
Lund University

Lund University Master of International Development and Management

May 23, 2011

***Sustainable Future:
Students' perception of sustainable development
Case study of Ukraine***

Author: Oksana Khmel

Supervisor: Catia Gregoratti

List of Acronyms

DESD - Decade of Education for Sustainable Development

EC – European Commission

EFA - Education for All

EHEA - European Higher Education Area

ENP – Environmental Neighborhood Policy

ESD – Education for Sustainable Development

HEI – Higher Education Institutions

MDG – Millennium Development Goals

MESU - Ministry of Education and Science of Ukraine

NCTS - National Credit Transfer System

SD – Sustainable Development

SDI – Sustainable Development Index

UN – United Nations

UNCED - United Nations Conference on Environment and Development

UNESCO - The United Nations Educational, Scientific and Cultural Organization

UNLD - United Nations Literacy Decade

WB – World Bank

Abstract

Sustainable development has been recognized as a global concern by the majority of the countries around the world. The importance of education for sustainable development for reaching sustainability has been recently emphasized by the international community. As a result of this recognition, the decade of education for sustainable development has been initiated by UN.

The purpose of this thesis is to study what actions Ukraine has adopted towards reaching sustainability, particularly in the education sphere. The study explores how the elements of sustainable development are incorporated into higher education in Ukraine and how students perceive and value this concept.

The study has been carried out using a combination of questionnaires, informal discussions, website and literature analysis. The results achieved indicate that educational development towards sustainability is extremely slow, with national commitments being mostly declarative. At the university level there are no programs and courses that cover sustainability issues and no extra classes related to sustainability are offered. The analysis of the questionnaires shows that the awareness about the concept of sustainable development among the students is extremely low. The results indicate that the sustainability ranking of Ukraine will not change in the nearest future.

Table of Contents

1. Introduction.....	6
1.1. Introduction to the problem.....	6
1.2. Setting.....	9
1.3. Main purpose of the research.....	14
1.4. Research questions.....	15
1.5. Outline of the study.....	15
2. Theoretical Framework.....	16
2.1. Background of sustainable development.....	16
2.2. Education for Sustainable Development (ESD).....	19
2.2.1. Interpretation of ESD.....	19
2.2.2. Challenges to ESD.....	20
3. Methodology.....	20
3.1. Research design and strategy.....	21
3.2. Research methods.....	21
3.3. Collection of primary data.....	22
3.3.1. Questionnaire.....	22
3.3.2. Selection of sample.....	23
3.4. Ethical considerations.....	24
3.5. Quality of the research.....	25
3.6. Limitations of methodology.....	25
4. Empirical results.....	26
4.1. Presentation of the empirical data.....	26
5. Discussion.....	32
5.1. Education at the university.....	32
5.2. Students' perception of sustainability.....	33
6. Conclusions.....	34
6.1. Research questions.....	34
6.2. Further research.....	35

References.....36

Appendix.....40

 Appendix 1: Sustainable development questionnaire40

1. Introduction

1.1. Introduction to the problem

Sustainable development

Throughout history and human evolution the demand for natural resources has risen. The human transformation of the planet that had to meet rapid demands for food, freshwater, timber and fuel, contributed to the gains in human well-being and economic development. This transformation together with global population growth is continuously putting more stress on the capacity of the ecosystem to deliver services (Allan, 2005).

With the consequences of environmental degradation and overexploitation of natural resources becoming more obvious, ecologists more and more started to point that resource supplies are not finite (Donella H. Meadows et al., 1972). From the 1970's the perception of the notion of sustainability has developed. Along with traditional economic rationality view (expansionist perspective – Figure 1), which relies on simple mechanics of free and open markets for ensuring sustainability, an alternative ecologically-minded view has been introduced (Figure 2), which sees the economy not as a separate isolated system, but rather as an inextricably integrated, completely contained, and wholly dependent subsystem of the ecosphere (Rees, 2001, p.3;8). The latter view has developed a lot since 1970 describing an economy "in equilibrium with basic ecological support systems" and started to introduce more and more responsibilities for businesses around the world (Stivers, 1976).

FIGURE 1: The Expansionist Perspective

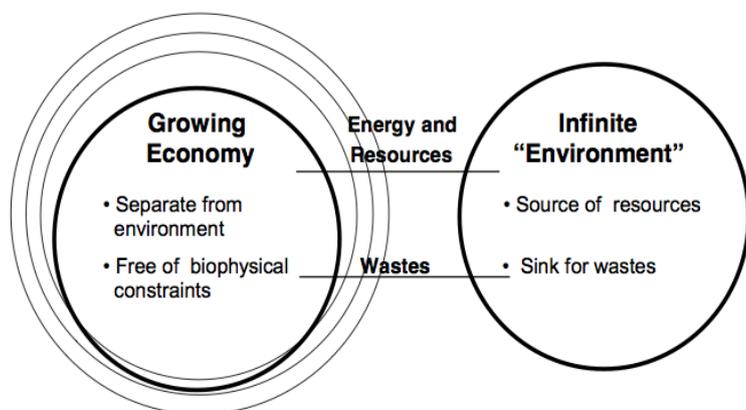


Figure 2 The expansionist Perspective

(Source: Rees 2001, p.3)

FIGURE 2: The Ecological (Steady-State) Perspective

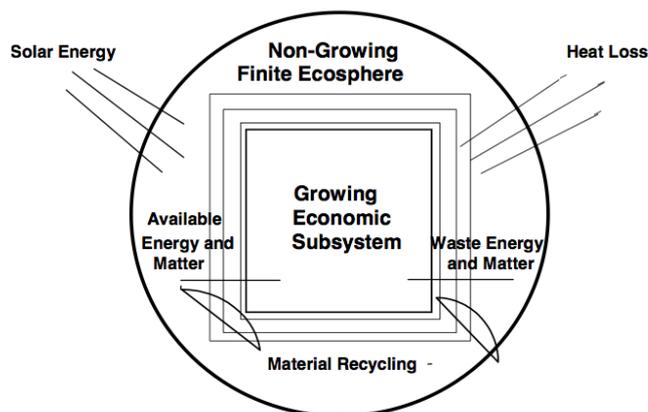


Figure 1 The ecological Perspective

(Source: Rees 2001, p.8)

On a global level the issues of “accelerating deterioration of the human environment and the consequences of that deterioration for economic and social development” were raised at the Brundtland Commission in 1987 (WCED, 1987). Sustainable development was then defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” and is now the most common definition of sustainable development. Another global event, the Rio Earth Summit (1992) also addressed the issues of achieving more sustainable global development. As a far-reaching result, it came up with a framework for action, the Agenda-21. Some of the aspects it focuses on included: quality of life

(eradication of poverty, control in population growth), the efficient use of natural resources and sustainable economic growth (Pelling, 2008, p. 290).

The Agenda-21, which also urged countries to develop strategies for sustainable development, was later supported by the World Summit of Sustainable Development (2002) and UN Millennium Declaration (2000), particularly in the areas where human impacts on the environment (UN Department of Economic and Social Affairs).

During almost 20 years since the strategy for sustainable development has been introduced in 1992 at the United Nations Conference on Environment and Development (UNCED), some countries have started to set up preconditions for developing strategies that would ensure their country's sustainable development, while others managed to have their SD strategies already developed. Some, particularly, put emphasis on the role that companies, forming the country's business environment, play in affecting country's sustainable development, others emphasize the importance of the concept of sustainable development to be a part of people's natural consciousness. Lately the critical role of the education in helping to promote sustainable development has been emphasized. Below the focus will be made on analyzing the role of education for sustainable development and how it can contribute to achieving global sustainability.

Education for sustainable development

The international community attached importance to education for sustainable development during the World Summit held by the United Nations in 2002 proclaiming the period from 2005 to 2014 the "UN Decade of Education for Sustainable Development" (DESD). The role of education was emphasized and it was identified as an "indispensable element for achieving sustainable development" (UNESCO, 2005). The United Nations Educational, Scientific and Cultural Organization (UNESCO) was chosen to lead the Decade of Education for SD and develop an International Implementation Scheme for the DESD in consultations with United Nations agencies, national governments, civil society organizations and NGOs (ibid). UNESCO defined the overall goal of the UN Decade of Education for Sustainable Development as:

... to integrate the values inherent to sustainable development into all aspects of learning to encourage changes in behavior that allow for a more sustainable and just society for all (UNESCO, 2005, p. 1).

The global issues of sustainability, which lie at the core of ESD, cover the following spheres: environment, society and economy. Environmental threats including natural resource depletion, pollution, deforestation, toxic waste can affect any nation along with social issues as human rights, gender equality, peace and human security (UNESCO, IIS, 2005, p.7). Economic threats such as poverty reduction and corporate responsibility and accountability need also to be addressed by the global society in order to ensure sustainable development (ibid).

DESD contributes to improving the quality of life, fulfillment of human rights and active citizenship along with other global initiatives. Among these initiatives, the following should be mentioned: the Education for All (EFA), United Nations Literacy Decade (UNLD), Millennium Development Goals (MDGs). While EFA focuses on providing educational opportunities for all, UNLD promotes key learning tool for structured learning, and MDG sets education as one of the indicators for measuring the achievement of the goals, DESD shares the common ground with the above mentioned initiatives but focuses more on the content and purpose of education (UN DESD).

The initial major thrusts of education to support sustainable development have been identified in Agenda 21 and include:

- (i) improving access to quality basic education with an emphasis on development of critical-thinking skills, skills to interpret data and information, ability to analyze issues

that confront communities and through education positively impact on people's lifestyles and behavior;

- (ii) reorienting existing education programs in order to include knowledge, skills, perspectives and values related to sustainability in its three perspectives – environment, society, and economy;
- (iii) developing public understanding and awareness of sustainability through developing a knowledgeable citizenry;
- (iv) providing trainings in all sectors including business, industry, higher education, governments, non-governmental organizations and community organizations (UNESCO, IIS, 2005, p. 29-30).

These thrusts have later on been expanded and reformulated based on the reports of the major UN conferences and work of UN Commission of SD and include the following:

- (i) public understanding of the principles behind sustainability through practical application of its culturally appropriate forms;
- (ii) mainstreaming ESD into all sectors – business, agriculture, tourism, natural resource management, local government and mass media;
- (iii) lifelong-learning for all through developing skills to adopt to rapid rate of change in knowledge reflecting the societal needs;
- (iv) reorienting existing education at all levels to address SD;
- (v) specialized training programs for all sectors of the society to keep the world in a sustainable manner (Global development research center, 2011).

ESD challenges all forms of education to deal with issues that undermine global sustainability. The formation of the sustainable society is crucial for sustainable future in which education does play an extremely important role. Close cooperation between all sectors of the education community is needed, especially at the university level, as they all touch the lives of people at different stages.

Sustainable development at the university level

Governments, international organizations, NGOs, educational institutions and schools are now engaged in various initiatives and campaigns to promote ESD around the world. Along with other stakeholders, higher education institutions across the world are also involved in making contributions towards improvement of sustainability in general and aim at increasing awareness and knowledge of students about social, environmental and economic issues and their complexity.

The role of higher education institutions in ESD has been identified by Clugston and Calder (2000, p. 34) as to “help students understand the roots of environmental degradation and motivate them to seek environmentally sustainable practices while also teaching the roots of today's injustices in full integration with modelling justice and humanness”.

Promoting the ESD programs in universities is a difficult and complex task. There is no common vision on how the ESD should be integrated into the university curriculum and different attempts on how to integrate sustainable development into existing fields of study have been made. While some believe that there should be separate courses/programs on sustainable development focusing mainly on the interactions between human activities and the environment, and their implications for sustainable human development, others support usage of integrated inter-disciplinary perspective throughout the whole education.

According to Lotz-Sisitka and Lupele (2006), teaching about sustainability issues should be organized from a range of disciplinary angles and take into account cultural perspectives, different time perspectives and a range of spatial perspectives. Holmberg and Samuelsson (2006) in their turn stress that both separate courses and integrative are needed for implementing ESD.

Things the higher education institutions should promote in order to effectively implement ESD were discussed in United Nations University Project Document on Education for Sustainable Development in Africa (2009), including: (1) interdisciplinary/multidisciplinary and holistic learning rather than single discipline-based learning; (2) values-based learning; (3) critical thinking rather than memorization and learning by repetition; (4) multi-method approaches including fieldwork, joint research, and internship; (5) participatory decision-making; and (6) raising student awareness of local as well as national and global issues (UN, 2009).

The role of universities in contributing to sustainable development has been analyzed in the research study conducted by Muchaiteyi Togo (2009). He particularly studied various declarations, which reference to sustainability in higher education. These references were made in Stockholm Declaration in 1972, 1977 Tbilisi Declaration, the Talloires Declaration (1990), the Halifax Declaration (1991), 1992 Rio Earth Summit, 1993 Kyoto Declaration, the Swansea Declaration (1993), The Conference of European Rectors-Copernicus (CRE-Copernicus) Charter (1994), The Thessaloniki Declaration (1997), The Lüneburg Declaration (2001), Kasane Declaration (2002, Botswana) and the Ubuntu Declaration (2002, Johannesburg, South Africa) issued at the World Summit on Sustainable Development. Though these declarations have different emphases, there are underlying themes which form the core of the role of universities in tackling the sustainable development problem, including: moral obligation, public outreach, sustainable physical operations, ecological literacy, develop interdisciplinary curriculum, encourage sustainable development research, partnerships with industry NGOs, government and inter-university cooperation (Wright, 2004, p.13). International Implementation Scheme, being one of the results of the launch of the United Nations Decade of Education for Sustainable Development also highlights the role of education, including higher education, in sustainable development (UNESCO, 2005) (see above).

1.2. Setting

Sustainable development in Ukraine

Changes happening on the international and national level of Ukraine in early 1990s, particularly the collapse of the Soviet regime and gaining its independence in 1991, have greatly affected its inner systems. Ukraine is still undergoing the process of transformation, altering the official state polity towards a new order “from totalitarianism to democracy, from command economy to market economy, from a passive to an active social role of individuals” (UNESCO-CEPES report 2006:11). Before the collapse, Soviet economic development policy was focused on global military, ideological domination and primacy in heavy industry (Vovk and Prugh, 2003, p.13). Heavy industry production was accompanied by overexploitation of natural resources, which were seen as infinite, and of no true value. Heavy energy subsidies, which resulted in inefficient energy consumption, along with outdated technologies contributed to existing environmental problems, i.e. air and water pollution. Soviet economic approach aimed at achieving industrial objectives and meeting steel quotas was incompatible with the emerging post-industrial knowledge and services economy of the early 1970s, which introduced such new technologies as energy and materials efficiency, computers and information processing, telecommunications, waste management and recycling (ibid). Only after the Chernobyl catastrophe in 1986, some important environmental regulations have been issued and in the beginning of 1987 authorities began declassifying

environmentally sensitive information, which they preferred to keep secret right after the accident. Environmental degradation, health problems and regime's policies resulted in massive opposition movements in the late 1980's with people hoping to some extent solve environmental problems through market liberalization, Western technologies and integration into the world economy.

The collapse of the Soviet system in 1991 has not brought the hoped-for effects of economic liberalization. In Ukraine the decline in economic output during the first years of transition has led to GDP shrinking by 60%, and a decrease in pollution as just a by-product. Nevertheless, the pollution intensity has increased compared with the shrunken industrial and economic output (emissions per unit of economic output). The threat of increasing unemployment led to more authorities being ignorant in terms of violations of environmental standards. While the output in less-polluting industry producing consumer goods has decreased, energy consumption per unit of GDP has grown for the needs of heavy industry. Even today Ukraine is not an efficient user of energy because the charging prices, both for households and industries, do not accurately reflect market energy costs (ibid). According to UN report, poverty, crime, disease and mortality rate have increased with this transition and shaping viable environmental policies has been left aside until the better times when the economy will be stronger (UN report, 1999). Privatization of state enterprises also contributed to their exploitation by oligarchs in order to maximize their profits. All these led to further environmental degradation.

According to a recent World Bank report, the ratio of merchandise imports and exports to GDP is high at some 80 percent, but exports are highly concentrated in metals, chemicals and machinery. Ukraine is highly energy inefficient and has significant unrealized potential as an agricultural producer and exporter (World Bank, CPS Progress Report, 2010). Thus, Ukraine's economy continues to be resource-intensive and environmentally unfriendly. Its position today in terms of environmental performance and the long-term sustainability of its economy is not placed high. Environmental Performance Index developed by Yale University, Columbia University in collaboration with the World Economic Forum which benchmarks the ability of nations to protect the environment over the next several decades and has 21 indicators of environmental sustainability puts Ukraine 87th out of 163 nations (Yale University report, 2010). According to Environmental Vulnerability Index, Ukraine is highly vulnerable (SOPAC, UNEP, 2010). Issues of greatest environmental vulnerability for Ukraine are: sea temperatures, environmental openness, degradation and pesticides (ibid). The World Wildlife Fund's 2002 report, based on eco-footprint methodology puts Ukraine 111th out of 146 (Vovk, Prugh, 2003, p.19). According to another index, Sustainable Development Index (SDI) taken from World Data Center, Ukraine is ranked 68 according to SDI (WDC). The results show country's low capacity to maintain favorable environmental conditions into the future and its weak sustainable development policies.

The European Union as a close neighbor is concerned with the environmental situation in its neighborhood countries and through European Neighborhood Policy, as it has highlighted the importance of the environmental protection as one of the directions of cooperation of the EU with its neighbors. In the ENP Strategy it states that "environmental pollution does not respect borders and can therefore be best addressed through a mix of international, regional and national actions" (ENP, 2005). The EU-Ukraine action plan, a tool for implementing the ENP at national level, contains a separate chapter on environment with three groups of measures to be implemented in the field of environmental protection. In the EU-Ukraine action plan assessment it is concluded that the level of implementation for these measures is low, often being postponed (Andrysevich, 2009, p.8). In general, the assessment of progress in the field of environmental protection in 2005-2007 is

classified as “some progress achieved” (ibid). One of the main problems of poor results is low level of implementation of legislation, plans, programs, policy, and international conventions. Even with international treaties ratified by Ukraine, practical implementation of its obligations under these treaties is not always adequate (ibid, p.14). Nevertheless, some progress has been made in the field of climate change and on ratification of the international agreements of Ukraine in the field of environmental protection.

Ukraine has signed the Declaration on Environment and Development and Agenda 21 that was adopted at the sustainable development summit in Rio de Janeiro in 1992 and has also approved the program for implementing the decisions passed at the sustainable development summit in Johannesburg in 2002 (Shcherbak, 2007). Concept of the National Environmental Policy of Ukraine for the period till 2020 was developed in line with the principles of these summits and was approved by the Cabinet of Ministers of Ukraine in 2007. This Concept serves as a basis for the Strategy of the National Environmental Policy of Ukraine, which has to be ratified by the Parliament of Ukraine as it is still under development. Ukraine has also recently become one of the 55 countries that have signed and supported the Decade of Education for Sustainable Development which has been declared by the UN with the goal to promote the vision of and transition to sustainable development through all forms of education, public awareness and training, and reinforce the important role of education and learning in sustainable development (DESD, 2005). This will be the point of departure of the research and I will try to assess the extent to which the DESD has translated in practice in Ukraine.

Higher education in Ukraine

Changes in the social structure, economy, and ideology involved concurrent changes in education as one of the country’s social priorities (UNESCO-CEPES report 2006:11). While some changes started in early 1990’s and others are still continuing, the most significant influence on the development and restructuring of Ukraine’s higher education system was due to the national government’s will to follow European trends and synchronize with the international models of education and joining the Bologna Declaration in 2005.

Identified by Gorga (2007:60), three stages of transformation that CEE countries passed from 1990-2000 (namely deconstruction, stabilization and reconstruction). The stage of deconstruction of 1991-1995 in Ukraine is marked not only with changes in the names of the government bodies of education management, which were previously subordinated to the central structures but also with their new roles and functions. The Law on Education adopted in 1991 has set the new legal framework for democratic governance in education. New responsibilities were allocated to higher education institutions (HEIs), new HEIs have been established, particularly in Western Ukraine, and a breakdown of the ideological control over the curricula was seen and Ukrainian language was actively introduced in the teaching process (Kotlyarova 2006:2).

The next stabilization stage (1995-2000) is characterized by implementation of major reforms of Ministry of Education and Science of Ukraine (MESU) that were initiated by the signature by the President of the Decree with a specific plan of actions. Some of the education governing bodies were further restructured, the work of the HEI network was optimized, HEI have introduced contractual form of education for students with entry scores lower than budget-financed admission require (Kotlyarova 2006:3).

The process of reconstruction, activated since 2000, aimed to adjust Ukraine's educational standards to European ones and integration into the European Higher Education Area (EHEA). The Law on Higher education was adopted in 2002. Marking by the government integration into the EHEA as the top educational priority has led to signing of the Bologna Declaration in 2005, which aims to make academic degree standards and quality assurance standards more comparable and compatible throughout Europe. Modern curricula at HEIs in Ukraine has been changed in response to Bologna principles and influenced by such global processes as ICT rapid development, intercultural exchanges, and scientific and technological progress.

Among changes that Ukrainian HEI had to adopt on their way to European integration was higher education standards unification, which had to ensure greater student and academic staff mobility and international recognition of qualifications and diplomas. Changes were introduced by EC TEMPUS project, European students' mobility program (Gorga 2007:64), which were supported by the MESU in 2003 by adopting National Credit Transfer System (NCTS). Ukrainian HEIs made a transition from the old curriculum structure to NCTS based model, which correlates with the European Credit Transfer System. As a result of the recent transformation a multi-tier higher education degree structure was introduced and HEIs continue to adapt to these new innovations.

All these processes of deconstruction, stabilization and reconstruction are accompanied by a shift from the state, being single machinery and the central economic planning tool, to the junction of state and market. With the state not being able to provide sufficient funding of higher education, the HEIs are forced to seek new resources on the market. Universities have to acquire more than 30% of their budgets from tuition fees and sponsorships and this figure is increasing as budget funds lessen. According to the WB records, the trajectories of GDP spending on education shows a downward spiral and as of 2005, funding for education is low at about 6.8% of GDP and more than 90% is spent on salaries and utilities (World Bank PAD 2005:2). The role of the state nevertheless remains strong and hierarchical. As a remaining legacy of the Soviet period, the responsibility for managing HEIs is fragmented across many ministries: the MESU, Ministry of Finance and Ministry of Labor and Social Policy, and the coordination of regional HEIs is delegated by MESU to its 24 regional education departments of regional state administrations. The MESU holds overall responsibility for strategic planning in higher education, approving the statutory documents of all HEIs, planning curricula and so on (UNESCO-CEPES report 2006:38). Accreditation and licensing process of all higher educational institutions (private and public alike) is also the responsibility of the MESU, and suffers from top-down bureaucratic control and lack of transparency (EC Tempus report 2005:3). HEIs remain to belong to hierarchical, regulated and centralized structure where the authorities still have the right to interfere in university's "life" (UNESCO-CEPES report, 2006).

The problem of HEIs' autonomy as they are being subordinated to the central government bodies is one of the recent concerns. Maassen notes that the main goal of HEIs autonomy is to make them "more efficient, effective, competitive and responsive actors, who will be able to transform the economy based on manufacturing and industry into knowledge society" (Maassen, Cloete 2002:50). The higher education system has to be free from the government pressures in order to serve the long-term interest of the public (World Bank 2000:45). An experiment to support HEIs autonomy was initiated by the MESU and supported by the International Renaissance Foundation in 2005 and Consortium for implementation of the principles of university autonomy in Ukrainian higher education system was established and a new model of university autonomy created. The model envisaged improving efficiency of HEIs by devolving greater responsibility and authority for institutional administration to the individual HEIs. The state in this model performs monitoring and

evaluative functions. It is sought that increasing institutional autonomy will give HEIs more flexibility to address inefficiencies and to create a structure in which savings would stay at the university level for reallocation to higher priority uses. The Consortium came up with recommendations for the government to make changes in the relevant legislation on higher education (IRF website).¹

Globalization with the emergence of knowledge society and fast ICT development affects higher education system. Ukraine in terms of higher education is on its way following the Western approach which particularly implies a further reduced role of the government, increased mobility of students and educators, comparable and compatible academic degree standards and quality assurance standards. Nevertheless, the hierarchical structure of higher education system in Ukraine being the legacy of Soviet regime, results in hierarchical structure of changes. The state, still being one of the main stakeholders in Ukrainian higher education system and being challenged by global and international factors, is setting new rules for HEIs, leading to changes in all processes of education and its overall system. A mixture of traditional Ukrainian and new European forms of education and continuous introduction of new changes can be observed today in Ukrainian higher education system. Jatsejko (2006) calls it experimental field, which should be used for further search and development of new pedagogical technologies, new education paradigms and humanization of education while at the same time student personality being the center of this process.

But at the same time introducing all envisaged curriculum and administrative changes in Ukraine's higher education and reshaping state-university relationship based on university autonomy and accountability, leaves a number of questions about its viability and effectiveness open for now. Among those questions are: will these processes allow to enhance the real quality of education leaving only supervision function to the state, will better provisioning of resources necessary for the research in education shift the balance between the teaching and research components, and so on. Transforming by HEIs of their role from being a tool in the state model to being an active participant and an initiator of the transformations, can result in higher efficiency and can lead to more changes in the sector. Higher education system of Ukraine needs to find its own way to implement the reforms in the system taking into consideration the contemporary global technological, institutional and economic dynamics, specific context of the system and the broader factors that influence it (Robertson et al. 2007:131).

ESD in Ukraine

In terms of ESD, government of Ukraine by joining the UN initiative "UN Decade of ESD" in 2005 committed to "use education as an effective vector to bring about change in values, attitude and lifestyles to ensure a sustainable future and the evolution of the just societies" (DESD, 2005, p.5). Ukraine is still on its way to introducing relevant changes into the education system.

International organizations have supported a number of initiatives in introducing ESD elements into secondary education. One of the initiatives called "Education for Sustainable Development in Action" introduced in some secondary schools in Ukraine is supported by Swedish International

¹ As of today, Five Ukrainian universities: Kyiv National Taras Shevchenko University, National Yaroslav Mudry Law Academy, Lviv National Ivan Franko, University Kyiv Mohyla Academy and Ostroz'ka Academy have obtained the status of self-governing academic institutions as well as research centers (EC Tempus report 2009).

Development Agency and is implemented by a local NGO “Teachers in support of democracy and partnership”. The purpose of this initiative is to familiarize teachers and students with the basic principles of sustainable development, ensure changes in their habits, behavior in everyday life, rational attitude to the planet's resources and their savings. Another initiative presented in 2011 is supported by OSCE which aims at promoting “green” behavior through education in Ukraine. The multimedia tool-kit for environmental education in secondary schools known as the Green Pack, was developed in co-operation with the Regional Environmental Center for Central and Eastern Europe and is designed to foster environmentally friendly attitudes and environmental thinking among young people. The Ministry of Education and Science of Ukraine is facilitating the introduction of the Green Pack to the Ukrainian school system.

In terms of higher education in Ukraine, all current reforms in this field discussed above can on the one hand bring additional complications to the introduction and development of SD and on the other provide opportunities for ESD development at different levels of education system. Ukraine's national commitments have mostly been declarative and have not yet resulted in developing a general strategy or action program on ESD in higher education yet, leaving the task of implementing the ESD to individual universities. As there has been a tendency of shifting from hierarchical centrally administered to more autonomous model of higher education in Ukraine, one of the main goals of my study will be to study how the ideas of ESD are incorporated into the higher education in Ukraine in practice.

1.3. Main purpose of the research

As communicated above, the international community identified universities as the key players in educating society about sustainable development (UNEP, 2006) and most appropriate instrument for the integration of the sustainability concept into the community (Little and Green, 2009). Universities' core functions of teaching, research and community engagement can be effectively utilized to address sustainability issues. The United Nations Resolution 57/254 with its main goal “to integrate values, activities and principles that are inherently linked to sustainable development into all forms of education and learning and help usher in a change in attitudes, behaviors and values to ensure a more sustainable future in social, environmental and economic terms” (UNESCO, 2007, p.5) along with other initiatives, has resulted in introducing of sustainability concept into the programs by universities all over the world.

The main stakeholders at the university are students, employers, faculty and parents, students' being the main target group for raising awareness and educating about sustainability and the consequences of environmental degradation. Their attitudes and knowledge, particularly, will affect their actions which might in its turn promote or hamper sustainable development. Therefore, in my study I will focus on analyzing perceptions and views of students of pedagogical universities studying natural sciences about sustainability issues. I will also try to see how the university as a place for knowledge provision and building values promotes the sustainability issues and affects students' awareness in this area through its planning, curriculum, activities and trainings.

Thus, the purpose of my research is to explore how sustainable development issues are incorporated into the higher education institutions curricula along with studying the attitudes and views of students of pedagogical universities/future teachers towards sustainable development and making an assumption about the trend in the future. I will particularly try to focus on all dimensions of sustainability, including social, environmental and economic. Since much research conducted on the

selected topic involves studying the developed world, I have decided to focus on Ukraine as a former republic of the Soviet Union and as a country representing a transitional economy.

1.4. Research questions

In order to analyze the way how SD concepts are incorporated into the university's curricula, how students view and value them, the following research questions were formulated:

1. In what ways have the concepts of sustainable development been incorporated in higher education and teaching?
2. What are the students' perceptions of sustainable development?

1.5. Outline of the study

Chapter One. Introduction.

The first chapter presents basic information about the concept of sustainable development and its background, concept of education for sustainable development and sustainable development at the university level. The setting in which the research will take place is briefly discussed. Main purpose of the research is identified along with the research questions.

Chapter Two. Theoretical framework.

In this chapter, the concept of sustainable development is thoroughly discussed, including major meetings on SD, definitions of SD, dimensions of sustainability, balance between them and trends of sustainable development. In this chapter, the concept of education for sustainable development, ESD in Ukraine, its environmental sustainability index and its sustainability reporting mechanisms are also reviewed.

Chapter 3. Methodology.

This chapter discusses the methodological point of departure of the study. It briefly covers research design and strategy, describes selected research methods, how the primary data is collected and sample selected. It also presents ethical considerations that have been taken into account in the framework of the conducted study and discusses the quality of the research. The limitations of the selected methodology and how the reliability and validity of the study could be improved are also briefly covered in this chapter.

Chapter 4. Empirical results.

The idea behind the formulated questions of the questionnaire is reviewed in this chapter. Empirical findings are presented with the help of the tables and diagrams.

Chapter 5. Analysis.

In this chapter the primary data collected with the help of questionnaires is analyzed with the help of the statistical tool SPSS. This chapter will discuss the results of the study by trying to find the answers to the research questions, particularly to see how SD concept is incorporated into universities' curricula, how students perceive and value the concept and what could be the trend for the selected country in the future.

Chapter 6. Conclusions.

This chapter presents the conclusions based on the findings in the analysis section. The conclusion chapter also incorporates answers to the formulated research questions in the first chapter. In this chapter, ideas for possible future research are also discussed.

2. Theoretical Framework

2.1. Background of sustainable development

In trying to see how sustainable development, being rather a new development concept, has emerged within several decades, the historical overview of the most important meetings of the international community related to this movement is performed below.

The first major conference on international environmental issues called Conference on the Human Environment was organized by United Nations in 1972 in Stockholm, Sweden and attended by the representatives of 113 countries, 19 inter-governmental agencies, and more than 400 inter-governmental and non-governmental organizations. As the result of this conference the Declaration on the Human Environment was issued along with an Action Plan and a Resolution. It is considered to be a turning point in the development of international environmental politics and particularly made an impact on the environmental policies of the European Community (UNEP, 1972).

In 1980, International Union for Conservation of Nature (IUCN) together with the United Nations Environment Program (UNEP) and World Wildlife Fund (WWF) have jointly formulated World Conservation Strategy and launched it in 30 countries. The aim of this strategy was to help advance the achievement of sustainable development through the conservation of living resources (WCS, 1980).

In 1983 the UN convened another important event, the World Commission on Environment and Development. The environmental problems were recognized as global in nature and that development of policies for sustainable development would benefit all countries in the world. In 1987 the Commission published a report called *Our Common Future*, which deals with sustainable development and the change of politics needed for achieving that (UN, 1987).

In 1992 the ideology of sustainable development obtained even broader global recognition during the UN Conference on Environment and Development in Rio. As a result of this even the “Rio Declaration on Environment and Development” and Agenda 21 have been adopted with a focus on eradication of poverty, control in population growth, efficient use of natural resources and sustainable economic growth (Pelling, 2008, p. 290).

The global awareness about environmental threats posed by the human activities has only grown. In 2002 the World Summit on Sustainable development has adopted the Johannesburg Declaration on Sustainable Development aiming to focus on “the worldwide conditions that pose severe threats to the sustainable development of our people” (UN, 2002). The importance of the central role of education in helping societies, worldwide, to achieve sustainability has also been emphasized at the summit.

Three dimensions of sustainability

Sustainability has raised many discussions around its different aspects and a lot of research has been conducted on this subject. Still it remains a rather complex concept, which aims to combine aspects of both nature and human development into one general idea (Raskin, 2008). In general, it is considered that sustainable development is comprised of three intrinsically linked pillars: economic development, social development, and environmental development. In economical terms, sustainability means providing economic welfare to the present and future generations and at the

same time managing the economic systems in such a way that resources are used effectively with consideration for future generations (UN, Johannesburg Declaration on SD). Sustainability from the social perspective means achieving social fairness through a just and equitable resource allocation and provision of social services to all members of the society now and in the future (ibid). An environmentally sustainable system is characterized by rational use of natural resources and protection of the environment for future generations through conservation of biodiversity, preserving atmospheric balance, productivity of soil and other systems of natural environment (ibid).

The balance between sustainability dimensions

The concept of sustainability has been interpreted and understood differently by the scholars and researchers all over the world. There is a general agreement about three pillars of sustainability, but the way how they are used to describe the concept and the role each of these dimensions play are presented and treated differently in different studies and researches. These different perspectives include: economists’ perspective, non-environmental degradation perspective, integrational (encompassing environmental, social and economic aspects), inter-generational and holistic perspective (Lozano, 2008). Main ways of how the concept can be visually presented are provided below.

One of the common ways is to present three dimensions of sustainability in concentric circles (Levett, 1998) (Figure 3). The inner circle represents economic aspects, the middle social aspects, and the outer environmental aspects. This model suggests that both social and economic dimensions are constrained by environmental limits (Mitchell, 2000). As drawback of this model, researchers mention its centric focus, rigid delimitation between the circles and absence of the time perspective (Lozano, 2008).

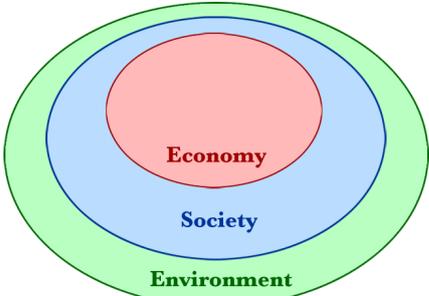


Figure 3 Concentric Circles

(Source: Levett 1998)

Another common way to present SD is using a Venn diagram where three overlapping components represent sustainability (Figure 4). The space where only two dimensions overlap represent partial integration, while the space where three dimensions overlap represent full integration. The drawbacks of this model are that the overlaps may be not balanced and that the model lacks the interaction between short-term and long-term (ibid). Some scientists have complemented the Venn diagram with local, national, and global perspectives, and societal influences such as politics, peace and security, cultural values, and institutional and administrative arrangements (Figure 5) (Dalal-Clayton and Bass, 2002).



Figure 4 Venn Diagram (Source: Lozano 2008)

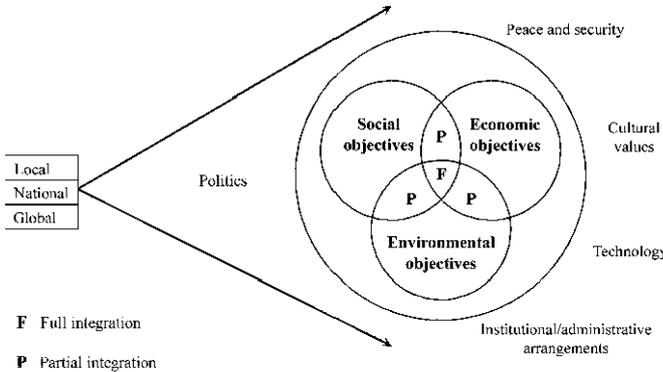


Figure 5 System of SD represented in a more holistic manner (Source: Dalal-Clayton, Bass, 2002)

Lozano (2008) suggests that there should be full incorporation between the elements of sustainability and that the model should be more holistic, i.e. take into account integrational and

inter-generational perspective. He offers a dynamic model, called First Tier Sustainability Equilibrium, which at its initial stage does not have equal dimensions, and economic one having the biggest impact on the society (Figure 6). As a result of sustainable development the dimensions are more united and connected (Figure 7). At the next level, they have to be continuously rotated and at the end become incorporated with each other (Figure 8). At the last level, the dimensions are fully integrated with each other (Figure 9). Time dimension (Figure 10) gives ability to represent the dynamic processes of change over time (ibid).

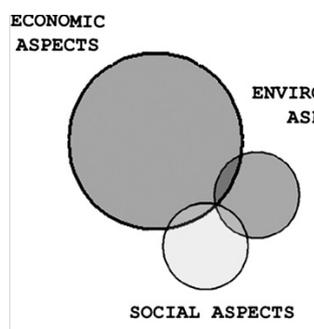


Figure 6 (Source: Lozano2008)

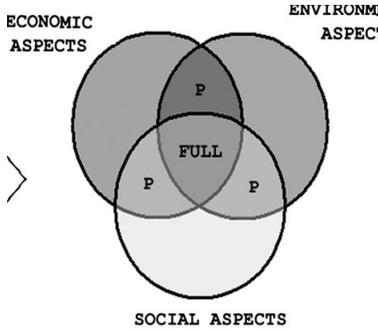


Figure 7 (Source: Lozano 2008)

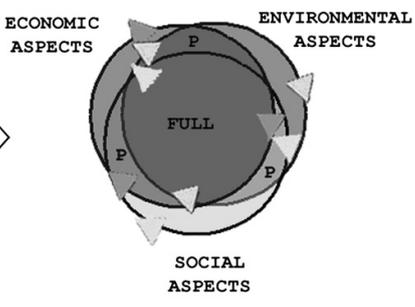
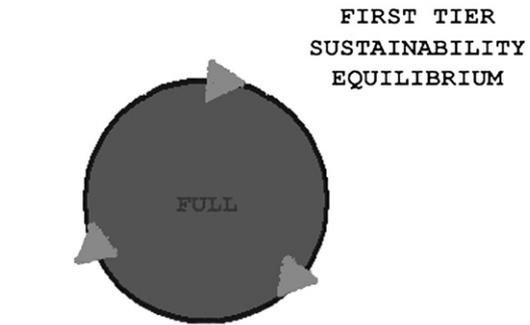


Figure 8 (Source: Lozano 2008)



ECONOMIC, ENVIRONMENTAL, AND SOCIAL ASPECTS INTERACTIONS

Figure 9 (Source: Lozano 2008)

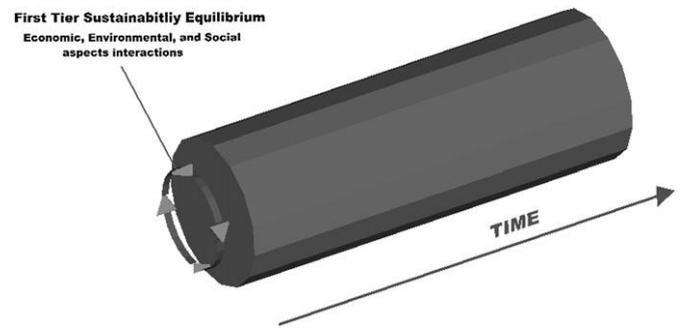


Figure 10 (Source: Lozano 2008)

Different models of sustainable development help to better understand the basic ideological approaches to sustainable development, particularly interconnectedness of economic disparities, social problems and environmental degradation and raise awareness about them. The visualization of the interaction of the three elements of sustainability should also include time dimension, as SD is a dynamic process, which has certain peculiarities at different points in time.

From the existing variety of the models, the one proposed by Lozano seems to be most holistic and balanced. It not only shows the equilibrium between the three dimensions of sustainability, but also incorporates time perspective, which lies at the heart of the notion of sustainability. When teaching about sustainable development, it is important that students get familiarized with different models and that the one selected as a key model reflects current social, economic and environmental aspects both on local and global levels.

Global trends in sustainable development

The Johannesburg Plan of Implementation has identified three transitions, i.e. demographic, development, and decoupling, in order to reach sustainable development through sustainable consumption and production (SCP), conservation of the natural resource base and poverty eradication (UN, 2010). The development transition aims to achieve high living standards for all people in the world, and the decoupling transition should downward convergence of resource use and environmental impacts (ibid). According to the report, the demographic transition should be leveled off within the next few decades, while the development and decoupling transitions will

remain problematic (ibid). Current trends in resource use show that the consumption of natural resources has constantly grown, where developed countries representing 15% of the world population, used 50% of the resources (WB report, 2009). With increasing level of consumption, the stress on ecosystems have also been intensively growing (UN, 2010).

A consulting company PricewaterhouseCoopers, has identified six trends that in the future would influence on shaping of the strategies that meet immediate needs without sacrificing the needs of future generations. According to their report, they will particularly be driven by the global market forces; revisions in corporate governance; high speed innovation; large scale globalisation; evolving societal requirements and communication (PwC report). The markets will have influence as they reflect the rising demand and shrinking supply and changing patterns of demand for natural resources. Another trend, the revisions in the financial model in corporate governance, will include new risk factors, and a growing number of intangible and non-financial factors. High speed innovation will include changes in behaviour, product design, supply chains and geopolitical structure. Globalization as another trend implicates that global policies will be formulated by international institutions, while the role of national and local institutions will be limited to implementation. Evolving societal requirements mean that the progress toward sustainable development will be mostly incremental with a small possibility for rapid change. The last trend, communication, may influence the issues that governments and industries focus on and accelerate the speed of changes in policy and behaviour (ibid).

Understanding of the models of sustainable development, current situation with the global resource consumption, environmental threats and sustainability trends in the future are crucial for identifying the means that could contribute to reaching sustainability.

2.2. Education for Sustainable Development (ESD)

With rising public concern about the environmental degradation and depletion, sustainable development has evolved not only as a field for research, but also for education. The emergence of ESD can be traced back to 1970s, but the UN Conference on Environment and Development held in 1992 is considered to be a turning point for developing an action plan to reduce the human impact on the environment through education, training and public awareness (UNESCO, DESD, 2009). Since then a lot of different conceptions of the meaning and role of education for sustainable development have emerged.

2.2.1. Interpretation of ESD

Despite many ESD definitions sharing common elements, there is no common definition of ESD and its precise meaning continues to be a subject of global debate. Nevertheless since the beginning of the decade there has been a shift from a need to come up with an agreed definition to accepting that local context is crucial for developing the meaning of ESD (UNESCO, 2009, p.25).

One of the definitions which was provided in the DESD Monitoring & Evaluation (M&E) guidelines documents was described as:

“Education for Sustainable Development is a learning process (or approach to teaching) based on the ideals and principles that underlie sustainability and is concerned with all levels and types of education. ESD supports five fundamental types of learning to provide quality education and foster sustainable human development –learning to know, learning to be, learning to live together, learning to do and learning to transform oneself and society” (UNESCO, 2009, p.26)

In the guidelines document it is also emphasized that ESD must be comprehensive and should cover key issues on sustainable development, i.e. poverty reduction, sustainable livelihoods, climate

change, gender equality, corporate social responsibility, protection of indigenous cultures, etc. It should also contribute to achievement of Millennium Development Goals and Education for All goals (ibid).

Despite the existence of a big variety of definitions of ESD, some of its common and core principles have been formulated and described as:

- process that integrates values and perceptions about sustainability not only into education, but into people's everyday life;
- a mean for providing people with skills and knowledge to address global societal challenges now and in the future;
- a holistic approach to attain economic and social justice ;
- a mean to improve the quality of education, reform existing education curricula build on sustainability principles and values, raise awareness of the concept of SD.

2.2.2. Challenges to ESD

While there is a general understanding of the role of education for achieving sustainability on a global level, still little progress has been made on the country levels. Among the impediments are: complexity of the SD concept, lack of funding, low awareness among the population, etc. By addressing these more or less "universal" issues the governments and HEI can reduce and prevent the delays with attainment of sustainability.

McKeown (2002) has identified twelve main impediments for reaching sustainability:

- low awareness of the public and education community about the essential role of education in achieving sustainability and critical linkages between education and sustainable development;
- introducing ESD into the curricula, including developing an ESD strategy and deciding on whether to teach *about* sustainable development or to change the goals and methods of education to *achieve* sustainable development;
- making the link between the educational reform to include ESD into the curriculum and the long-term economic well-being;
- understanding the complexity of the SD concept;
- developing locally relevant and culturally appropriate ESD programs with public participation;
- introducing ESD elements using a transdisciplinary approach;
- the responsibility should be shared between all sectors of the government and cover both formal and nonformal sectors of education;
- reorienting teacher education to include ESD, creating knowledgeable leadership;
- lacking financial resources for reorienting education to address sustainability;
- need for developing a policy on a government level; understanding that both "top up" and "bottom down" efforts in order to implement educational reforms;
- nurturing appropriate climate for accomplishing new educational and sustainability goals;
- threading principles of sustainable development into people's daily life and governmental policy.

3. Methodology

According to Scheyvens research philosophy is one of the areas, which is crucial to the genesis, and initiation of a viable and relevant research topic (Scheyvens 2003: 17). It covers issues of ontology (theories of what the world is) and epistemology (theories of what it is possible to know about the

world and how we might come to know it). In terms of the epistemological position of my study, it can be described as post-positivism. The knowledge that is produced by post-positivists is based on careful observations and measurement of the objective reality that exists in the world (Bryman 2004: 12, Creswell 2009: 6-8). Developing numeric measures of observations and studying the behavior of individual is critical for post-positivists (ibid).

In terms of the ontological position, constructivism will be the base for the study. It implies that knowledge and meaning is produced through social interactions or in other words that social objects and categories are socially constructed (Bryman 2004: 17).

The research will particularly be exploring the students' perceptions and views and analyze how the ESD is incorporated into higher education in Ukraine.

3.1. Research design and strategy

Bryman defines research design as “a framework for the generation of evidence that is suited both to a certain set of criteria and to the research question in which the investigator is interested” (Bryman 2004: 26). He identifies several types of research design: experimental design, cross-sectional or survey design, longitudinal design, case study design and comparative design (Bryman 2004:33, Creswell 15).

The research study has cross-sectional design. It entails the collection of data on more than one case and at one time for collecting quantifiable or quantitative data (with at least several variables), which is later, examined for patterns of association (Bryman 2004: 41, 56). The study particularly has the following attributes of cross-sectional design. First of all there is interest in variations in the study. 75 students from 3 pedagogical universities have been asked to participate in the survey. Students who have completed at least 3 years of studying natural sciences have been identified as the target group for the study. Students represent the following HEIs in Ukraine which have been randomly selected: Lugansk National Pedagogical University, Khmelnytsky Humanitarian and Pedagogical Academy and National Pedagogical Dragomanov University. Also, the data was collected more or less simultaneously within 1 week. The study is focused on working with quantitative/quantifiable data (questionnaire) and ability to discover a relationship between several variables (Bryman 2004: 42). Also, the survey is concerned with generating statements that apply regardless of time and place and selection of Ukraine as a case is partially due to the fact that being from this country and given my vested interest in studying students' perceptions which might affect Ukraine's development in the future.

A deductive strategy is employed and the study aims to make statistical generalizations on the basis of empirical findings (Bryman 2004: 9-11, 20).

3.2. Research methods

A quantitative research approach has been selected because quantitative data can be characterized as objective, representative and specified in numbers (Scheyvens 2004: 38). Another strength of quantitative data is that it can be verified and replicated (ibid). A broad range of means is available for quantitative study. Among main means for collecting quantitative data are: observations, questionnaires, structured interviews and the use of secondary data (Scheyvens 2004: 39).

In this research questionnaires are the main research instrument. They allow gathering information from different regions of Ukraine and ensuring higher representativeness of data. Thus the perceptions and values are analyzed from a numerical perspective, which entails preparation of qualitative interpretation. Also, as the target group for the survey is students, it ensures their

adequate literacy level for completing the questionnaire. This approach was selected also due to the fact that the research is limited by the amount of time available and limited funds at my disposal (Scheyvens 2003: 87). Because of these reasons, several professors have assisted with data collection (notices and questionnaires distribution and collection of the completed questionnaires) as I was not able to personally visit the selected universities, which are located in geographically different regions of Ukraine. Some secondary methods for collecting data are used in addition to the questionnaire, as there is scarce official data available on the selected research topic. Particularly few informal discussions over Skype and telephone with university staff were organized in order to get better understanding of the situation in the education field in Ukraine along with content analysis of the selected universities' websites and literature review.

3.3. Collection of primary data

3.3.1. Questionnaire

The purpose of the questionnaire is to collect the data that will help us find the answers to the research questions (Bryman 2004: 132-162). I have studied similar studies conducted by other researchers that are connected to the subject of my study (key words: students, sustainability, future, attitudes, perceptions, values). Among those studies is a work prepared by Zhilei Yao and Yin He, who compared students' knowledge, awareness and actions in sustainable development at university. A study conducted by Johan Rootzen, where he analyzed how Russian and Swedish students perceive the concept of sustainable development has also been studied. Scientific works prepared by Dai Lu, Tiffany Finley, Susan McCormack, Linda Gustafsson, Emma Axelsson, Ebenezer Miezah Kwofie, Giulia Giunti and Kristina Zaytseva have also been studied.

Some of the questions used in the questionnaires of the analyzed studies have been utilized in the questionnaire of this study. A pilot version for probing the developed questionnaire has been sent out, particularly for checking the significance of the sampling error. The questions have been checked for the criteria of validity, reliability and replication (see the Quality of the Research section).

Two types of questions have been utilized in the study: open-ended and closed questions (Bryman 2004:145-163). Each of these two types has its respective advantages and disadvantages. According to Bryman survey researchers tend to use closed questions as it is less time-consuming for interviewers to administer and to 'code' the answers, and does not require greater effort from respondents. On the other hand, usage of open questions allows respondents to answer in their own terms, achieve unusual responses, and explore areas that the researcher has limited or no knowledge about, etc (ibid).

In the study, questions about attitudes, beliefs, normative standards and values, questions about knowledge and personal factual questions are employed. The questions were divided under 3 sections: a) open-ended questions, b) closed questions formulated as statements and c) a group of questions that were formulated as possible goals for society. Particularly, open-ended questions focused on analysis of students' perception of the concept. The second group of questions consisted of a number of statements concerning different aspects of SD and students were asked to rank their agreement with the statements on a 4 point scale ranging from "strongly disagree" to "strongly agree". In the third group of questions, students prioritized goals for the society according to their own views (refer to Appendix 1). The original questionnaire has been prepared in Ukrainian and was translated into English as an integral part of the thesis (refer to Appendix 1).

Coding

Coding is considered to be the key element in quantitative research (Bryman 2004: 146). Some of the data that social researchers are interested in comes in unstructured way (like answers to open questions in questionnaires and interviews, somebody's behavior, etc.) and needs to be coded in order to quantify and analyze such materials. This process entails two main stages: unstructured data should be categorized and number should be assigned to the categories created (ibid). Usually closed questions are pre-coded, meaning that respondents are asked to assign themselves to a category that already has a number assigned to it. Post-coding occurs when answers to an open-ended question are being coded (ibid).

In this study, questions from section 2 and 3 are pre-coded. Answers from the first section of questions are post-coded and categorized to simplify the analysis process and then together with the results of Group 2 and Group 3 questions are analyzed in SPSS, which is a statistical tool used for data analysis and interpretation. Several types of tests are used in SPSS, such as Chi-Square test to determine whether there is an association between the variables or not and Anova test (one way analysis of variance) to compare means of the categories and see how they are different from each other (Agresti, 2009).

Using existing questions

Overview of the existing studies has been conducted in order to see how similar researches have been organized and in order to find some scientific directives for developing appropriate questionnaire fitting my purpose. Particularly questions from the studies that have been conducted in Russia, Italy and Sweden related to sustainable development in education and corporate social responsibility prepared by Giulia Giunti and Kristina Zaytseva (2009) and Johan Rootzen (2006) have been employed. All of those studies focused on analyzing student's knowledge, views and perceptions on sustainable development and used questionnaires as the main tool for data collection. This allows using questions that have been piloted and provide with the reliability and validity measurement qualities of the questions that are used in the study. It also allows drawing the comparisons with other researches that would allow seeing whether place/country makes a difference (Bryman 2004: 160).

Data analysis

There are various techniques for analyzing and representing the data. Among those statistical measurement for representing quantitative data Scheyvens mentions the following: central tendency (mean, mode and median), frequency distribution, dispersion, cross-tabulation and correlation coefficient (Scheyvens 44-56). Several techniques for analyzing and representing the data have been identified and will be discussed in the next section.

3.3.2. Selection of sample

Sample size

According to Bryman sample size should be a compromise between the constraints of time and cost, and the need for precision (Bryman 2004: 97). A small group selected has to be representative of the wider population (Scheyvens 2003:42). Given the amount of time and resources available, it was decided that in order to manage the collection and analysis of the received data, the sample should be reasonable in size. Thus 75 questionnaires have been distributed in total. It might not be representative of all students studying natural sciences in pedagogical universities in Ukraine, but due to time constraints bigger sample size could not be chosen. Also, I was targeting 95 per cent confidence interval and in case of a big sampling error the sample had to be increased. Apart from that, a possibility that respond frequency could be less than 100% (possibly around 80-90%) was taken into account. In case if there were less than 60 completed questionnaires collected, then a

group of alternative students from one of the universities would have been asked to complete the questionnaire. Ultimately, 74 students completed the questionnaire and there was no need to engage more students.

Selection of sample

As the selection of the sample must fit the purpose of the study, students forming the sample have to meet specific characteristics. The students have been selected based on the following criteria: 1) students have to be from pedagogical universities and major in natural sciences; 2) students should have completed minimum 3 years of studies.

The reason for choosing students of natural sciences is that they as future teachers will affect the way younger generation perceives sustainable development. For a higher representativeness, students from three universities have been taking part in the questionnaire. Three universities from geographically different parts of Ukraine - Lugansk, Kiev and Khmelnytsky, representing central, eastern and western parts of the country, have confirmed their willingness to participate in the research. The groups of students from natural sciences faculties have been identified who completed the questionnaires.

Biases when selecting students

In terms of being a random sample of students, it is considered to be so. Three universities were selected in a random way with the only criteria of representing different parts of the country. Because the universities taking part in the study and students studying natural sciences in these universities are selected randomly, it shouldn't cause any biases that could affect the outcomes of the research.

3.4. Ethical considerations

When considering ethical issues, five ethical concerns suggested by McNamara (1994) have been taken into account: voluntary participation, no harm to respondents, anonymity and confidentiality, identifying purpose and sponsor, and analysis and reporting. Participation in completing the questionnaire was fully on a voluntary basis. As this could possibly cause low return rate, it was decided to use multiple notices (one preceding the survey to inform possible participants of the importance and justification for the study, another one for explaining the study in more depth and another one as a reminder for those who had not responded and one in a few weeks after the actual survey to inform about the closing of the study and that their input was valuable to the results of the study). The participants showed high response rate and there was no need to send a reminder to anyone.

The next ethical guideline, i.e. avoiding possible harm to respondents, has also been taken into account. The study does not include any sensitive questions that could somehow make a student feel embarrassed or uncomfortable about questions.

Protecting a respondent's identity is another ethical guideline that can be accomplished by exercising anonymity and confidentiality. As there is a need to know who had not responded for follow-up purposes, the anonymity was not exercised unless decided so by a student. Confidentiality was exercised through non-disclosure of the individual's identity, particularly when reporting the results.

The fourth guideline is achieved through letting know the respondents the purpose of the survey and that it isn't sponsored by any organization. The purpose of the study along with the explanation that its results will be used in a thesis as part of the Master programme requirements has been communicated to all prospective respondents. The last ethical guideline, i.e. accurate reporting on

the methods and results of the survey, is achieved by reporting both positive results and weaknesses experienced during the study.

3.5. Quality of the research

For determining the quality of a scientific research, different measures have been identified by the researchers. In social research there have particularly been identified 3 main criteria for their evaluation: reliability, replication and validity (Bryman 2004: 28-30, 70-75). While replication checks the capability of a study to be replicable, reliability has to do with the issue of consistency of measures, i.e. whether the results of a study are repeatable if the same study would have been organized again. Validity is concerned with the integrity of the conclusions that are generated from the research and whether a measure of a concept really measures the concept (ibid).

This study employs both qualitative and quantitative measures where questionnaires represent quantitative side of the study and analysis of the empirical data represents the qualitative side of the research. In this study the concept of reliability is related to the quality of the questionnaire and the data collection process. Hence, the criteria of stability reliability, representative reliability and equivalence reliability, which are used in quantitative studies for measuring the reliability, will be used (Neuman, 2000).

- **Stability Reliability**, meaning measuring the instruments over time. In this study there is an assumption that the students would answer the same way as they did, if they had to respond to the questionnaire few days before or after they have actually responded. The time dimension is critical in this particular case as a longer time period could imply that students could gain more knowledge on the research topic and that would affect the outcome.
- **Representative Reliability**, meaning checking if the indicator gives the same results when interviewing different groups. In order to assess whether the selected sample satisfies this criteria, students had to provide some socio-demographical information about themselves (age, sex, origins, number of years of studies, study field, etc.). When looking at sub-groups based on the mentioned socio-demographical variables, there was no influence on the empirical results discovered.
- **Equivalence Reliability**, meaning the extent to which two questions measure identical concepts. In this study several questions measuring the same indicator have been used on purpose. The results achieved from different indicators measuring the same aspect seem to be not contradictory and even complementary (please see the empirical results section for details).

The concept of validity is concerned with the study's success at measuring students' views and attitudes towards sustainable development. Two types of validity have been used in this study: external and internal validity (Bryman, 2004:28). As the conclusion of the study does not incorporate a causal relationship between two or more variables, the internal validity is not so relevant for being checked in this particular study. The external validity is concerned with answering the question of whether the results of a study can be generalized beyond the specific research context. As the students together with the universities have been selected in a random way for participating in the research, the findings can be generalized to the population from which the sample was taken. Therefore it is believed that the achieved results can be generalized to all students studying at pedagogical universities.

3.6. Limitations of methodology

The most important restriction in the scope of the study has been caused by the limited amount of time for conducting the research. This has been taken into account when the study was in its initial

stage of planning. Thus, for managing both the collection and analysis of data it was decided that the sample had to be reasonable in size. This might have caused a difficulty with drawing any generalizations about all students and all universities in Ukraine on the basis of the results of the study. Nevertheless the results in general allow seeing the tendency in terms of sustainable development in Ukraine.

Time restrictions also didn't allow including other methods for data collection and analysis. The results of the study are mainly based on analysis of the data from the questionnaires as the primary source of information. The findings of the study would be more grounded if contributed by analysis of interviews with key stakeholders in the selected field of study (policy makers, faculty staff, government representatives, etc.). Financial constraints were another limitation of the study and did not allow me to visit the universities that took part in the questionnaires and organize them personally as they are located in different regions of the country. Thus I relied on the assistance of several professors who have organized the process of collecting the questionnaires.

Also, both types of questions (open-ended and closed pre-structured questions) used in the questionnaire, had their drawbacks. Open-ended questions required time and mental efforts, and based on the achieved results one can see that students were reluctant to elaborating their answers. On the other hand, closed pre-structured questions didn't allow students to answer spontaneously and freely.

4. Empirical results

In this section the findings of the study are briefly presented. Similarly to one of the studied questionnaires prepared by Rootzen (2006), the questionnaire has been divided into several sections. The results will be presented accordingly. In the first part the results of the questions with a more open character focusing on analyzing students' views on different problems in the world and perceptions of the concept of sustainable development will be discussed. In the second part of the results of closed questions formulated as statements, which are linked to different aspects of SD, are presented, particularly the level of agreement among students from "strongly disagree" to "strongly agree" is discussed. The last part presents the results on how students' identify and prioritize possible goals for the society according to their own views.

4.1. Presentation of the empirical data

Before presenting the results of the questionnaire, some general information about the students participating in the survey is presented.

Gender	
Male	28
Female	46
Average age	21.3 years old
City size	
Small	9
Medium	43
Large	22
Average years of studies	3.46
Study field	
Geography	56
Biology	18

Table 1. General characteristics of the respondents

Below the results of the questionnaires are presented in three sections.

First section

The questions in the first part of the questionnaire deal with how students view society and environment around them. Understanding of what problems students face in their everyday life and in the society as a whole will allow to better understand their choices and actions.

Thus, for presenting the answers for the first question, they have been divided into a number of categories: education, finances, unemployment, well-being of students, health problems, ecological problems, no problems and other problems. Most common answers under different categories are provided below:

- Education – low level of general public education, difficulties with enrollment to higher education establishments, heavy workload;
- Finances – financial status, social stratification, low scholarships, lack of money, high prices;
- Unemployment – problems with finding a job;
- Well-being of students - not getting enough sleep, getting up early, poor living conditions, poor quality of life, lack of free time, poor quality of sold goods, problems with public transportation;
- Health problems – diseases, poor healthcare system;
- Ecological problems – air pollution, ecology, environmental pollution, dirty streets;
- No problems – the students didn't see any problems in their lives or didn't find them to be of any importance;
- Other – answers that didn't fit into identified categories, have been put under this category, i.e. misunderstanding between different generations, laziness, time management problems, relations between people.

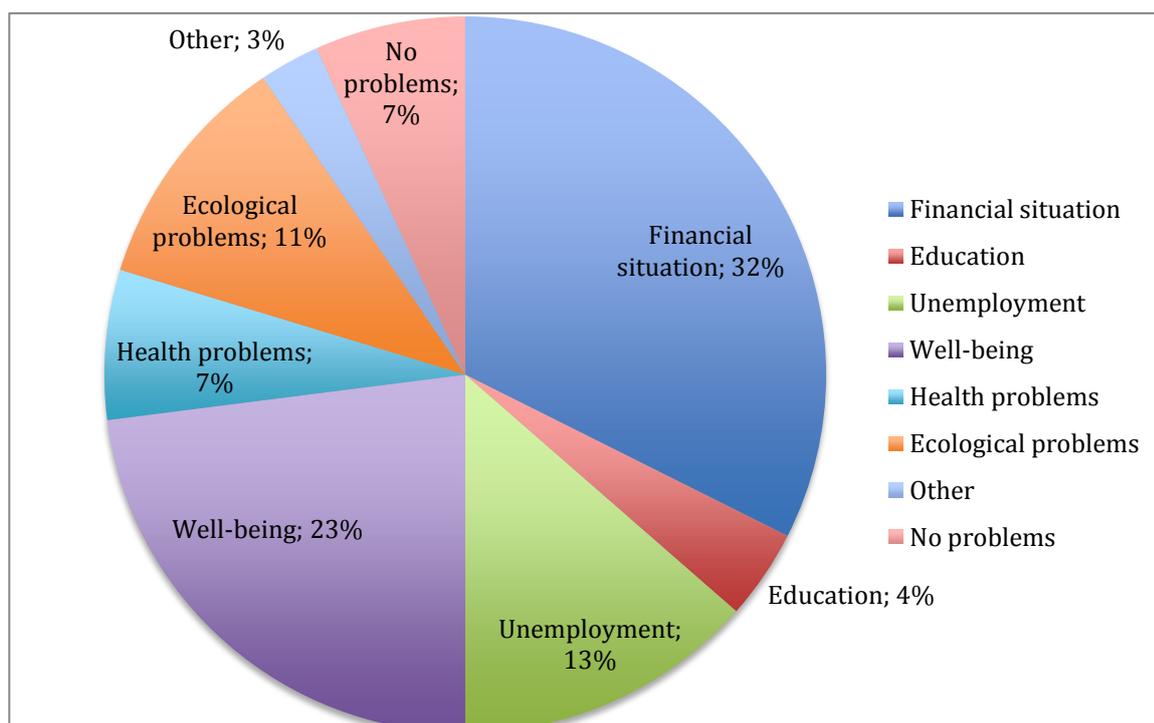


Figure 11. Answers to the question about the most important difficulties in students' everyday life

As it can be seen from the chart, the most important difficulties that students face are related to their economical situation (32%) and problems associated with students' well-being (23%). Many of the students also worry about difficulties with finding a job (13%) and the ecological situation (11%). Only a few (7%) are concerned with the health situation related to poor health system and about the same number of students (7%) don't find any problems in their everyday life.

In the next question students were asked to name the problems from a broader perspective that they think society is facing. Similarly to the first questions, the answers have been divided into the following categories: health, economy, environment, unemployment, war and peace, terrorism, corruption and other.

- Environment - threats to ecology, pollution, landfills, water and food insecurity, raw materials shortage;
- Economy - poverty, low salaries, high prices, economical instability, social stratification, low standards of living;
- Health - poor medical services, drug addiction, diseases;
- War and peace/terrorism – concerns about war and peace in the world, military operations and global terrorism;
- Unemployment – high unemployment rates, difficulties with finding a job;
- Corruption – concerns about high level of corruption;
- Other - mutual understanding, relations between people, social insecurity, absence of national identity, threats to society development, demographical and territory problems, moral degradation.

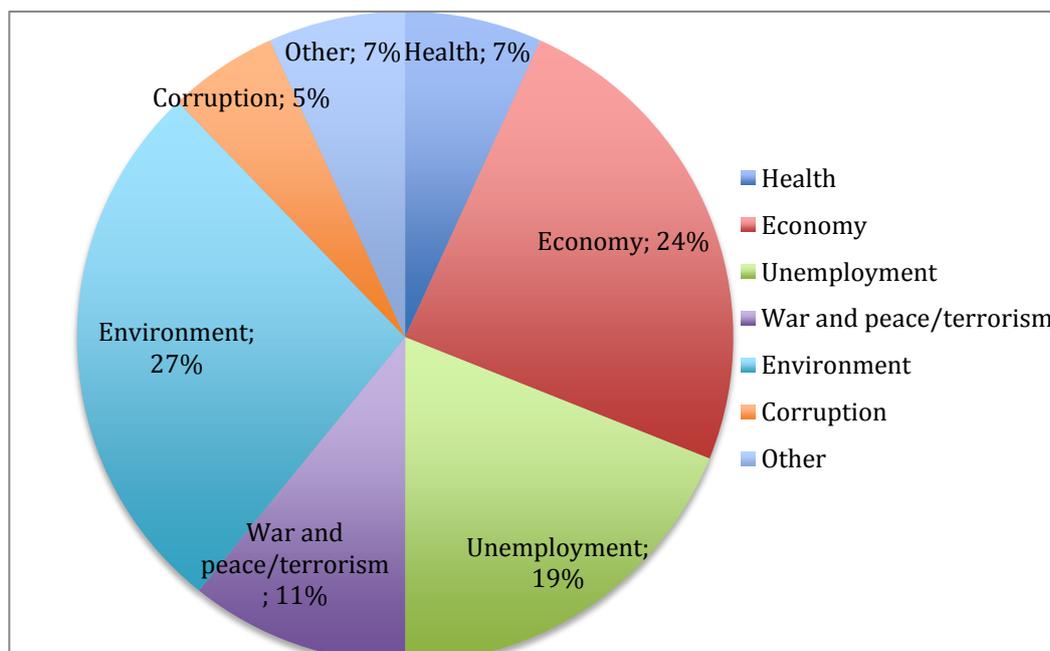


Figure 12. Answers to the questions about problems that society is facing in students' views

Almost the same amount of students is concerned with the ecological situation and different types of threats to the environment as with the economical situation (27 % and 24% accordingly). Among other concerns are high unemployment rates (19%) and situation with peace/terrorism in the world

(11%). A number of students have also raised their concern about high level of corruption (5%) and with health situation (7%).

When comparing the results from the answers to the 1st and 2nd questions, one can see that students' images about personal problems are much alike with the ones they have identified for the society as a whole. In both questions, they have showed concerns about the economical/financial situation, situation with unemployment and concerns about the health and environment situation.

The third question aimed at finding answers about students' perceptions of different environmental threats. The answers have been categorized into the following categories: pollution, deforestation, global warming/climate change, pollution of water, ozone hole, no problems and other.

- Pollution – rising level of CO₂ emissions, water and air contamination, soil contamination, household waste pollution, environmental contamination,
- Global warming/climate change – threat to switching off Gulf Stream because of the climate change, ablation, threats due to green house effect;
- Ozone hole – depletion of the ozone layer;
- Deforestation – depletion of the natural forests;
- No problems – students didn't mention any problems in the environment;
- Other – unlimited use of natural resources, mineral resources depletion, low quality of water and food.

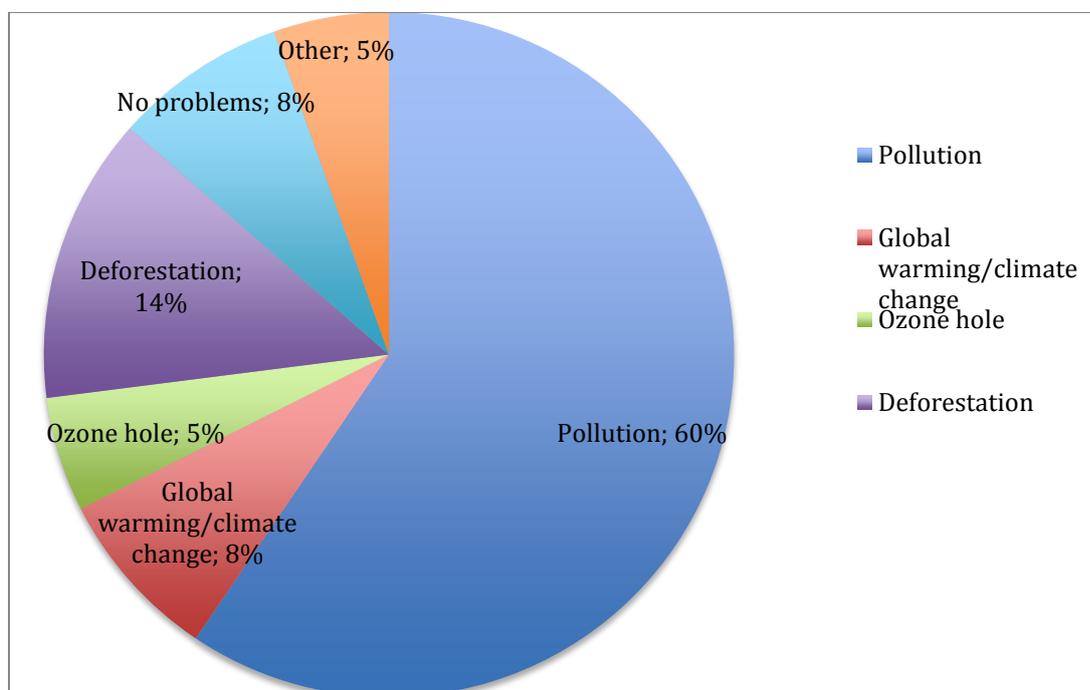


Figure 13. Answers to the questions about environmental problems that concern students the most

More than half of the students (60%) raised their concern about various types of pollution such as water and air pollution, soil contamination and rising level of CO₂ emissions. Others have also mentioned depletion of natural forests (14%) and threat of global warming/climate change (8%) as their environmental concern.

The rest of the questions in the first section deal with different aspects of SD and ESD, what students know about it and how they understand the concept.

When asked about associations with the expression of «sustainable development», most of the students were not able to give any. Majority (91%) have never heard of this expression and only 9% had some kind of associations with the given expression and vague idea about what it stands for, like «sound economic and social development» or «development that leads to the best results» or “enterprise development” or “sound development of a country”.

In terms of the general understanding of the concept of sustainable development it is extremely low as only 4% of students showed familiarity with the SD concept defined by the Brundtland Commission and have expressed that they kind of feel the meaning of the concept. Nevertheless, no students were able to list any drawbacks of the mentioned concept.

In terms of the role of education in promoting the concept, more than half of the students (65%) believe that education plays an important role for sustainable development while only 3% think the opposite. Almost a quarter of students (24%) were not able to give an answer in this regard.

The last question in the first section meant to identify students’ associations when thinking of an ideal place for them to live. Similarly to the first three questions in the section, the answers have been divided into a number of categories: economical, social and environmental aspects, other and no answer.

- Economy – stability, financial security, developed economy and industry, competent leadership, high employment rate, caring government, quality of life in the country;
- Social aspects – good relations between people, educated society, comfortable everyday life, national identity;
- Environment – clean air, water, clean environment in general;
- Other – this group include the following answers such as there is no ideal place to live, I don't dream about such a place, view from the window, pensioners must give a chance to younger generation to work, etc.

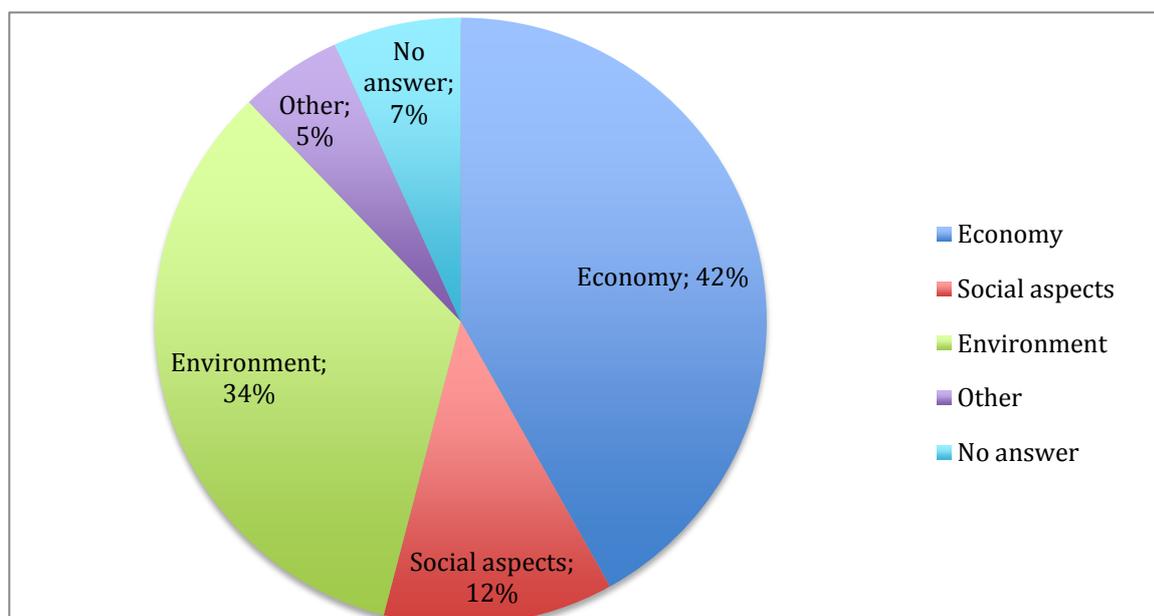


Figure 14. Answers to the questions about an ideal place to live

A little less than half of the students (42%) answered that economical aspects play an extremely important role when thinking of an ideal place to live. Among the most common answers among this category are financial security, high employment and quality of life in the country. Slightly less students (34%) put clean environment as the main association of an ideal place to live. 12% of the students listed social aspects as the ones being important for an ideal place to live.

Second section

In the second section, questions are related to how the concept of sustainable development is treated at university, which dimension of sustainable development they find more important than others and to what extent they value different aspects of SD.

In terms of how the concept of sustainable development is incorporated into the university program, students' answers show that their university program does not cover this concept. As the majority of the students showed little awareness about this concept (see section 1 for details), it was hard for them to answer the question about whether they are satisfied with the amount of information that they get in this regard and thus most of the students (79%) expressed satisfaction with the amount of information that they get while only 18% of students answered that they would prefer to receive more information on this topic.

In the next question the students were asked to directly value the aspects of SD based on the three sustainability dimensions presented in the theoretical framework. The first aspect is from the economical dimension, the second one is from social dimension and the last one is from the environmental dimension. The answers show that almost half of the students (47%) value the economical dimension of sustainability the most, while 41% value environmental dimension and 12% - social.

For the next group of questions in the second section, students had to express the extent to which they agree with eight different statements representing different aspects of SD. Students had to tick one of the answers on a four point scale ranging from Fully agree to Strongly disagree. The results are presented through the means that represent an average level of agreement among the students with the statements.

Statements representing aspects of SD	Means of the answers
Science and technology can solve any environmental problems	2,49
Threats to the environment are not my business	3,40
I believe that concept of sustainable development can help to solve environmental problems	2,23
Developed countries should take responsibility for the environmental problems of the world	2,15
Changing our way of living can contribute to solving environmental problems	1,76
Environmental problems are exaggerated	2,96
I am a part of the ecosystem and I can influence what happens with the environment	2,00
I am eager to contribute my time/energy to solve environmental problems	2,11

Table 2. The means of the answers representing agreement among the students with the statements about the environment

The results in Table 2 show that students tend to agree that their actions can influence what happens with the environment and share the concern about the threats to the environment. Students didn't show much confidence in the ability of the concept of sustainable development to solve environmental problems. This can partially be explained by students' unfamiliarity with the concept and its underlying principle. The results also indicate that students are not confident whether science and technology can solve environmental problems. At the same time all of them agree that changing their way of living can contribute to solving environmental problems.

Third section

In the last part of the questionnaires students were asked to rank different goals for the society from Not important to Very important on a scale from one to ten accordingly. The means of students' answers are presented in Table 3 representing an average level of agreement among the students with the different goals.

Statements representing goals for the society	Means of the answers
Achieve high economic growth	7,87
Eliminate gender disparity and empower women	7,00
Improve access to education and its quality	8,96
Protect natural reserves	9,06
Strong focus on health (child health, maternal, combating HIV/AIDs, tuberculosis)	9,65
Protect natural resources against overexploitation	8,29
Address population growth challenge	7,98
Address economical inequalities	8,37
Address the special needs of least developed countries	7,96

Table 3. The means of the answers representing agreement among the students with different goals for the society

The results in Table 3 indicate that students put high emphasis on all of the formulated goals on an average. The highest emphasis has been put on addressing health problems and protecting natural reserves. On a contrary, the lowest emphasis has been put on eliminating gender disparity and empowering women.

5. Discussion

Arguments in this section will be based on the theoretical framework and on the explorative study of students' knowledge, perceptions and values.

5.1. Education at the university

In this section the results related to the questions that aimed to collect information about the educational environment are presented. The first result that is relevant for this discussion is students' familiarity with the concept of sustainable development. From the answers to the questions 4 and 5 from the questionnaire one can see that the percentage of students who have heard about this concept is very low. This result shows that 67 students are not aware of this concept out of 74 students who participated in the questionnaire. This is an important indicator for the rest of the analysis.

When looking at different sustainability indexes with various criteria at their basis, the study shows that Ukraine is currently ranked quite low in comparison with other countries (see SD in Ukraine section for details). The fact that Ukraine is falling behind in sustainability development process is partially reflected in students' answers to questions 4 and 5. Nevertheless Ukraine shows its willingness to become more environmentally responsible and sustainable by joining different international initiatives to promote sustainable development. The commitment to ESD in Ukraine has mostly been limited to adopting of relevant international declarations, while no concrete commitments have been made on the national level. This will require not only much time, but also great efforts and political will for radical changes both in the field of SD and ESD.

For analyzing whether university currently serves as a source of information and how much the subject of sustainability is treated and in what ways, answers from another question have been utilized. The results seem to be very interesting as out of 7 students who have heard about the

concept of sustainability before, only 1 student got information about sustainability from the university, while the other 6 mentioned Internet, mass media and academic competition in geography as the relevant source of information. The results show that the general awareness about sustainability is also quite low as the topic of sustainability is poorly treated not only by the universities, but also by other national and local sources (mass media, Internet).

The results from another question (Q11) show that the concept is not covered in students' university programs and that students are unaware of extra classes that are provided in relation to this topic. Majority of the students also answered No to existence of a specific course with sustainability as a major topic and of programs with sustainability as a major field. In order to verify the answers of the students forming the sample and to see how the university treats the concept of sustainability, the university environment has been analyzed in closer details. Thus the homepages of three universities forming the sample have been analyzed. Particularly the programs and courses offered at the selected universities have been analyzed along with checking the availability of the information about eventual seminars and extra courses. The results show that on the homepages there is no information neither on specific courses nor entire programs focusing on sustainability. Information on existing seminars or extra classes has also been missing.

As identified in the theoretical framework, universities have an important responsibility in promoting the concept of sustainable development among students. Current educational environment at the universities in Ukraine show that the trend for incorporating the concept of sustainable development into the programs and courses is far underdeveloped.

In terms of students' interest in relation to sustainable development and whether universities are being able to satisfy them, the results show that 18% percent of the students would like to receive more information on this topic. Universities should take it as a starting point and through introducing ESD, serve as a platform where students could get knowledge and opportunity to discuss these issues with teachers and between each other.

5.2. Students' perception of sustainability

Students' perception of the problems

When answering the question (Q1) about problems that students face in their everyday life, students' answers reflect the everyday realities in Ukraine and society's worries in general. Taking into account the context of Ukraine, the students show their concern and worries about very practical and concrete issues. Financial problems, poor health, difficulties with finding a job are among the pressing issues among the students and society in general. Students have also indicated problems with the water and air quality that affect their everyday life, while the environmental situation in its turn adds to the health problems of the society. Thus, the concerns are very concrete and are very much connected to the personal life of the students. I think that the students concerns and worries could serve as a starting point for introducing aspect of sustainable development into education. There is a need to adapt education to students' realities and understand what societal, economical and environmental matters worry them the most in order to achieve sustainable results in education for SD. This is also where education for sustainable development can contribute by trying to link and show the connection between the individual actions and more general trends in the country and in the world in general.

As problems for the society as a whole, students have also identified those in close connection with their local realities. Economical problems, high rate of unemployment, environmental problems are among students' main worries. Again, identified concerns mostly reflect the current trends in the country and only to some extent reflect global problems. Nevertheless, students did show concern about the situation with war and peace in the world and marked terrorism as a serious global threat.

When identifying environmental threats, students showed their awareness not only about local problems, but also global environmental trends, such as global warming and depletion of the ozone layer. Again, this is where ESD could play its important role in shifting the focus of the discussion by reflecting the changing environmental trends.

Sustainable development

In this part students' experience and how they value the different aspects within the concept of sustainable development will be analyzed. In Q13 the students have been asked to tick one of the three statements that in their opinion describes the concept of sustainability best. The results of how students value the sustainable dimensions are presented below.

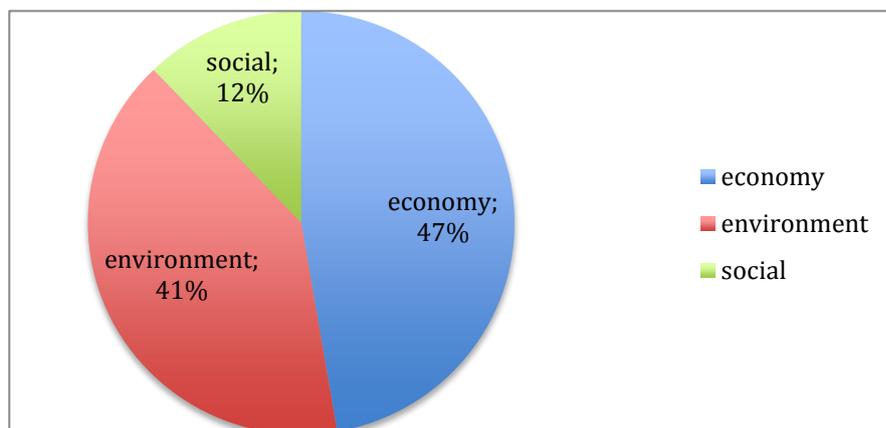


Figure 15. Presentation of how students experience and value SD

The empirical data presented above reveals that students have a positive opinion about three dimensions in general. Nevertheless, the environmental awareness along with the social should be increased in order to reach the balance between all the dimensions of sustainability. Students need to become more aware about the importance of all three dimensions.

The individual's role for SD

The results show that students tend to be optimistic and believe that their actions can influence what happens with the environment, particularly that changing their way of living can contribute to solving environmental problems. At the same time the results also indicate that students are not confident whether science and technology can solve environmental problems. It can be explained by perceiving environmental deterioration not as a technical problem, but as a rather social and moral problem that can be solved through changing the materialistic values of the society.

Ranking of goals for the society

The results under this section give an understanding of what the biggest challenges are for the society in students' views and they also reflect the environment in which students live. The results particularly show that students more or less rank all the goals for the society quite high (answers ranging from 7 to 9.65 on a 10 point scale). Nevertheless, students have ranked addressing health issues and protecting natural resources higher than the economical growth.

6. Conclusions

In this section the answers to the research questions will be presented along with suggestions for further research.

6.1. Research questions

1. In what way has the concepts of sustainable development been incorporated in educating students?

Although Ukraine has joined a number of international agreements that foresee integration of sustainable development issues into higher education and reorienting university curricula to build a sustainable world, as of now Ukraine's commitments in this regard are mostly declarative. The analysis of the trend of incorporating the sustainable development concept into education at the university level shows that it is not developing at all. There are neither specific programs nor courses that have sustainability as the major topic. Moreover, universities don't offer any extra classes related to sustainability. Extremely low awareness about the concept of sustainable development among the students also confirms this state of affairs.

The universities should be more proactive in introducing ESD into their curricula. There are many ways of how ESD components could be introduced into higher education, i.e. through environmental and ecological disciplines or through elective courses within the Bologna agreements system, or through extra classes and universities should decide for themselves on how this should be done. More efforts should be made for incorporating this topic into university's research focus.

On the national level, the government should introduce a sustainable development policy that would be adapted to local context and give general guidance on how to implement this concept in practice, particularly in higher education in Ukraine. For that the political will to strengthen the priority of the environmental and sustainable development policy and its integration into the development strategies of the country is mostly needed. Facing other challenges in this regard is also crucial, i.e. poor understanding of the basic ideological approaches to the sustainable development policy both by the government authorities and by public, lack of qualified staffing potential and absence of the properly developed theory of sustainable development for the countries with transitional economies (Johannesburg Summit, 2002).

2. What are the students' views and perceptions of sustainable development?

The results of the study show that the students have very limited knowledge about sustainable development. Nevertheless they have showed awareness and expressed their concerns about the ecological and environmental situation, both global and local. The students' values fall very much under the sustainable development umbrella and can be characterized as environmentally oriented. Still, there is an indication that students value economic dimension of sustainable development more than the social and environmental dimensions. This can be explained by their low awareness about the concept. The results show a strong interest among the students in learning more about the concept and probably a deeper understanding of it would affect the way they value it.

6.2. Further research

As ESD currently is thought to play an important role in promoting sustainable development of the society now and in the future and tends to strengthen its role in that further, research on teaching and learning about sustainable development should be encouraged. More research is also needed because it is a rather young field both on the practical educational and academic levels.

Efforts to reach sustainable development also require inclusion of all actors into the process, both on local and national levels. In order to achieve positive results, the concept of SD has to become an integral part of people's actions and values. Greater efforts are needed for starting up a dialogue between the different actors using both bottom-up and top-down approaches. I believe it is important to conduct studies that would explore different actors perceptions of SD that would in its turn allow understanding and incorporating their concerns and priorities in teaching about SD, reflecting the reality they live in and making the world around more sustainable.

References

Allan, J. A., 2005, *Water in the Environment, Socio-economic development, Discourse: Sustainability, changing management paradigms and policy responses in a global system, Government and opposition*, Blackwell Publ., 181-199.

Agresti, Alan and Finlay Barbara, *Statistical Methods for the Social Sciences*, Prentice Hall Inc., New Jersey Fourth Edition, 2009 p.369-402.

Assessment of the EU – Ukraine Action Plan Implementation: Environment and Sustainable Development, Andrusyevych N. (ed). Lviv. 2009. <http://www.rac.org.ua/index.php?id=105&L=1>

Council of Europe. Education for democratic citizenship and human rights. Overview of EDC in Ukraine, http://www.coe.int/t/dg4/education/edc/Country_profiles/Profile_UKRAINE_en.asp#TopOfPage (access 25 October 2009).

Dalal-Clayton, B., Bass, S. *Sustainable development strategies*. 1st ed. London: Earthscan Publications Ltd; 2002. p. 358.

de Boer, H. Goedegebuure, L. (2003) 'New Rules of the Game? Reflections on governance, management, and systems change, in File, J. Goedegebuure, L. *Real-Time Systems – Reflections on Higher Education in the Czech Republic, Hungary, Poland, and Slovenia*. Logo CHEPS Centre for Higher Education Policy Studies, University of Twente, Enschede, 207-234.

Donella H. Meadows, Dennis L. Meadows, Jørgen Randers, William W. Behrens III (1972) *The Limits to Growth*.

EC Tempus report (2009). The education sector in Ukraine, http://eacea.ec.europa.eu/tempus/participating_countries/ukraine_en.php (accessed 23 October 2009).

European Union. European Training Foundation. *Ukraine Country Plan 2007*, <http://www.docstoc.com/docs/4976295/UKRAINE-ETF-COUNTRY-PLAN-Socioeconomic-background-Since-Ukraine-s> (accessed 24 October 2009)

Giunti, G., Zaytseva, K. (2009) *Transition to a sustainable future. A study about students' attitudes and views toward corporate sustainability. A comparison between Sweden, Italy and Russia*. Master thesis. Umea School of Business.

Global development research center, http://www.gdrc.org/sustdev/un-desd/intro_un-desd.html (accessed 11 April 2011).

Gorga A. (2007) *Where are we with the harmonization of European higher education?* *European Education*, Vol. 39 (4): 58-68.

Holmberg, John; Samuelsson, Bo E. (2006). Workshop on Drivers and Barriers for Implementing Sustainable Development in Higher Education. Göteborg, Sweden, 2006. *Drivers and barriers for implementing sustainable development in higher education*. Paris, UNESCO, 130 p.

International Renaissance Foundation. University Autonomy as Part of Civil Society Project, <http://www.irf.kiev.ua/ua/programs/edu/rezult/> (accessed 23 October 2009).

- Jacejko M. (2006) Democratization of education: analysis of main factors. *Multiversum. Philosophical collection*, vol. 56, http://www.filosof.com.ua/Jornel/M_56/Jacejko.htm (accessed 23 October 2009)
- Johannesburg Summit (2002) Development of the sustainable development policy introductory process in Ukraine, http://www.johannesburgsummit.org/html/prep_process/national_reports/ukraine_national_report.pdf (accessed 12 September 2010).
- Kotlyarova O. (2006) The stages of reforming of the system of higher education of Ukraine at the end of the XXth – the beginning of the XXI century. Lugansk National Pedagogical University, http://alma-mater.luguniv.edu.ua/magazines/elect_v/NN1/r1/07koopds.pdf (accessed 23 October 2009).
- Kremen, V. and Nikolaienko, S. (Eds.) (2006). Higher Education in Ukraine. Monographs on Higher education. UNESCO-CEPES, <http://www.cepes.ro/publications/mono.htm> (accessed 21 October 2009).
- Levett, R., (1998) *Sustainability indicators—integrating quality of life and environmental protection*. Journal of the Royal Statistical Society: Series A (Statistics in Society), 161: 291–302.
- Little W.A., Green A., “Successful globalization, education and sustainable development”, *International Journal of Educational Development* Vol. 29, Issue 2 (2009) p.171
- Lotz-Sisitka, H. and Lupele, J. "Curriculum Transformation in Higher Education Institutions: Some Perspectives from Africa", in: *Education for Sustainable Development in Action*, UNESCO 2006.
- Lozano R., *Envisioning sustainability three-dimensionally*, Journal of Cleaner Production Vol. 16 Issue 17 (2008) pp. 1838-1346.
- Lundholm C., "The Challenges facing learners in EE and ESD", Holmberg J., Samuelsson B.E. (Ed.), *Drivers and Barriers for Implementing Sustainable Development in Higher Education*, UNESCO, Technical Paper No. 3, 55 (2006)
- Maassen, P. and Cloete, N. (2002). Global reform trends in higher education, in Cloete, N., Fehnel, R., Maassen, P., Moja, T., Perold, H. and Gibbon, T. (Eds.), *Transformation in Higher Education. Global pressures and local realities in South Africa*. Pretoria: Centre for Higher Education Transformation and Juta.
- McKeown, R. *Education for Sustainable Development Toolkit*, version 2. <http://www.esdtoolkit.org/authnote.htm> (accessed 12 March 2011).
- Mitchell C. Integrating sustainability in chemical engineering practice and education. *Transactions of the Institution for Chemical Engineering* 2000; 78(B):237–42.
- Muchaiteyi, Togo (2009) *A systems approach to mainstreaming environment and sustainability in universities: the case of Rhodes University, South Africa*. Rhodes University, South Africa.
- Myklebust, J.P, Meleshevych, A, (2008) Modernizing PhD training in Ukraine: report from a Tempus Project. *Forum. European Association for International Education*, <http://www.eaie.org/pdf/F93art5.pdf> (accessed 23 October 2009)
- Pelling, M. (2008). The Rio Earth Summit. In R. B. Potter, & V. Desai, *The Companion To Development Studies* (pp. 288-292). London : Hodder Education.
- PricewaterhouseCoopers' report (2006) "Corporate Responsibility: Strategy, Management and Value." <http://www.globenewswire.com/newsroom/news.html?d=96784>. (Accessed 10 April 2011).

Rees, W. (2001). Economics and Sustainability: Conflict or Convergence? (An Ecological Economics Perspective). StatsCan Economic Conference. Ottawa, Ontario. 5 June 2001, <http://www.environomics.org/environomics/econSustain.pdf> (accessed 09 May 2010).

Robertson, S., Novelli, M, Dale, I., Tikly, L. and Dachi, H. (2007) *Globalisation, Education and Development: Ideas, Actors and Dynamics*. Educational Paper 69. London: DfID.

Rootzen, J. (2006) *Perceptions of the concept of sustainable development among Russian and Swedish students*. Undergraduate thesis. Umea Universitet.

Shcherbak, Yurii (2007) Ukraine: sustainable development and prospects. <http://www.day.kiev.ua/189279> (accessed 12 March 2011)

South Pacific Applied Geoscience Commission (SOPAC), the United Nations Environment Programme (UNEP), 2010, http://www.vulnerabilityindex.net/EVI_2005.htm (accessed 10 April 2011).

Stivers, R. 1976. *The Sustainable Society: Ethics and Economic Growth*. Philadelphia: Westminster Press.

UN Department of Economic and Social Affairs. (n.d.), Division for Sustainable Development: http://www.un.org/esa/dsd/dsd_aofw_nsds/nsds_index.shtml (accessed 9 May 2010)

UNEP (2006). *Education for Sustainable Development innovations-Programmes for universities in Africa*. Share-Net: Howick.

UNESCO (2007), *The UN Decade for Education for Sustainable development (DESD 2005-2014): the first two years*. UNESCO.

UNESCO (2009), *Review of Contexts and Structures for Education for Sustainable Development 2009*. UNESCO.

United Nations University Project on Education for Sustainable Development in Africa (2009), http://isp.unu.edu/research/projects/esda/files/ESDA_ProjectDocument.pdf (accessed 16 April 2011).

UN Ukraine National report.

http://www.un.org/jsummit/html/prep_process/national_reports/ukraine_national_report.pdf (accessed 25 August 2010)

Vovk, V., Prugh, Th. (2003) *Red Past. Green Future. Sustainable Development for Ukraine and the Post-Communist Nations*. Worldwatch Institute, http://findarticles.com/p/articles/mi_hb6376/is_4_16/ai_n29013484/ (accessed 15 January 2011)

WCED (1987), *Our Common Future: Report of the World Commission on Environment and Development*: <http://www.worldinbalance.net/agreements/1987-brundtland.php> (accessed 10 June 2010)

World Bank (2000). *Higher Education in Developing Countries Peril and Promise*, The Task Force on Higher Education and Society.

World Bank (2005). Equal access to quality education in Ukraine. Project Appraisal Document. <http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=40941&menuPK=228424&Projectid=P077738> (accessed 20 October 2009).

World Bank (2008). *Higher education and development*. Annual World Bank Conference on Development Economics – Regional. Lin J., Pleskovic B. (Eds.)

World Bank (2010). Country Partnership Strategy Progress Report for Ukraine, FY08-FY11. April 19, 2010.

World Data Center, <http://wdc.org.ua/en/services/country-profiles-visualization> (accessed 28 August 2010).

Yale University, Yale Center for Environmental Law and Policy, <http://earthmind.net/rivers/docs/yale-esi2005.pdf> (accessed 2 September 2010).

Yale University report (2010), <http://epi.yale.edu/> (accessed 16 April 2011).

Yao, Zh., He, Y. (2010) *Sustainable Development at University: Comparison of Students' Knowledge, Awareness and Actions*. Master Thesis. University of Gavle.

Zaspa H. (2008) Bologna process and higher technical education in Ukraine. 19th EAEEIE Annual Conference. IEEE: 149-151.

Appendix

Appendix 1: Sustainable development questionnaire

Опитувальник (Ukrainian version)

П.І.Б.
Вік
Освіта
Місце проживання:

Розділ 1.

1. Назвіть основні труднощі / проблеми з якими ви стикаєтесь у вашому повсякденному житті?

2. На вашу думку, які проблеми найбільш важливі в суспільстві в цілому?

3. Які екологічні питання турбують Вас найбільше?

4. Що ви думаєте, коли чуєте вираз "сталий розвиток"?

5. Чи ви чули про концепцію сталого розвитку? Де? Коли? Якщо так, то перейдіть до пит. 6, якщо ні, то до пит. 7.

6. Якщо чули, то чи поділяєте ви цю концепцію, чи вважаєте, що вона має свої недоліки? Які саме?

7. Чи вважаєте Ви, що освіта може зіграти важливу роль у просуванні цієї концепції? Чому?

8. Як Ви вважаєте, які основні труднощі на шляху забезпечення сталого розвитку?

9. Чи має Україна стратегію в галузі сталого розвитку? Якщо так, то які в неї пріоритетні напрямки?

10. Які аспекти ви вважаєте найбільш важливими для себе, коли ви думаєте про ваше ідеальне місце для життя?

Розділ 2.

11. Чи включена концепція сталого розвитку до вашої університетської програми?

- Курс зі сталого розвитку є основним предметом
 Ви чули про цю концепцію протягом кількох курсів
 Додаткові заняття даються з цієї теми
 Є окрема програма зі сталого розвитку

12. Чи задовольняє ваші очікування рівень інформації, яка надається за даною темою?

- Так, я повністю задоволений кількістю інформації
 Так, я задоволений
 Так, але я бажав отримувати більше інформації
 Ні, я не задоволений кількістю інформації.

13. Яке з наступних тверджень ви думаєте, найкраще описує концепцію сталого розвитку?

- вільні і відкриті ринки забезпечують сталий розвиток
 економіка – це підсистема екосфери, яка нерозривно інтегрована, цілком входить і повністю залежна від неї (екосфери)
 під сталим розвитком розуміється єдність суспільства та його можливість працювати для загальних соціальних цілей, як здоров'я та добробут, їжа, житло, освіта та культура.

14. Наука і технології можуть вирішити будь-які екологічні проблеми.

- Повністю згоден Згоден Не згоден Повністю не згоден

15. Загрози навколишньому середовищу мене не турбують

- Повністю згоден Згоден Не згоден Повністю не згоден

16. Я вважаю, що концепція сталого розвитку може допомогти у вирішенні екологічних проблем

- Повністю згоден Згоден Не згоден Повністю не згоден

17. Розвинені країни повинні взяти на себе відповідальність за екологічні проблеми світу

- Повністю згоден Згоден Не згоден Повністю не згоден

18. Зміна нашого способу життя може сприяти вирішенню екологічних проблем

- Повністю згоден Згоден Не згоден Повністю не згоден

19. Екологічні проблеми є перебільшеними

- Повністю згоден Згоден Не згоден Повністю не згоден

20. Я – частина екосистеми і я можу впливати на те, що відбувається з навколишнім середовищем

- Повністю згоден Згоден Не згоден Повністю не згоден

21. Я готовий приділити свій час/енергію для вирішення екологічних проблем

- Повністю згоден Згоден Не згоден Повністю не згоден

Розділ 3.

У якій мірі ви поділяєте наступні цілі для людства? Зробіть відмітку від 1 до 10.

1. Досягнення високих темпів економічного зростання.

Не важливо 1 2 3 4 5 6 7 8 9 10 *Важливо*

2. Ліквідація гендерної нерівності та розширення прав і можливостей жінок

Не важливо 1 2 3 4 5 6 7 8 9 10 *Важливо*

3. Поліпшення доступу до освіти та її якості.

Не важливо 1 2 3 4 5 6 7 8 9 10 *Важливо*

4. Захист природних заповідників.

Не важливо 1 2 3 4 5 6 7 8 9 10 Важливо

5. Рішення проблем, пов'язаних із здоров'ям (здоров'ям дітей, матерів, боротьба з ВІЛ / СНІДом, туберкульозом).

Не важливо 1 2 3 4 5 6 7 8 9 10 Важливо

6. Захист природних ресурсів від надмірної експлуатації.

Не важливо 1 2 3 4 5 6 7 8 9 10 Важливо

7. Рішення проблем, пов'язаних із зростанням населення.

Не важливо 1 2 3 4 5 6 7 8 9 10 Важливо

8. Рішення проблем, пов'язаних з економічними нерівностями.

Не важливо 1 2 3 4 5 6 7 8 9 10 Важливо

9. Рішення найгостріших потреб найменш розвинених країн.

Не важливо 1 2 3 4 5 6 7 8 9 10 Важливо

Дякуємо за Вашу участь у дослідженні

Questionnaire (English version)

Name

Age

Education

Place of residence

Section 1.

1. What are the most important difficulties/problems that you face in your everyday life?

2. In your opinion, what are the most important problems in the society as a whole?

3. What environmental issues concern you the most?

4. What do you think when you hear expression “sustainable development”?

5. Have you heard about the concept of Sustainable Development? Where? When? If you answered Yes, then go to Question 6, otherwise proceed to Question 7.

6. Do you share this concept or think that it has its drawbacks? What are those?

7. Do you think that education can play an important role in promoting this concept? Why?

8. What are the main obstacles to implement sustainable development?

9. Do you know whether Ukraine has a sustainable development strategy? If so, what are its priority areas?

10. What do you think are the most important aspects for you when you think about your ideal place to live?

Section 2.

11. How is the concept of SD covered in your university program?

Courses with sustainability as a major topic

You have heard about this concept during several courses

Extra classes are provided in relation to this topic

There is a separate program on SD

12. Does it satisfy your expectations?

Yes, I am fully satisfied with the amount of the information.

Yes, I am satisfied

Yes, but I wish I got more information

No, I am not satisfied with the amount of information.

13. Which of the following statements you think describes the concept of sustainability best?

Free and open markets ensure sustainability

Economy is inextricably integrated, completely contained, and wholly dependent subsystem of the ecosphere

Sustainability means the cohesion of society and its ability to work towards common social goals (such as those for health and well-being, nutrition, shelter, education and cultural expression) be maintained.

14. Science and technology can solve any environmental problems.

Fully agree Agree Disagree Strongly disagree

15. Threats to the environment are not my business.

Fully agree Agree Disagree Strongly disagree

16. I believe that concept of sustainable development can help to solve environmental problems.

Fully agree Agree Disagree Strongly disagree

17. Developed countries should take responsibility for the environmental problems of the world.

Fully agree Agree Disagree Strongly disagree

18. Changing our way of living can contribute to solving environmental problems.

Fully agree Agree Disagree Strongly disagree

19. Environmental problems are exaggerated.

Fully agree Agree Disagree Strongly disagree

20. I am a part of the ecosystem and I can influence what happens with the environment.

Fully agree Agree Disagree Strongly disagree

21. I am eager to contribute my time/energy to solve environmental problems.

Fully agree Agree Disagree Strongly disagree

Section 3.

To what extent do you share the following goals for the human society? Make a mark from 1 to 10.

1. Achieve high economic growth.

Not important 1 2 3 4 5 6 7 8 9 10 Important

2. Eliminate gender disparity and empower women

Not important 1 2 3 4 5 6 7 8 9 10 Important

3. Improve access to education and its quality.

Not important 1 2 3 4 5 6 7 8 9 10 Important

4. Protect natural reserves.

Not important 1 2 3 4 5 6 7 8 9 10 Important

5. Strong focus on health (child health, maternal, combating HIV/AIDs, tuberculosis).

Not important 1 2 3 4 5 6 7 8 9 10 Important

6. Protect natural resources against overexploitation.

Not important 1 2 3 4 5 6 7 8 9 10 Important

7. Address population growth challenge.

Not important 1 2 3 4 5 6 7 8 9 10 Important

8. Address economical inequalities.

Not important 1 2 3 4 5 6 7 8 9 10 Important

9. Address the special needs of least developed countries.

Not important 1 2 3 4 5 6 7 8 9 10 Important

Thank you for taking part in the study