUATION ON RISK SOCIETY AND ECOLOGICAL RISKS IN LATVIA**

#### **3.1. Survey Methods**

In the 2<sup>nd</sup> chapter of the doctoral thesis (hereinafter – the DT) the analysis of several studies was carried out and the data were interpreted according to the modules defined in the Introduction. In order to examine the ecological awareness components of the Latvian population, their interconnection and to determine their subjective evaluation on the risk society and ecological risks as well as to gather information on the main factors constituting the representations of the Latvian residents on the risk society (concern about environmental degradation), to determine and evaluate the level of the resident awareness or knowledge and to analyze the role of the level of the resident awareness on the process of the ecological risk awareness, and to analyze the readiness of the Latvian population for actions to reduce emergence of new ecological risks and spreading of the existing ones, it is important to determine the overall attitude towards environmental protection, to analyze the evaluation of the ecological risk content and the level of knowledge on the ecological risks, to assess activities for risk reduction. Due to this reason in the third chapter of the DT the quantitative method of information obtaining was used for information gathering. With the help of this method the primary quantitative data on all the research questions set forward in the research objectives outlined in the Introduction were obtained. The *research instrument* – a special, partially standardized questionnaire (see Appendix 1 to the DT) – was developed. On the basis of the studies on various ecological questions analyzed in the chapter 2.2 of the DT and the conclusions drawn in the theoretical part of the thesis, the questionnaire was supplemented with specific

questions on ecological risks and risk society, and that promoted the analysis of the subject chosen for the doctoral thesis. Though the questionnaire comprises questions from several other studies to make comparison, the present content of the questionnaire on the ecological subject is original and approbated in a doctorate survey for the first time.

The personal input of the author of the DT in the development of the quantitative research of the DT is the creation of the questionnaire, choice of the appropriate method, selection of specially trained interviewers, quality control (10% of the amount). When starting the quantitative research, the author prepared the analysis model (figure 2), determining the thematic modules of the research questions and the most important questions in each of them as well as the expected interrelation of the question modules under study. In the questionnaire, the author was concentrating on five thematic question modules under study:

- 1) Attitude (evaluation of topical problems, environmental protection, interaction of environmental and economical issues, responsibility for the care in environmental protection, topicality of environmental problems).
- 2) Evaluation of the ecological risk contents (subjection to ecological risks, evaluation of the national economy processes causing risks, evaluation of the damage caused by the ecological risks, identifying the content of the ecological risks).
- 3) Views on the risk society (evaluating features of the risk society).
- 4) Level of knowledge on ecological risks and media (knowledge on national economy processes causing risks, knowledge on damages caused by ecological risks, sources of information on ecological risks, knowledge on actions in case of different ecological disasters).



**Figure 2. Research Model<sup>4</sup>**

<sup>4</sup> The schematic survey model is created on the basis of a sample model of the welfare survey of the European Social Research programme (*Welfare attitudes in a changing Europe: module template with background information, survey questions to be used in ESS Round 4, European Social Survey*).



- 5) Activities for risk reduction (readiness to participate in environment improvement activities, participation in environmental protection measures).

In addition a block of social and demographic factors and its connection with all the above-mentioned blocks of questions was examined by assuming that these factors have more or less significant influence on all the thematic modules of questions under study.

When creating the survey questionnaire, the author of the thesis used indicators and measurement scales from studies conducted during previous years (EVS, WVS, ISSP, EB, *Human Safety in Latvia* and *Nuclear Energetics and Conditions of Human Life*) by adapting and adjusting them for the realization of the goal and objectives set in the doctoral thesis. The multilevel random selection was used to create the selection group, taking into account that every element from the selection frame has certain probability to be included in the selection that is not equal to zero. Calls were made to both mobile and landline phone numbers.

In order to ensure the planned selection amount  $n=800$ , the total number of contact attempts was 8168. When performing the quality control of the survey fieldwork and verifying the quality of the data input, only four questionnaires were declared to be invalid for the analysis of results. The number of completed interviews was 817; 813 of them were declared to be valid for further data analysis. The non-respondent amount reached  $n=7355$  (the non-response recording see in the appendix 2 of the doctoral thesis).

The data input was carried out in the program RM PLUS WARP-IT. The open or text questions in questionnaires were written down in free text form and then encoded.

The data validity and input quality was controlled and ensured according to the international methodology (ESOMAR standards) by verifying 10% of the input questionnaires.

After the data input, the gathered material was transferred from the RM PLUS WARP-IT DATA ENTRY program to SPSS 19.0. This program was used for the further data processing.

The data were subjected to the weighing procedure on the basis of the latest statistical information on the number, gender, age, and regional distribution of the Latvian population provided by the Population Register of the *LR IeM PMLP*.

### **3.2. Resident Attitude to the Environmental Protection in the Context of Latvian Problems**

According to U. Beck's approach, a risks can be defines as systematic interaction of the socoety with hazards that are induced and produced in the course of the modernization process. Industrialization has created new risk types, in addition, the boundaries of potentially hazardous risk consequences are widening as the result of globalization processes (Beck, 1992, 2002). One of the global risks is the *ecological risk* that takes the central place in this research.

This chapter focuses on questions that characterize the overall public opinion on problems in Latvia and environmental protection in general. Hypotheses were put forward and, respectively, analysis was carried out on the resident concern on environmental degradation, i.e., problems and situation in this field not only on the level of unidimensional analysis, but also mathematical verification on the interconnection of the representation systems of these modules – hierarchy of problems (1), state – individual (2), and economic input (3) – was performed. During the research, all the hypotheses set forward were confirmed.

Table 3.4.

**Summary of Hypothesis Confirmation**

1.	The Latvian population includes the environmental problems in the context of social problems in the group of most actual problems	Hypothesis confirmed
2.	There exists statistically significant connection between the opinion “care for/not care for” the environmental protection and the opinion on how important the environmental problems are in the country	Hypothesis confirmed
3.	In the question on responsibility distribution in environmental protection – state or individual –, the Latvian population believes that the responsibility should be accepted both by the residents and the state	Hypothesis confirmed
4.	There exists statistically significant connection between the public opinion that the government must reduce the environmental pollution, but not at the expense of the residents, and the public opinion that the economic growth and creation of new working places must be priority, even if the environment has to suffer to some extent	Hypothesis confirmed
5.	There exists statistically significant connection between the public opinion on agreement to increase taxes if there is certainty that this money will be used to reduce the environmental pollution and the opinion that the environmental protection must be priority even if this means slower economic growth and loss of a certain number of working places	Hypothesis confirmed
6.	There exists statistically significant connection between the opinion “care for/not care for” the environmental protection and the opinion that both the government and the residents must take care for the environmental protection	Hypothesis confirmed

When verifying how the social and demographic factors influence the answers provided by the Latvian population in the evaluation of general problems (the listing of these problems also includes environmental questions), with the help of the  $\chi^2$  test it was stated that not all the social and demographic factors influence the opinion on the environmental problems. The evaluation of the environmental problem topicality expressed by the Latvian population is influenced by the education level and the type of the place of residence – rural area, urban area, or Riga. It means that, when analyzing and interpreting this

question, the attention should be paid to the fact that the environmental problems are perceived as topical mostly by respondents with secondary general and higher education living in Riga and other cities of Latvia. In rural areas environmental problems are perceived as less important that could be explained by higher quality of the environment as well as by other factors, for instance, extremely low level of welfare that depresses concerns about everything else (see the DT P8, chapter 3.2.). In their turn, such factors as gender, age, nationality, and region where the respondent lives do not influence the opinion on the environmental problems.

When assessing the public opinion that the environmental protection must be priority even if that means slower economic growth and loss of a certain number of working places and the opinion that the economic growth and creation of working places must be priority even if the environment has to suffer to some extent, it can be concluded that the evaluation on these two opinions was influenced by several demographic factors: gender, nationality, and the place of residence, but it was not influenced by the resident age, education and region. Male respondents (69.0%) more often than female respondents (51.8%) believe that the economic growth must be priority even if the nature has to suffer. Similarly, Latvians more often than other nationalities care for the environmental protection rather than the economic growth and creation of working places (see the DT P8, chapter 3.2.).

### 3.3. Identification and Evaluation of Ecological Risks

One of the components of the ecological awareness is the human concern of the environmental degradation and its prevention. U. Beck indicates that a great part of the modern society risks are the so called luxury risks that are related to the possible consequences of the improved living conditions, and not the fight with natural forces or concern of survival. U. Beck demonstrates such consequences of risks in the risk society: 1) *delocalization*; 2) *unpredictability*; 3) *unbalanced position* (Beck, 2006: 234).

In this chapter individual research questions were defined in the way so as to evaluate how the Latvian population identifies and defines ecological risks, evaluate processes of nature and national economy that create ecological risks as well as the damage caused by the ecological risks, thus evaluating the anxiety of residents about the environmental degradation that is one of the indicators of the *ecological awareness*.

To the question whether their life is subject to ecological risks, 42.8% of respondents provided affirmative answer, 40.0% gave negative answer, but 17.3% of respondents had difficulties in defining their opinion (basis n=813) (see the figure P6 E.1).

When characterising the ecological risk<sup>5</sup>, an opinion that corresponds to the characteristic trait of the risk society theoreticians prevailed in the answers of respondents – 67.3% indicate that the ecological risk is related to the result of human activity or *environmental pollution*. In this block of answers, the residents noted air and water pollution most frequently.

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<sup>5</sup> The respondents who noted that their life is subjected to risks were asked to specify what they understand with words “ecological risk”, the respondents were offered an opportunity to provide for three response variants.

As the second most important ecological risk, the respondents (17.0%) indicate various *nature problems*, a part of which is natural disasters, but a part can be characterized as the consequences caused by human activity. A little smaller number of residents specified the following ecological risks (or consequences of the said risk): *influence of ecological problems on human health, food problems, concern about different catastrophes, accidents, use of different chemical substances, burning of the last year's grass and deforesting*. A part of the respondents included answers in the risk concept that is related with *general attitude towards risks*, a part of the respondents linked the concept "ecological risks" with *different limitations* that are caused by the aggravation of the ecological situation. Comparatively few respondents (2.9%) noted *climate changes* as the ecological risk, basically a generalized answer "climate changes, green-house effect, global warming" was given.

When evaluated by the residents, three most dangerous processes of the national economy generating ecological risks are disposal of waste in forest, uncontrolled use of chemicals in agriculture and food industry, as well as pollution of water bodies. The least dangerous aspect in the generation of ecological risks is construction of small HPSs and the technological processes of their operation (see the DT P6 Fig. E.3).

In the verification with the  $\chi^2$  test, in order to determine how the provided answers, that characterise the opinion of the Latvian population on the content of ecological risks, are influenced by the social and demographic factors, such a connection was established between two different variables. It proved that the opinion of the residents is not influenced by their gender, education and nationality, at the same time it is influenced by their age, region and place of residence.

The greatest percentage of the respondents who believe that they are subject to ecological risks, is situated in Riga. That is not surprising as Riga has the highest density of population, respectively high number of vehicles, lots of

garbage, etc. When looking at the age groups, the respondents considering that they are subjected to ecological risks mostly belong to the age group of 35–44 years and 25–34 years. But the groups of respondents least concerned about the threats of ecological risks are in the age of 18 to 24 years and the age of 55 to 74 years. When generalizing, it is possible to say that these problems cause less concern to “young people” and “elderly people” (see the DT P8, chapter 3.3).

### **3.4. Public Opinion on Risk Society**

Abundance of information on possible risks is considered to be a characteristic feature of the risk society, in addition, unlike the industrial society where risks were defined by experts and authorities, the confidence of residents in expert systems in a risk society has decreased or disappeared at all. At the same time the risk consequences cannot be predicted and it is not possible to secure oneself sufficiently against them due to their complexity and probable future consequences as it used to be before, in addition the abundance of information on the subject of risks creates new risks.

In this chapter the research questions were set so that it would be possible to evaluate whether the opinions of the Latvian population can be compared with these characteristics defining the risk society, and what social and demographic factors have impact on the answers.

The answers provided by the Latvian respondents also confirm the statement of the risk society theoreticians that the society every day receives so much information on various risks that it is difficult to orient oneself in it, in their turn, the unpredictable consequences of risks forbid structuring an action model for their prevention to some extent since no credible knowledge on the risk content is available.

The respondents were asked if they agreed with the statement that any field of life is subject to certain hazards or risks. The Latvian population is aware of life in connection with certain risks: 66.3% of the respondents gave affirmative answers that in everyday life any field is subject to certain risks, 18.5% denied this statement, but a great part of respondents (15.2%) had no opinion on this question (see the DT P6, Fig. R.1.). From all the respondents who provided affirmative answer to the question “Do you agree with the statement that any field of life is subject to certain hazards or risks?” (n=539), 88.3% indicated particular risks. In their turn, from the respondents indicating particular risks (n=476), 61.9% named reasons of ecological character (see the DT P6 Fig. R.2.a., R.2.b.).

78.3% of respondents consider that the possible harm of the risk can be predicted only approximately, 71.1% – that the level of the risk danger is determined by experts of different fields, and almost the same number of respondents (71.3%) agree with the opinion that the inactivity of the society creates new risks (see the DT P6, Fig. R.3.).

A bit more than a half of the Latvian population considers: though people recognize the existence of ecological risks, they think that their existence is not endangered (55.5%); 52.9% of respondents attest that people speak so much about different catastrophes, accidents, and risks that it is not possible to worry about them every day. Approximately half of residents (48.9%) have the following opinion: the more information on risks is received, the greater is certainty on uninterrupted growth of risks. At the same time only 25.4% of respondents believe that the abundance of the information on ecological risks generates new risks.

To the question whether respondents would be able to protect themselves in case of an ecological emergency, only 24.2% of the respondents gave affirmative answer, but 59.2% of the respondents thought that they would not manage to do it.



When using the  $\chi^2$  test to statistically control how the social and demographic factors influence the answers given by the Latvian residents, what characterises the evaluation provided by them in relation to characteristics present in a risk society, it can be concluded that the affirmation of residents that they agree with the statement that any field of life is subject to certain hazards or risks is affected by such variables as the age, education, region, and the place of residence. Though all the respondents quite unanimously believe that any field of life is subject to risks, still, when speaking about risks in general, the respondents with higher education are the ones that more frequently believe that any field of life is subject to risks (the same is true about the respondents living in Riga and Pieriga), but the respondents with the basic education very rarely voice the opinion that any field of life is subject to risks (see the DT P.8., chapter 3.4.). This means that education (and also the region) is one of the determining factors in this question.

Nevertheless it was not stated that the variables of gender and nationality would have any influence on the statement evaluations expressed by the residents.

### **3.5. Knowledge of the Latvian Population on Ecological Risks**

Theoreticians of the risk society, when characterizing a risk society, indicate that the residents in such a society every day receive abundant information on risks, and the situation itself creates new feeling of danger. At the same time, one of the components of the ecological awareness is the resident knowledge on environment-degrading factors and their prevention. This section of the doctoral thesis is devoted to the clarification of the resident knowledge or awareness of ecological risks.

When answering the question to what extent they were informed about the ecological risks that could be generated by environmental problems, less than a half of the respondents (44.0%) could evaluate their level of knowledge as good or very good. The received answers also prove that the society in Latvia in general has poor knowledge on the action plans in case of high dangerousness since the majority of the respondents admitted that they would not know what to do in case of an industrial emergency or its threats in high-risk objects, in case of chemical leakage or nuclear plant accident. It can be concluded that in general the Latvian population is not prepared for emergency situations and has not enough knowledge on this type of accidents and the most appropriate actions in this case (see the DT P.6.C.2., C.3, C.4.).

The reason for the poor knowledge of the residents on actions in case of different technogenic accidents can be conviction that such emergencies cannot affect Latvia and its residents, due to this reason the information on them is not necessary. It is reflected also in the question asked to the respondents on the situation now in Latvia and whether the Latvian population is subject to ecological risks. 62.5% of respondents answered that the Latvian residents are subject to relatively few ecological risks, but 18.8% – that the Latvian population is practically not subject to ecological risks.

When comparing the distribution of the most popular information sources according to the criterion on from where the respondents receive the information on ecological risks and from where they would like to receive it, it can be concluded that undeniable leaders in the information distribution are the television, Internet, press, and radio.

The statement of U. Beck that in a risk society experts are those who determine the level and hazard of the risk is supported by the fact that 18.7% of the respondents have named the evaluation provided by experts as the best preferable source of information, thus revealing the desire to receive comprehensive and high-quality information on ecological risks. Nevertheless

the information provided by experts at present is indicated as the source of information for the knowledge on ecological risks only by 4.8% of respondents.

When performing analysis of the hypothetical assumption that “there exists statistically significant connection between the level of the resident knowledge and the opinion that the abundance of information on ecological risks creates new risks” with the help of the  $\chi^2$  test, it is possible to determine that the respondents who have high level of knowledge on ecological risks believe that the abundance of information on ecological risks cause new risks more often than other respondents (see the DT P.7., Table 3.16.).

When verifying with the  $\chi^2$  test how the social and demographic factors influence the provided answers characterising the opinion of the Latvian population on the content of ecological risks, it was stated that that answers to the question to what extent in general the residents are informed on those ecological risks in Latvia that could be caused by environmental problems were influenced and are interdependent on such variables as the age, education, and region, but were not influenced by the factors of gender, nationality or place of residence. For instance, the level of education determines the level of the respondent knowledge on ecological risks as the respondents with the basic education feel less informed on ecological risks (see the DT P.8., chapter 3.5.).

### **3.6. Readiness of the Latvian Population to Engage in Reduction of Ecological Risks**

The ecological awareness is also characterized by the readiness of residents to devote time and invest means in the environment preservation and protection. In this chapter the research questions were phrased in the way as to evaluate if there exists statistically significant connection between the environment improvement activities of the Latvian population in time

dimension and to determine what the exact activities are for the improvement of the environmental situation where the inhabitants are ready to participate.

The majority of respondents answered that in future would participate in the following activities: dispose of waste in special places only (definitely – 59.1%, rather yes – 31.7%), use economic light-bulbs (definitely – 45.6%, rather yes – 38.3%), hand over outdated household appliances, batteries in special places only (definitely – 41.4%, rather yes – 40.6%), sort household waste (definitely – 36.3%, rather yes – 43.1%), use more environment-friendly household chemicals (definitely – 33.9%, rather yes – 44.9%), etc.

When conducting verification with the  $\chi^2$  test in order to determine if there exists statistically significant connection in the activities of the Latvian population in the field of environmental protection in time dimension, the statistically significant connection between these variables was proven. All the performed measures are more active now than it was in the past (apart from seasonal activities – tree planting, participation in community work days and use of bicycle as a means of transportation). It can be concluded that the activities fixed in the question have tendency to increase: for instance, 29.4% of respondents declare that they have sorted household waste in past, but now it is done by already 35.9% of respondents, and 79.4% of the respondents are planning to do it in the future (Fig. 3.6.).

When analysing how social and demographic factors influence the provided answers characterizing the readiness of the Latvian population to participate in different activities in order to improve the environmental situation with the  $\chi^2$  test, it was stated that not all the social and demographic factors are dependent on the variable that determines the readiness to act.

When speaking about the participation in activities that could improve the environmental situation at large, in all the cases except for the acquisition of water treatment equipment for private houses, women are ready to participate in different activities more frequently than men, also in all the cases Latvians

appear likely to be more active than other nationalities, and also respondents with higher education are ready to be more active in almost all the fields than people with basic or secondary education (see the DT P8, chapter 3.6.).

When examining different indicators that characterize the resident knowledge and care for the ecological values, it must be concluded that most often those are interdependent on such demographic indicators as age and education, while the statistical dependence is the most seldom stated in relation to the type of the place of residence, respectively, whether a person lives in Riga, in an urban or rural area, as well as on the nationality. In addition, the variables characterizing the activity are influenced by almost all the variables of demographic indicators. The dependence of variables characterizing other blocks on so many demographic indicators is not observed.

When creating the theoretical model (Fig. 2.), already at the beginning of the work, it was envisaged to verify the interrelation and influence of the question modules. The *Kendall's tau b* coefficient was used to verify the interconnection (1) between the module of the evaluation of the ecological risk content and the module that characterizes the activity in risk reduction; (2) between the module “level of knowledge on ecological risk” and the module “activities for risk reduction”, (3) between the module of the level of knowledge on ecological risks and the module of the evaluation of the ecological risk content. In all three cases the interconnection between the modules was proven. The *Goodman* and *Kruskal tau* rank correlation coefficients were used to verify the interconnection between the module “activity in risk reduction” and the module of general attitude as well as between the module of the evaluation of the ecological risk content and the module of general attitude. In both cases the interconnection was confirmed. Thus, the data analysis proved the interconnection of the modules and confirmed the set hypotheses accordingly.

## CONCLUSIONS

The theoretical substantiation of the doctoral thesis is based on two important directions of sociology dealing with study of environmental issues – this is the „new ecological paradigm” developed by Americans W. Catton and R. Dunlap and representing the idea of environmental realism in studies conducted since late 1970s, and the „environmental constructivism” approach by U. Beck, A. Giddens, N. Luhmann, and others that has been developing since 1990’s with studies published on the risk society.

U. Beck, A. Giddens, and N. Luhmann are very different in the aspect of theoretical interpretation, yet the author uses the „free” definition of risk by exactly these three authors in her conceptualization of the risk society, namely, although each of the mentioned theoreticians offers their own interpreting of the risk and risk society, they still define it using several characteristics rather than with a single theoretically justified and practically approved definition (the interpretation by N. Luhmann is the least definite, while the most precise interpretation of the risk and risk society is provided by U. Beck, when taking the tree mentioned ones). Finally, in this thesis the author has combined a summary of theoretical aspects of the risk society and the ecological risks as well as the analysis of surveys conducted earlier on ecological problems, and developed a questionnaire and carried out an inquiry directed at the very evaluation of ecological risks, not the analysis of general environmental issues.

When analyzing the definition and origins of the *risk* concept, the author has paid particular attention to the notion of the *risk society* in the first chapter of the thesis. Within the framework of the risk society, one of the most significant risks that the modern society has to deal with is the ecological risk. An extended analysis of the ideas by authors examined in the first chapter (mostly N. Luhmann, A. Giddens, and U. Beck) provides the theoretical

justification for the theme examined in the thesis on the evaluations of ecological risks as elements characterising the ecological awareness. In addition, approaches of other authors to the analysis of risk perception have been examined, different models of risk interpretation have been evaluated in order to acquire deeper insight into the problems of the risk and risk society research.

While developing the doctoral thesis and realizing the objectives set in the Introduction, the goal of the research was reached and the study of the ecological awareness of the Latvian society was carried out on the basis of the representations of the Latvian residents on evaluation of ecological risks; at the same time the interconnection of the components of the ecological awareness was established. When working out the doctoral thesis, the author came to several conclusions:

- The risk concept, though being similarly theorized in different disciplines, historically and in each particular field of science acquires a bit different shade of view. The common characteristic is that the risk is always associated with the admission of probability elements for a situation of harmful consequences.
- The risk identification and management in every society can be led in a different way taking into account the understanding of risks as well as the attitude of the society towards the admissible level of risk.
- There exist five different risk perception theories: knowledge, personality, economical, political, and cultural risk perception theories. Namely, when interpreting an individual's risk perception, one uses the criteria of knowledge, personality features, economical level, political choice, and cultural peculiarity.
- One of the most significant risks within the frames of the risk society that is faced by modern society is the ecological risk.

- The outset of the nature socialization can be considered to be the dawn of the ecological alienation that is viewed by U. Beck in his risk society concept as one of the characteristics of the risk society. Namely, the nature socialization has promoted the formation of a dominant social paradigm that was based in the man's dominance over the nature, but the most important function of the nature – to produce wealth for the mankind and inexhaustibility of natural resources.
- Residents, even though they are informed on ecological risks they are not aware that they are living in a risk society, or, by putting it into the words of U. Beck, the society cannot be protected from the production of new risks since the society that is not willing to notice and acknowledge the existing risks cannot reduce them in the future either.
- International studies in the field of environment are not carried out frequently enough, and Latvia, most probably, does not use all the possibilities to participate in such surveys and quite rarely initiates the conduct of such surveys on national level. The information obtained up till now does not ensure the required full picture for the development of large-scale measures, programmes that could promote even more the development of the society's ecological awareness.
- It would be important not only to promote increased level of ecological awareness of the architects of policy, but also to evaluate the efficiency of such measures on regular basis – that would permit to gather information about the questions that require particular attention.
- The former studies in the field of nature protection were mostly analyzed without interpreting their results according to the ecological awareness, and their authors have not used the evaluation of ecological risks as an instrument for characterization of the ecological awareness. Due to this reason in the empiric research conducted within the frames of the doctoral



thesis, the author paid particular attention to the ecological awareness of the Latvian population by interpreting the evaluation of the ecological risks by residents in the context of the risk society.

- The Latvian population is worried about the condition of the environment; a part of the residents has sufficient knowledge on the environment-degrading factors and possibilities for active participation in the environmental improvement.
- The level of the ecological awareness of the Latvian population favours the readiness to act for the improvement of the environmental condition, yet people consider that the government takes great role in solving these issues and that the tax burden is not used for the settlement of ecological problems to full extent. The current complex economical situation is the basis for the economic and poverty eradication issues to be considered as the primary ones.
- The Latvian population in general is not informed in the action plan in case of high-risk technogenic accidents or their danger. When determining the reasons for the low level of resident knowledge on their actions in case of different technogenic accidents, the reason can be their conviction that such accidents cannot affect Latvia and its residents, due to this reason the information on them is not required. This attitude causes particular concern that the Latvian society does not acknowledge new risk types in due time that, as stressed by U. Beck, are formed in the risk society under the influence of modernization. It is necessary to note a positive tendency, though: the majority of respondents believe that they know where to find information on the particular ecological risk if needed.
- Residents that admit that they are not sufficiently informed about the ecological risks, but try to find additional information on a particular ecological risk and the damaged caused by it when needed, is the potential part of the

Latvian population with a tendency to identify and acknowledge ecological risks. This part of residents is passive, but in case they were provided with free-of-charge information on different ecological risks and processes causing these risks, the activity would probably increase and the damage caused by ecological risks would reduce.

- Awareness of the residents that their personal input can be important for the improvement of the nature condition increases the likelihood that the residents would actively engage in any real activities for environmental protection. The Latvian population is more prone to acknowledge the importance of the environmental protection and to engage in discussion of ecological problems and active participation that, in its turn, has impact on the decision-taking in the field of environmental policy on the state level. The residents are willing to participate more in activities that have no direct influence on their economical situation.
- The Latvian population is ready to change those everyday habits that can promote environmental protection but does not require considerable financial investments.
- When examining the indicators characterizing ecological values in total, it can be concluded that most often they are interdependent on such demographic indicators as age and education, while the statistical dependence is least observable in case of populated area type (whether a person lives in Riga, an urban or rural area), and nationality. In addition, the variables characterizing the activity are influenced by almost all or all variables of demographic indicators. Interdependent bond between variables characterizing other blocks with so many demographic indicators is not noticeable.

When carrying out the verification of interconnection with the help of the *Kendall's tau b* coefficient, the hypotheses set forward at the beginning of

the doctoral thesis were verified. In all three cases the interconnection between the modules was proven.

(1) Evaluation of the ecological risk content by the Latvian population has poor interrelation with the activity of the Latvian population in risk reduction, namely, there exists interrelation between two components of the ecological awareness – the more pronounced is the anxiety of the Latvian population about the environmental degradation, the greater is the resident readiness to invest time and means in environmental preservation. This hypothesis relates to the thesis of E. O’Sullivan and M. Taylor that the ecological awareness is the response to ecological problems. Anxiety about the environmental degradation is like social accelerator for more active involvement of the Latvian population in environmental protection with investment of personal means and time.

(2) The level of knowledge of the Latvian population on ecological risks has poor interrelation with the evaluation of the ecological risk content, namely, only 6 indicators out of 20 possible ones show mutual influence. Thus, there exists poor connection between the knowledge on the environment-degrading factors and the anxiety about the environmental degradation. This hypothesis relates to the thesis by U. Beck on risk legitimating: the society knows, it is informed that risks exist, but chooses behaviour manifesting that it denies or ignores the said information on risk existence. Respectively, the knowledge on ecological risks does not influence the anxiety of residents about ecological problems. Thus, it is difficult to prevent something that is denied by the society.

(3) The level of knowledge of the Latvian population on ecological risks has poor interrelation with their activities in risk reduction, namely, if residents feel well-informed on ecological risks, they are being actively involved or are ready to participate in risk reduction while investing their time and means. Yet, in the context of participation or readiness to act, it is

necessary to take into account that increase of the level of knowledge does not automatically mean correct actions in risk reduction, as it is noted by M. Douglas and A. Wildavsky and that is to some extent proved by the attitude of the Latvian population in the question on such involvement that would have impact on personal material welfare level. Similarly as U. Beck states on the possibility to reduce the society's subjection to risks only in case if people are aware of the risk-containing situation, it can just be concluded that the Latvian society, when acknowledging the possible hazards in the way of gained knowledge, becomes more active in reducing these hazards.

When analyzing the structure of the ecological awareness of the Latvian population, it must be stated that all three components of the ecological awareness (anxiety on environmental degradation, readiness to invest one's time and/or means in environmental preservation, knowledge on environment-degrading factors) are rather poorly interrelated, nevertheless such an interrelation exists, for instance, the readiness of the Latvian population to invest time and means in environmental preservation is influenced by the level of knowledge on the environment-degrading conditions as well as the anxiety about the environmental degradation. Knowledge on the environment-degrading conditions has influence on the anxiety of the Latvian population on environmental degradation. The content of the ecological awareness components is influenced by different demographic indicators, still, when describing the total view, it must be concluded that the most expressed characteristics can be noticed in the section of regions, gender, and education.

The conclusions, mutual regularities and the influencing factors that were obtained by analyzing the evaluation of the ecological risks by Latvian population can be used as criteria for developing a set of instruments for the creation of the content of the ecological awareness components and management of the ecological awareness advance of the Latvian population.

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2. 2 <sup>nd</sup> International Veterinary Laboratory Scientific and Applied Conference “Laboratory diagnostics today and its future challenges”, Latvija, Rīga, augusts, 2009, referāts „Particularities of Research Methodology in Researches on Population Health Issues”.
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10. International scientific conference „Human Potential Development: Search for Opportunities in the New EU States”, Lietuva, Viļņa, 2010, referāts „Экологические риски: в какой мере мы их осознаем?”
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14. Rīgas Stradiņa universitātes 10. zinātniskā konferencē, Rīga, marts, 2011, referāts „Ekoloģiskie riski – vai mēs tos apzināmies? Pētījumu analīze”.
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