enjoined
educate for sustainable development

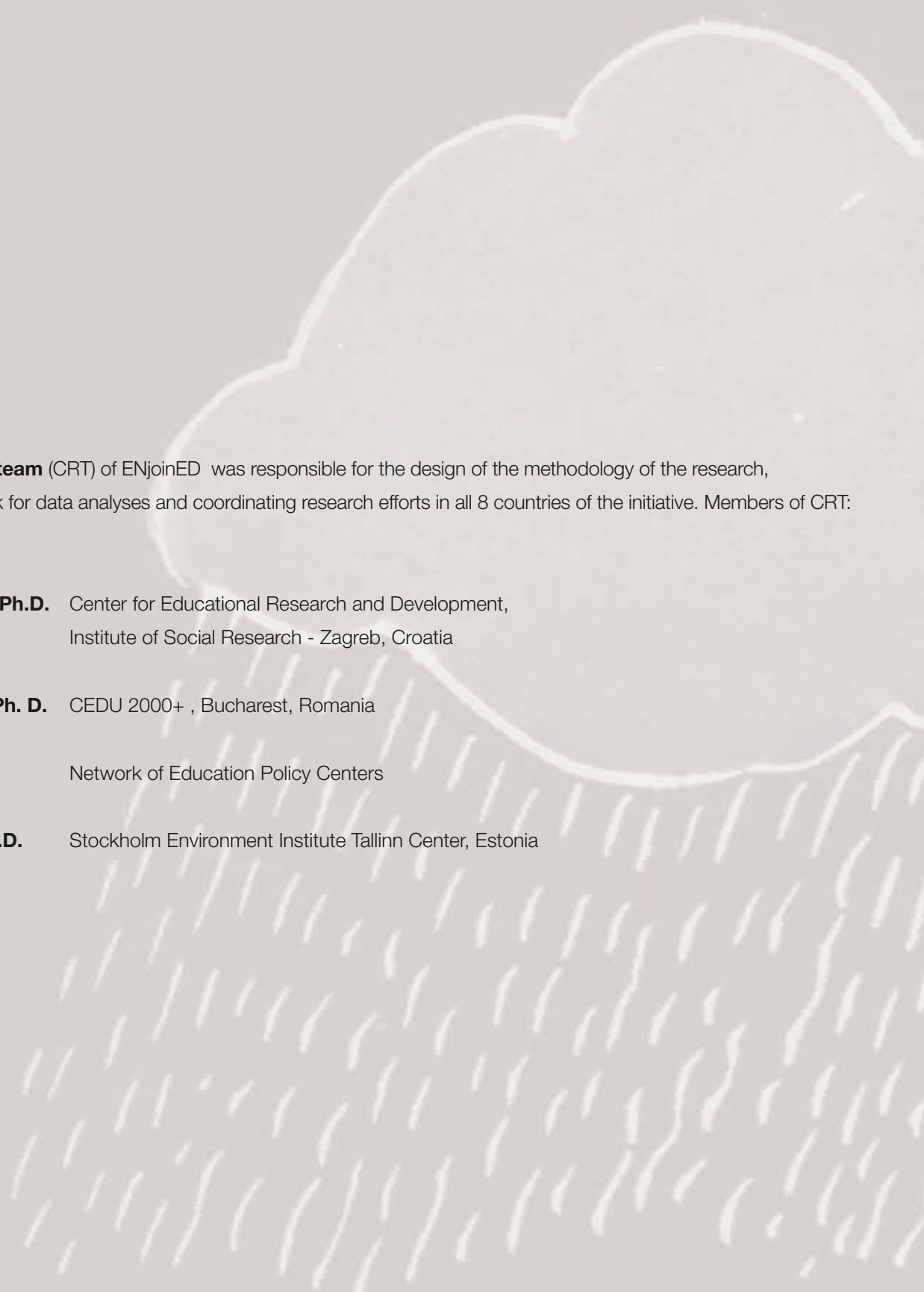# Education for Sustainable Development
Slovenija

Research Report

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Central research team (CRT) of ENjoinED was responsible for the design of the methodology of the research, providing framework for data analyses and coordinating research efforts in all 8 countries of the initiative. Members of CRT:

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1. Introduction

1.1. Why focus on ESD why ESD is important?

> *"The world continues to face various critical challenges such as: human-induced climate change, the rapid depletion of natural resources, the frequency of natural disasters, the spread of (old and new) infectious diseases, the loss of biodiversity, the violation of human rights, increased poverty, the dependency of our economic systems on continuous growth in consumerism and so forth. Sustainable development (SD) has become a vehicle around the globe for expressing the need to depart from present dominant models of development which appear unable to balance the needs of people and the planet in the pursuit of peace and prosperity."* (UNESCO, 2009, p. 6.)

Entire generations are at least in part shaped in their attitudes, personal and communal aspirations, in their development goals, by what formal educational systems equipped them with in terms of conceptual toolboxes and mental models. If the current predicament is seen as unbalanced, as not sustainable through the forthcoming generations and thus in need of alteration, it cannot be altered using the existing dominant ways of acting and living (Tillbury, 2007). And those ways of acting and living are, at least partly, a product of the existing formal education. In order to abandon them educational systems have to be reconceptualised to provide current and future generations with new mental models of material, living and social environments and their role in the socio-economic processes.

Among traditional tasks of equipping young people to become successful members of national and global communities, formal education will also have to enable them to live together in way that contributes to sustainable development of their communities. **Education for sustainable development (ESD)** is a formal education's response to global challenges in order to help students understand what sustainable development requires globally and locally, help them understand how to use their own capacity for critical reflection and systemic futures-thinking and motivate them to consider individual actions contributing to communal sustainable development.

1.2. Why we were doing this study?

UNESCO' (2009) reports that the most common global response to the calls for inclusion of ESD into formal education is to make adjustments (either minor or

substantial) to the existing educational system, with all its pre-existing strengths and weaknesses. However, all additions to the national formal education curricula struggle with an already crowded curriculum which has a primary task of teaching the basics of reading, writing and arithmetic. ESD content can be seen as "an integrative, cross-curricular theme that can bring together many of the single issues that schools are already expected to address" (UNESCO, 2009, p. 48.).

The research sets out to map the content that already exists in the national curricula, the content that is either explicitly aligned with the teaching for sustainable development, or is related to it. Based on such mapping it is expected to show how the existing curricular content can be modified (in minor or substantial manner) to contribute to ESD. Besides curricular mapping it is looking into the subject curricula and textbooks concerning the same ESD content. Though not as comprehensive as the curricular mapping, these provide a clearer idea of how important goals expressed in the Framework Curriculum are presented directly to the pupils.

It is expected that this mapping will provide the foundation in each of the participating countries for a public debate on inclusion of ESD learning outcomes in the national curricula (and further educational documents based on them) and their importance for future sustainable development. It is expected that it will point out and stress the important role the formal education has in actively shaping a more secure future for the next generation.

1.3. Sustainable Development and Education for Sustainable Development

The Notion of Sustainable Development

According to the World Commission on Sustainable Development (WCSD) report, also referred as the Brundtland Report "Our Common Future" (WCED, 1987), sustainable development marks the ability of "humanity to /…/ ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs." Thus, the report called for the need to look beyond today's needs and short-term effects of decisions.

The pursuit for sustainable development continued at the Rio Summit in 1992 in signing the Agenda 21, the commitment was renewed in the Summit on Sustainable Development in Johannesburg in 2002 (Rio+10). In 2012 the Rio process shall celebrate its 20th anniversary, but the definition of SD evolves further. The evolution of SD has been marked by the attempts to develop a clear notion. However, it has been realized that defining SD is actually implementing the SD. Today, sustainability is

firmly embedded in the language of development - locally, globally and at every level between, but according to several authors the popularity of the notion has been accompanied by more verbal adherence than practical implementation (Gibson *et al.* 2005). Moreover, the practice at all levels mostly still follows the mainstream economic growth agenda. The difficulties to apply the SD derive from the need for fundamental changes in values and perceptions, but also political and administrative structures.

SD is very much context dependant (social-cultural, political, economic and other) and the interpretation of sustainability changes between contexts and also over time, as new knowledge emerges. Weaver and Rotmans (2006) propose to the use 'sustainability interpretation' rather than 'sustainability definition'. In addition to the social context, the interpretation of SD may depend on other perspectives, such as on the extent of trade-offs made between values (economic, social and environmental).

In conclusion, the concept of sustainable development has created a great challenge for the socio-economic development. The concept of weak and strong sustainability (WS and SS) has questioned the limits of the Planet Earth to cope with the growing demand for resources and the thresholds for harmful impacts. Rockström *et al.* (2009) have identified the Earth-system processes and associated thresholds which, if crossed, generate unacceptable environmental change. This group of researchers has presented evidence that three boundaries of Earth-system processes (climate change, rate of biodiversity loss, nitrogen cycle) have been overstepped already. The debate over WS and SS is largely about the options for substitutability of natural assets, on one hand, and the acceptability of this by people and communities on the other hand. Understanding of the SD concept assumes to look beyond today's needs and short-term effects of decisions. Developing this ability has become much in the focus of the education for sustainable development.

Education for Sustainable Development

While the roots of *education for sustainable development (ESD)* could be traced back to the early 1970s ESD was formally tabled at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992. UNCED among other landmark publications, it also resulted in "Agenda 21" which provides a comprehensive plan of action to be taken globally, nationally and locally by UN agencies, governments and major organizations and networks to reduce the human impact on the environment. "Agenda 21", the Rio Declaration on Environment and Development and the Statement of Principles for the Sustainable Management of Forests were adopted by 178 Governments. The *Commission on Sustainable Development (CSD)* was created in December 1992 to ensure effective follow-up of

UNCED and to monitor and report on implementation of multilateral environmental agreements.

Chapter 36 of Agenda 21 is addressing the education, training and public awareness. *UNESCO has been designated as Task Manager for ESD* to address four overarching goals (http://www.un.org/esa/dsd/agenda21/res_agenda21_36.shtml):

▶ promote and improve the quality of education: the aim is to refocus lifelong education on the acquisition of knowledge, skills and values needed by citizens to improve their quality of life;

▶ reorient the curricula: from pre-school to university, education must be rethought and reformed to be a vehicle of knowledge, thought patterns and values needed to build a sustainable world;

▶ raise public awareness of the concept of sustainable development: this will make it possible to develop enlightened, active and responsible citizenship locally, nationally and internationally; and

▶ train the workforce: continuing technical and vocational education of directors and workers, particularly those in trade and industry, will be enriched to enable them to adopt sustainable modes of production and consumption.
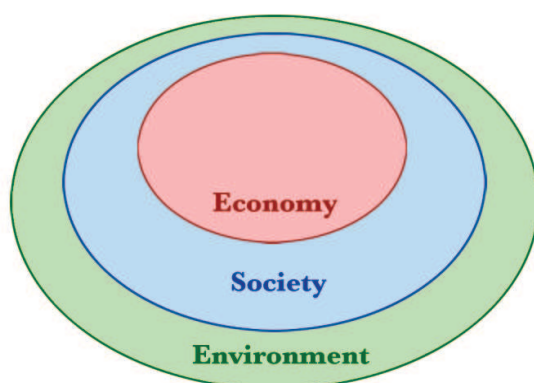
Figure 1: Three basic elements of sustainability – environmental, social and economic (Source:

Although there appears widespread consensus about these goals, there is less agreement about the meaning of ESD. Just as is the case with sustainable development, there is not one single correct interpretation and use of ESD. ESD is argued to be seen as the total sum of diverse ways to arrive at a 'learning society' in which people learn from and with one another and collectively become more capable of withstanding setbacks and dealing with sustainability-induced insecurity, complexity and risks. From this point of view, ESD is about - through education and learning - *engaging people in SD issues, developing their capacities to give meaning to SD and to contribute to its development and utilizing the diversity represented by all people.*

In order to bring the ESD into the attention of governments and the public, the United Nations has declared a *Decade of Education for Sustainable Development (DESD)*. Resolution 57/254 on the DESD (2005–2014) was adopted by the United Nations General Assembly in December 2002, shortly after the World Summit on Sustainable Development (Rio+10) which was held in Johannesburg in August/September of the same year. The basic vision of the Decade is of a world in which everyone has the opportunity to benefit from education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation. DESD seeks to promote the meaningful development and implementation of ESD on all geographical scales (locally, nationally, regionally and internationally) with the involvement of a wide range of stakeholders. At the start of the Decade, this vision was translated into four objectives: 1) facilitate networking, linkages, exchange and interaction among stakeholders in ESD; 2) foster an increased quality of teaching and learning in ESD; 3) help countries progress towards and attain the Millennium Development Goals; and 4) provide countries with new opportunities to incorporate ESD into education reform efforts.
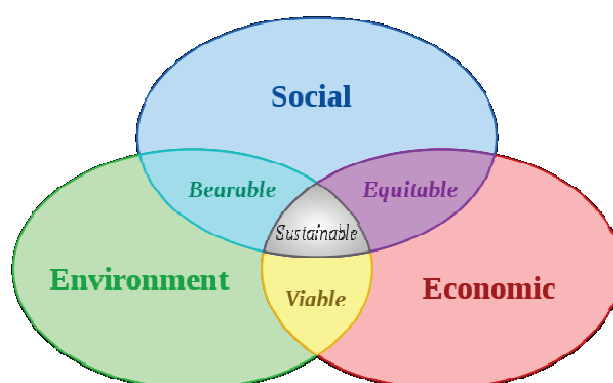
Figure 2: sustainability representation showing how environment and society limit economics (Source: Wikipedia)

Current project addresses all the four goals of DESD, but specifically the goal of networking, linkages and learning among education centres in Europe in ESD, fostering the increased quality of teaching and learning in ESD and sharing experiences and knowledge of teaching of ESD.

Sustainable development in national curricula

Daniela Tillbury (2007), Director of International Research Institute in Sustainability (IRIS), suggests that sustainability is about challenging our mental models, policies

and practices and not just about accommodating new dimensions into current work or finding common ground between related existing programmes. She holds that learning based change for sustainability challenges educators to think beyond raising awareness and go beyond involving learners merely in one-off activities such as cleaning-up or planting trees. Though these are useful and beneficial activities, what is essential is to encourage learners to develop critical and systemic thinking skills, enabling them to get to the core of the issues. This reflects the major shift in thinking from **environmental education (EE)** to **education for sustainability** or ESD (Tillbury, 2007).

In terms of curricula content, EE can be whole part of ESD, or have significant overlaps with ESD, but EE is insufficient to replace ESD as it lacks the socio-cultural and economic dimensions (see Methodology, next chapter). Conceptually, ESD also contains important pedagogical elements which are somewhat harder to capture with our current research, and which includes social learning, participation and capacity-building. On top of these, some countries are moving away from the anthropocentric (or human-centred) perspective towards eco-centric interpretation of sustainable development through references to living in harmony with nature and the rights of other species and the non-human world.

It is clear from the above that ESD is not just a matter of information, but is setting the ground for a gradual change, a learning-based change. This comes from the perspective that dominant current models of development appear unable to balance the needs of the people and the plant in the pursuit of peace and prosperity. SD is mainly portrayed through three dimensions and their interrelation in time (past-present-future) and in space (near-far) (see Figure 2).

*Sustainable social development (**people**)* is aimed at the development of people and their social organization, in which the realization of social cohesion, equity, justice and wellbeing plays an important role.

A *sustainable environmental development (**planet**ary boundaries)* refers to the development of natural ecosystems in ways that maintain the carrying capacity of the Earth and respect the non-human world.

*Sustainable socio-economic development (**prosperity**)* focuses on the development of the socio-economic infrastructure, in which the efficient management of natural and human resources is important. It is the finding of balanced ways to integrate these dimensions in everyday living and working that poses, perhaps, the greatest challenge of our time as this requires alternative ways of thinking, valuing and acting.

In brief, in the SD context it is important to consider the environmental and socio-economic development in cross generational (i.e. intergenerational) perspective.

According to the DESD Monitoring and Evaluation document by UNESCO (2009), ESD would be focused on development of knowledge, capacities, qualities or competences required for active, critical and meaningful contribution to sustainable development, on the transfer of appropriate sets of knowledge, attitudes, values and behaviour. The report states:

▸ "ESD must be seen as a comprehensive package for quality education and learning within which key issues such as poverty reduction, sustainable livelihoods, climate change, gender equality, corporate social responsibility and protection of indigenous cultures, to name a few, are found."

▸ "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."

▸ "ESD 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." *(UNESCO, 2009, p.26., Box 3)*

However, ESD still remains debatable around the world. It is now understood that more room will be left for localization and contextualization, and national and regional debates towards the development of the meaning are seen as crucial. Further to that, the current study aims at identifying the cognitive and skills and values elements of sustainable development in the national curricula in 8 countries included in the ENjoinED initiative (Bosnia and Herzegovina, Croatia, Estonia, Georgia, Kosovo, Macedonia, Romania and Slovenia).

1.4. Education for Sustainable Development in Slovenia

1.4.1. Educational System in Slovenia

Educational system in Slovenia includes four levels: preschool, primary, secondary and tertiary/higher education. It is a developed system that comprises complex organization and financing, a range of teachers and other professionals. It is legally arranged with system (organic) laws and many regulations.

Competences and responsibilities for the development and functioning of the system of education are shared between the Ministry of Education and Sport, Ministry of Higher Education, Science and Technology, local authorities (municipalities), boards of experts (appointed by the government) and institutes, which were established for development and counseling in the field of education (the National Education Institute of the Republic of Slovenia, Institute of the Republic of Slovenia for Vocational

Education and Training (CPI), Slovenian Institute for Adult Education, National Examinations Center, Center for School and out-of-school Activities)[1].

The goals of education are defined with the laws and with educational programs (subject curricula), meaning subject specific curricula (subject programs).

Compulsory (primary) education lasts 9 years (age 6 to 14). The gradual introduction of 9 years started in school year 1999/2000, followed by a transitional period (8 and 9 years of primary education) and the complete implementation from the year 2007/2008.

Children start going to school at age 6. The nine years are divided into 3 educational periods of three years each. The first period is classroom based and the pupils have one teacher and an assistant, no numeric marks are given, only descriptive ones. The inclination to value based teaching is noticeable. The last triad has most elements of differentiation (dividing groups of pupils according to chosen level in some subjects). The teachers are responsible for grouping students into different levels, according to their performance and knowledge, based on assessment.

Two rounds of external assessments take place: an optional after the sixth year and an obligatory after the ninth year.

1.4.2. Education for Sustainable Development in Slovenia

The topic of sustainable development (SD) and education for sustainable development (ESD) is present on various levels in the Slovene education debate. Stakeholders involved in ESD come from different institutions and organizations, like the NGO sector, different ministries, institutes, schools, out of school education organizations. Although the debate is almost omnipresent it does not result in official documentation and practice as much as the global situation demands. The white book on education was drafted and has been in public consultation since spring 2011. It includes most of the topics of ESD, however as the government fell in September 2011, the question is, what is going to happen to the procedure.

There are however several documents on ESD that are all non-binding. Those include: guidelines for ESD (VITR - smernice za vzgojo in izobraževanje za trajnostni razvoj), the cross curricular subject called Environmental education (EE), which is defined as one of the additional, non-obligatory subject on the web page of the Ministry for education and sports (Ministrstvo za šolstvo in šport). In the elementary education it appears as "inter-subject field. This means the teachers include it in teaching specific

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[1] http://www.mss.gov.si/si/solstvo/

subjects, daily activities and other activities in schools. The elements of environmental education are present in all the three periods of elementary schooling. It can be taught as a separate, optional subject in the third period (from grade 6 to 9). The optional subject is designed in an interdisciplinary way; it connects and expands knowledge gained in different compulsory natural science and social subjects"[2]. But it is still optional and not compulsory, which means it depends on the teacher how much and what to incorporate in her/his subject(s). So, not all the pupils get this kind of education.

In the NGO community ESD is called also Global education (GE). GE is understood and presented even more broadly than traditionally understood ESD. Global education focuses on skills and even more on values, topics are presented as interlinked (development cooperation, peace studies, human rights, environmental education, climate change etc.), it involves also contemporary methods of teaching, like the open space methodology, learning by doing, the border between teachers and the ones who are taught is blurred, participatory learning, research and critical thinking. GE is still implemented on the level of out-of-school activities or on special occasions, where individual teachers invite speakers to carry out workshops.

There was an educational program for educators, led by the faculty of pedagogy at the University of Ljubljana and financed by the European social funds (Evropski socialni skladi - ESS), where several topics from sustainable development were included (economic, social and environmental perspective) and many multipliers were giving presentations to teachers, various methods were used to present the topics, many of them in line with education for sustainable development (participatory, active learning etc.), many teachers attended the program. But this was a two year program finished in 2011 and is not supposed to be continued.

1.4.3. ESD in Official Educational Documents

In the present research it was obvious that in official educational documents, like the curricula, sustainable development is rarely understood with all the three components. It is mostly linked to environmental education. Also the environmental sides are mostly linked to noticing problems, rarely actively encouraging pupils into active engagement in the field. Missing is also the component of climate change, which could encompass other topics as well (also the economic and social perspective). The lack of inclusion of climate change is interesting as it is caused by and it affects

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[2] http://www.mss.gov.si/fileadmin/mss.gov.si/pageuploads/podrocje/os/devetletka/predmeti_izbirni/Okoljska_vzgoja_izbirni.pdf

present day communities and it will affect even more the future generations. It also causes even bigger distinctions among the poor and the rich (country wise as well as community wise), similarly to global depletion of natural resources. As the generations now in school are going to be affected more than the adults today there is even bigger need of understanding the issue, causes, and consequences. It requires critical thinking, innovative ideas and adaptation skills. Even more, in one of the materials analyzed, melting of the Triglav glacier in Slovenia was presented as a consequence of "nasty" climate, with no reference to global warming or changing climate, with no link to human activities and impacts.

A cross sector working group led by the Ministry for foreign affairs Group for Global Education is operational. The working group was established in 2010 and is not functioning properly yet, although the mere existence and formation of the group is a positive sign. The formation was influenced by the NGO community dealing with GE. The existence of the working group depends also on the new governments will to develop it further.

In Slovenia the education for sustainable development is still not perceived as an integral part of (formal) education as such, but as an additional element, which was shown also from the analysis. In the text books elements of SD were mentioned as a separate, additional part of different chapters. The trend of strengthening ESD is noticeable, but it is still in early stages.

Besides the fact that EDS is missing in formal education, there are various voluntary initiatives and networks of schools, linked to ESD. These are eco schools network, UNICEF schools, UNESCO schools, healthy schools and other. It depends on individual actors in the schooling community the level of engagement and inclusion and the way sustainable development is incorporated into educational processes, speaking of methods and contents.

In the last years the topic is being present more and more, but still on the level of side topic, additional topic and not as a holistic approach included through contemporary methods and contents.

2. Methodology of research

The aim of the research was to collect and analyze the existing content most directly relevant to sustainable development in the national curriculums of the participating countries. The research methodology was designed by the Central Research Team (CRT) of the project to be as straightforward and efficient as possible for the country teams to gather as well as to analyze such complex data, and to aid the CRT in

comparative analyses of the findings. The method involved three separate phases (A, B and C) that aimed to restrain and circumscribe the scope of research from the most abstract educational documents (framework curriculum) to the "grass root", to what exactly is delivered to the children in the classroom (the textbooks).

In Slovenia there is no framework curriculum yet. The white book on education was about to be published (in the discussion), but the government fell, so the future of it is uncertain. That is why we used as the framework curriculum **the introductory segment of the subject-specific curricula** (overall goals of subjects), so it might have been expected that they go into much less detail than the later subject proscriptions (Phase B), but also that they contain more cross-curricular links and explicit connections to generic ESD skills and values that the curriculum aims to foster. This has largely been confirmed in the case of natural and social science subjects. It is important to note that compulsory education in Slovenia includes primary education but encourages also secondary education, which is free, and thus what we used as a 'framework curriculum' includes the high school content also. But the general statements we reviewed do not access all the students of this age group, as they apply only to the 'general education' schooling such as grammar schools are. That is why we focused on primary education on later stages of the research.

All three phases used the ESD Content list (**Annex 1**), categorization as well as specially designed matrixes for each phase.

ESD Content list - there are two major groups of SD content elements that make up the content list: *cognitive content* and *skills and values*. The **cognitive content** was organized on three categories: social cultural elements (human rights, peace and human security, gender equality, etc.), environmental elements (natural resources, water, soil, air, energy, etc.), economic elements (poverty, planetary boundaries, market economy, corporate and social responsibility and accountability, etc.). **Skills and values** group contains items like: acting with responsibility locally and globally, acting with respect to others, critical reflective thinking, applying learning in a variety of life-wide contents, etc.

All elements of the content lists had **codes** assigned **and descriptions** that added coherence and unity for the analysis process in all participating countries, while at the same time permitted a quantitative approach along with the qualitative one.

Categories - the research also used for analyses *five categories*: Environment affects Humanity (EH), Humanity affects Environment (HE), Individuals affect Environment (IE), Sustainable Development Values (V), Other (O). The five categories aim to show if the curriculums have an orientation, a vision.

Phase A of the research aims to scan the National Framework Curriculum[3] framework curriculum to reveal the SD content and its distribution in six curricular areas, by going through the document(s) and recording in the matrix all occurrences of ESD content according to the Content list as well as categorizing it according to the Categories.

One of the specifics of Slovenia is, that there is no framework curriculum. There are overall goals linked to subjects and operative goals of the subject. The overall goals were used in the analysis as framework curriculum in the first phase (phase A) and the specific goals in the second phase (phase B) of the research.

The given **curricular areas** were reorganized (for coherence across countries) as follows:

Area A – natural sciences, physical environment and technology
Area B – social sciences, socio-economic development, history and economics
Area C – values and ethics education, citizenship education, religious education and philosophy
Area D – arts, humanities and languages (communication)
Area E – mathematics
Area F – physical and health education

Phase B of the research analyzed the subject curricula. In order to focus the research two most loaded curricular areas based on Phase A were selected: one according to cognitive content and one according to skills and values content. Once the curriculum areas were selected country researchers in consultation with CRT selected subjects again by the criteria of SD loaded at certain grade levels (max 6 subjects) for deeper analyses.

In Slovenia subject specific curricula were analyzed from compulsory subjects in primary schools. Focus was given more on subject specific curricula, which was kind of continuation, diversification of the phase A. We focused on most content and skills and value loaded curricula

Following subjects were taken for next stage of study:

- ▸ Natural science and technology (4 and 5 grade);
- ▸ Getting to know the environment (1 to 3 grade);
- ▸ Biology (8 and 9 grade);
- ▸ Geography (6 to 9 grade).

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[3] In Slovenia there is no framework curriculum, so subject curricula (introduction, general goals) weere analysed

The steps from Phase A were then repeated on the selected subject curricula the SD content from the Content list was recorded into predesigned matrixes and categorized according to categories.

Phase C of the research analyzed textbooks and it was conducted in two steps. Step 1 of these phase aims to select the three textbooks whose content was to be analyzed. This is based on Phase B of the research and includes the following criteria:

1. The most content loaded subject + grade combination. This was based on the highest number of content elements and skills and values elements.

2. The most 'IE only' loaded subject + grade combination. This was based on the highest number of category IE (individuals affects environment).

3. The most 'IE alone or with other categories combination.' loaded subject + grade combination. This was based on the highest number of IE (individuals affects environment) in combination with other category.

The rationale behind this selection procedure was to increase the focus on the framing of the content, as denoted by the Categories. The primary drive behind the selection of textbooks was not to perform an evaluation of such a limited sample, but to provide internationally comparable examples of good practice in interweaving different aspects of education for sustainable development into a coherent narrative delivered to students. Also, relationship between the curricular proscriptions (indicated both in the framework curricula and the specific subject curricula) and the content, tasks and illustrations directly presented to students was to be mapped.

Research has shown that 5th grade "natural sciences and technology", 9th grade "Geography" and 1st grade "Knowing the environment" are the most sustainable development loaded curricula in Slovene primary education subjects curricula.

As it was not possible to obtain data from the Ministry of Education and Sports on the most used text books and there are five or even more possible choicesof different text books for each subject (each year), we used different methodology. The official data would be very useful for the present research, but it was not available. The text books were therefore selected based on the data given in a book stores on the most popular text books bought. Until recently the choice of the text book depended solely on the decision of individual teacher, even schools contacted did not have official data on the text books used. Plans for changes were made, but no implemented due to governmental turmoil.

The selected textbooks were:

D. Vrščaj, J. Strgar, D. Kralj, V. Udir, V. Čonč, Opazujem, raziskujem, razmišljam 1, učbenik, spoznavanje okolja v 1. razredu osnovne šole, DZS, 2003 (2. edition, 7. print)

A. Kolman et al., Naravoslovje in tehnika 5, učbenik za naravoslovje in tehniko v 5. razredu osnovnošolskega izobraževanja, ROKUS KLETT, leto potrditve: 2010, 2007 (1. edition, 2. print).

J. Senegačnik, B. Drobnjak, M. Otič, Živim v Sloveniji, učbenik, Geografija za 9. razred osnovnošolskega izobraževanja, Modrijan, leto potrditve 2008, 1957 (10. edition)

The second step of phase C had a matrix which asked the researcher to analyze content, illustrations and tasks from each textbook selected.

Research limitations. We must draw attention to some limitations of the present research, which are inherent to social empirical studies. This is an international initiative, deployed in eight countries with different linguistic, cultural, historical and social context. Each county had a team formed by an educational partner and an environmental partner where Slovenia was an exception, as the environmental partner is dealing also with educational issues and had no educational partner from Slovenia. The CRT was assisting the organisation. A dose of subjectivity in analyzing the curriculum is present, due to so many researchers involved. The central research team anticipated this and it is the reason for introducing codes. However it is not possible to assure that all coding is totally uniform and standardized. The central research team tried to keep subjectivity at a minimum by describing accurately all SD elements and discussing in depth with country teams every aspect of tasks.

3. Introduction to analyses

3.1. The path towards ESD as a path towards a durable future

Although the fascination with future and potential developmental paths is well known, at least since it became possible to record fears, wants and states (and thus also to repeatedly transmit them to future generations), contemporary scientific and social global institutions warn that the humanity is collectively facing an unprecedented challenge, at least as important as the coming of the Stone or Agricultural Ages, or the beginning of the Industrial Revolution (Glasser, 2007). The current predicament is at least in part fraught with problems which cannot be resolved using the existing dominant ways of acting and living, but require a step out of the standard

conceptualization of our material, living and social environments and their role in the socio-economic processes (Tillbury, 2007).

Though this is a broad socio-cultural task, broader than any formal curriculum can hope to encompass, on the conceptual level it requires an inclusion of questioning of the existing mental models, mostly successfully reproduced through formal education, which have consigned most contemporary societies to the path of unsustainable development. Alongside inquisitive reconsideration of how we act, this also includes a better understanding and questioning of the social expectations and prejudices that influence individual action. The required change is deeper than a curricular intervention, based on educational processes and learning. The perceived threat is big and every community should address it through responses based on planned and all-encompassing learning and understanding. Education needs to be restructured into education for sustainable development, which is more than reducing the lack of knowledge. It is adoption of an attitude and development of motivation to act based on the stimuli from the immediate environment and independent formulation of own interests and attitudes.

One of the current and future tasks of education is to enable people to live together in ways that contribute to sustainable development of their communities and states. However at present education often contributes to unsustainable living because of the lack of opportunity for learners to question their own lifestyles and the systems that promote those lifestyles, because it advocates reproduction of unsustainable models and practices. A reorientation of formal educational content towards sustainable development is thus recommended. More concretely, that includes helping students understand what sustainable development requires globally and locally and also to help them understand how to use their own capacity for critical reflection and systemic and futures thinking, as well as to motivate them to consider actions towards sustainable development.

3.2. ESD and the national curriculum

The most common global response to the calls for inclusion of ESD into formal education is to make adjustments (minor or substantial) to the existing educational system, with all its imperfections and peculiarities. This is achieved either as an expansion of the existing inclusion of environmental education topics (thus their importance in our methodology and the results; see section 2 and 4) or adoption of altogether new cross-curricular and interdisciplinary teaching and learning. It is especially interesting that at the global level (UNESCO, 2009) few countries report the support of ESD in early childhood education, which is something we have investigated in greater detail from both the side of skills and values development (see section 4.2)

and the cognitive content introduction (see section 4.1), through analysis of curricula from the beginning of compulsory schooling. It is often the case that ESD themes are *seen* as too complex and suitable only for later stages of education, rather than being seen as mostly a matter of presentation of the existing curricular content.

But in our country a shift (although inclusion of skills and values is strong in all subject curricula analyzed) from focusing on skills and values for SD in the early stages of primary education to much lesser skills and values content in later stages was noticed in the analysis of the textbooks and workbooks. As it is a global trend (UNESCO, 2009) to increase integration of forms of ESD into education, we note the avenues for continuing the present research in our country.

The process of making strong national framework curricula oriented towards sustainable development topics needs to continue. Although the subjects' curricula are already crowded, this must not be an excuse for excluding or avoiding integration of SD topics. We therefore started our analyses with mapping of what content already exists in the national curricula (in Slovenia only subject curricula) that is either explicitly conformant to teaching for sustainable development, or is related to it. It is therefore of utmost importance for us that the sustainable development content can be seen as "an integrative, cross-curricular theme that can bring together many of the single issues that schools are already expected to address" (UNESCO, 2009, p.48).

As is expected from the 2009 *Review of Contexts and Structures for ESD* (UNESCO, 2009) most of the ESD-content was found in those curricular segments where environmental education content can traditionally be found: in natural sciences. It was in this segment of the national framework curriculum that most content was identified in all the participating countries. It was especially interesting for us to determine the extent to which the generally-applicable learning goals (part of our Skills and Values Content elements – SV), such as acting with respect for others, acting with responsibility globally and locally, critical thinking, understanding complexity, futures thinking, understanding interdisciplinary relations, ability to identify and clarify values (see section 4.2), are represented across the national framework and selected subject curricula. Some of these learning outcomes can be seen as instrumental (for example, acting with responsibility, futures thinking or understanding interdisciplinary relations), whilst others are more emancipatory (e.g. critical and reflexive thinking, participating in consensus building and democratic decision making, decision-making in uncertain situations). As *Review of Contexts and Structures for ESD* reports these differences may reflect the historical and political context of individual countries, but through explicitly presenting its role and position in the curriculum we hope to open a public debate about its importance for sustainable development.

3.3. What we teach and how we teach it

In that light, and building on from the methodological and historical foundation of ESD in the curricular environmental education, we also sought to map how curricular content presents the interaction between individuals, humanity and their bio-physical environment (see section 4.1.1.1). We thus report on the overall findings of this type of framing of the curricular content. We have sought to map whether the segments of the curriculum state that some aspect of a natural system affects or impacts people, or that humanity is dependent on some aspect of the Earth or environment; that the actions or decisions of society influence or change the Earth and environment, for better or for worse; or that the actions or decisions of individuals, in their private capacity, influence or change the Earth and environment, for better or for worse (Kastens and Turin, 2006). The latter is especially important for its emancipator aspect in combination with development of certain skills and values. The analysis has sought after mapping and reporting on the content from selected textbooks on how they reflect and represented these curricular recommendations. In regards to overall national and selected subject curricula, it was expected that the analysis will show the prevalence of different framings of perceived interaction between individuals, communities and the environment.

Following the *Review of Contexts and Structures* analysis and recommendations it was sought to map both the environmental as well as developmental, disaster prevention and corporate and social responsibility ESD content themes. As is the general global trend it is most often the case that the traditional environmental elements (natural resource management, health, water and importance of biodiversity) are more represented than the social, cultural and economic aspects of development. In the case of Macedonia topics such as peace, citizenship, ethics, equality, and cultural diversity are relatively more emphasized. It is important to note that globally two SD focal areas emerge (a) a focus on understanding the causes and impacts of key issues and their mutual interconnections, and (b) focus on capacity development for addressing the key issues at individual, communal and global level (UNESCO, 2009).

The analysis tries to shed some light on two aspects by looking in greater detail into both the subjects that were expected to contain most cognitive environmental, economic and socio-cultural content (CC) and those subject that were expected to contain most 'skills and values' content (SV). Each will be presented in greater detail below. It is important to note that approach focuses on the more conventional presentation of the ESD content, through integration of the ESD and SD issues in the existing school subjects, rather than through innovative methods such as 'adopting a whole school' approach to ESD. Though latter is important, it does not have a potential to reach as wide a number of students as the former, and remains an open

topic for further analyses and project development. Moreover, interventions in the formal national curriculum lead to more urgent and readily adoptable responses, which is one of the important first steps towards orienting educational practice in the direction of sustainable development.

4. Overview of country findings

Analysis showed the dominance of environmental content (21 units) in the overall goals from subject curriculum, while the socio-cultural elements of sustainable development (2 units) and the economic elements (7) are very poorly represented. Looking at particular areas, most elements of sustainable development (22 units) are in the area that covers natural sciences, physical environment and technology. In this case we speak about **very narrow area of sustainable development that is covered, mainly environmental elements.**

Further concentration of sustainable development elements is so vague that it is not worth mentioning (social sciences, socio-economic development, history and economics with 3 and in physical and health education 5 elements of SD). In other areas the analysis did not detect elements of sustainable development.

When it comes to sustainable development skills and values, the emphasis is different from area to area. The most common skills across all areas are "acting with responsibility locally and globally" (SV1), "acting with respect to others" (SV2) and "applying learning in a variety of life-wide contents" (SV8), with the first one most represented in the social sciences area and the latter two in natural sciences area. These are followed by observing (SV15) and measuring (SV16), which are dominant in science part of curriculum. Out of all skills and values listed in research matrix, several were **not found**:

- ▶ Dealing with crisis and risks (SV10);
- ▶ Identifying stakeholders and their interests (SV12);
- ▶ Negotiating and consensus building (SV14);
- ▶ Classifying (SV18);
- ▶ Communication and understanding graphs and symbols (sv20);
- ▶ Manipulating mathematical ratios (SV21).

According to these data following educational plans were selected, with the most SD cognitive content and skills and values content: biology 8. and 9., Natural science and technology 4. to 5., Knowing the environment 1., 2., 3., Society 4. and 5., Geography 6.-9.

The Second phase of the study approached to the analysis of subject curricula selected on the basis of the results of the first phase. Generally, there is dominance of the environmental elements over other elements of sustainable development.

Looking at each subject, "Natural science and technology", "Geography" and "Knowing the environment", all are rich with environmental elements, while "knowing the environment" and "Society" are rich in socio-cultural elements. Economic elements are present mostly in "Geography".

The reason can be found in the fact that the "Knowing the environment," taught from 1st to 3rd grade, as its name suggests, introduces students to general concepts related to their environment, mostly nature but also society. On the other hand, "Geography," taught from the 6th to 9th grade, handles geographic, demographic, economic and other characteristics of the continents, regions and countries, and of Slovenia (specifically in the 9. grade).

Sustainable development skills and values are represented in all subjects. Most common skill across subjects is Understanding complexity/applying systemic thinking (SV4; 32 units), than Acting with responsibility locally and globally (SV1; 30 units), followed by Acting with respect to others (SV2; 20 units), Observing - qualitative (SV15; 15 units), Applying learning in a variety of life-wide contents (SV8; 14 units) and Inferring - based on observation (SV17; 10 units). It should also be noted that in all analyzed subject curricula following skills and values were not found:

▸ Negotiating and consensus building (SV14);
▸ Manipulating mathematical ratios (SV21).

Overview of selected textbooks

The text books and accompanying task books for the third phase of the research were:

A. Kolman et al., Naravoslovje in tehnika 5, učbenik za naravoslovje in tehniko v 5. razredu osnovnošolskega izobraževanja, ROKUS KLETT, leto potrditve: 2010

J. Senegačnik, B. Drobnjak, M. Otič, Živim v Sloveniji, učbenik, Geografija za 9. razred osnovnošolskega izobraževanja, Modrijan, leto potrditve 2008

D. Vrščaj, J. Strgar, D. Kralj, V. Udir, V Čonč, Opazujem, raziskujem, razmišljam 1, Spoznavanje okolja, 1. razred, DZS, 2009

The third part of the study focused on selected textbooks and accompanying task books that are very well equipped and graphically attractive (except the selected for "Geography 9"). All textbooks have established concept of presenting the content consequently used throughout textbook with various forms of reminders, short notes, pictures, sidebars with quick information, and textboxes with quotes. Questions and tasks in the text book and the task book "Geography 9" are mostly repetition type (53% of the tasks were rote learning), and rarely encourage students to engage more deeply into different problems, research, project planning and link certain topics with the content and themes of other subjects. The tasks in ""Natural science and technology 5" and "Knowing the environment 1" were mostly process learning oriented (both more than 90%).

From the selected text books it was seen that the SD topics are not fully incorporated into the subject itself, but given as additional elements. This was not so obvious from all of them, mostly from the Geography for the ninth grade. Geography for the ninth grade was the least ESD oriented. Tasks were mostly rote learning type (53%), almost no SD topics were in there, climate change was not even mentioned and it was not future oriented (e.g. energy sector focused on fossil fuels and mining were presented as the building blocks for development of all sectors in Slovenia[4]). It was also focusing mostly on the agricultural sector, which is obvious from the research and the cognitive content (agriculture – B6, was found 77 times followed only by energy - B5, with 45 matches). Urban areas were (almost) not analyzed, so it was not in line with contemporary developments of Slovene society. The energy sector was presented mostly from the side of past and present (coal power plants, nuclear power plants and big hydro power plants).

The other two text books (and the task books attached to them) were much better regarding methods for learning, tasks and SD content. Most of the tasks were process learning oriented (in Natural science and technology more than 90% were process learning oriented, in knowing the environment all were – as learning by doing and observing were the methods used through pictures).

From the text books we could say that there were most skills and values elements in the first grade, a bit less in the fifth grade and almost none in the ninth grade. In the "Knowing the environment 1" 2 skills and values (SV) elements from the previous phases were not found: critical thinking (SV3) and Understanding complexity / applying systemic thinking (SV4), other were covered and 4 more than in overall goals were found: Futures thinking (SV5), Decision-making (SV9), Negotiating and consensus building (SV14) and Inferring - based on observation (SV17). In "Natural

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[4] Geografija za 9. razred (Geography 9)

science and technology 5" 3 were not found in the text and task book, but were prescribed in the curriculum: Acting with responsibility locally and globally (SV1), Acting with respect to others (SV2) and Understanding complexity (SV4); while 1 additional was found: Manipulating mathematical ratios (SV21).

In "Geography 9" 7 SV from the subject curriculum were not found (neither in the text, not in pictures and tasks): Acting with responsibility (SV1), Acting with respect (SV2), Critical thinking (SV3), Understanding complexity (SV4), Understanding interrelationships across disciplines (SV7), Participation in democratic decision-making (SV13) and Predicting (SV19). 6 SV elements were not found in the textual part of the book: Applying learning in a variety of life-wide contents (SV8), Decision-making (SV9), Observing (SV15), Measuring (SV16), Inferring (SV17) and Communication and understanding graphs and symbols (SV20). One additional was found in tasks – Classifying (SV18).

In the text book for the first grade most illustrations fell into category biodiversity (13 units), water (7 units), energy (7 units) and soil and waste (each 4 units). Among the illustrations having SV content the leading was the element of qualitative observing (17 units), followed by acting with respect to others (8 units). Most tasks were process learning type of tasks.

In the text book for the fifth grade most illustrations fell into categories water and air (61 and 60 units), followed by biodiversity (44 units), energy (32 units). In the skills and values category mostly present was understanding and communicating graphs and symbols (25 units), inferring based on observation (24 units), qualitative (18 units) and quantitative observing (15 units). Most tasks were process learning type of tasks.

In the text book for the ninth year most illustrations fell into category agriculture (44 units), followed by energy (29 units). The comments on this fact is similar to the one above – past leaning learning. Other elements were far behind. Observing (both quantitative and qualitative) was the most present regarding skills and values (59 and 51 units), similarly graphs understanding had 51 illustrations. Most tasks were rote learning type of tasks, which is not in line with contemporary teaching and learning methods and not in line with the methodologies used to promote SD and/or global education.

All the three text books were visually rich in illustrations, graphs and photographs.

4.1. The analysis of the SD cognitive content

Both natural and social sciences, possibly due to strong tradition of environmental education in the Slovenian education system, contain explicit references to reversible and irreversible global environmental changes, as well as interconnectedness of humanity and the natural environment. These were difficult to code for using our matrix, as no specific code has been assigned to this content. It is variously covered by topics of 'natural resources' (B1) and 'biodiversity' (B7), 'humans as living organisms' (B13), 'understanding complexity/applying systemic thinking' (SV4) and 'planning and managing change' (SV6). They are more clearly reflected in frequent conjoining of the 'environment affects humanity' (EH) and 'humanity affects environment' (HE) categories to the relevant curricula content. Although not so little emphasis was given to the category "individuals affect environment" (IE), this was not reflected in the text books, where active engagement for action should be noticeable.

It was possible to expect and was confirmed that the environmental elements would be the most present: in the area A (natural sciences) 2 social cultural elements, 4 from the field of economy and 7 environmental were found, area B (social sciences) 3 socio-cultural, 4 economy and 7 environmental elements; area C (values and ethics education) 3 from each field (socio-cultural, economy, environment).

> Some conceptual limitations of the research methodology and examples of findings from different curricular areas

As the subjects selected were all part of natural sciences (and geography as being between and both social and natural science) the elements present were mostly environmental, because of the nature of the subjects but also because ESD in Slovenia is perceived as environmental education, with less emphasis on social and economical content.

The natural sciences curricula contain general statements about human effects on global environmental change and its (ir)reversibility. Not so much on the effect environment and especially changing environment has on humans and even less on sustainable development as such. These are repeated as general statements in the specific subject curricula, but are not strongly linked to the individual lifestyles/behavior (although IE categorized content is present), nor are presented in specific detail using local and global examples. On the other hand, there is mention (repeated in high-school Biology and Physics) of the interdependence of society and nature, which is a useful value-base for ESD, but was difficult to code using our matrix (mostly assigned the SV4: complexity/systemic thinking code). There is also 'circulation of matter through the living and non-living environment', which is an important cognitive ESD topic at early stages of education and which we have not

provided clear codes for (again, SV4: complexity/systemic thinking goes some way towards that).

In general, Slovenia is a country with traditionally rich environmental/natural education curriculum, but which is not framed in the ESD way, and thus difficult to align to the coding used in this research. There is a specific cross-curricular addition of environmental education, which contains some, though not many, direct IE-didactics such as "what can I myself do for the preservation of clean waters?".

For example, some subjects (e.g. natural science and technology - *naravoslovje in tehnika*) have specific sections entitled 'environmental education', which explicitly contain our environmental topics. But the coverage of the other topics and skills that are part of ESD is not as well represented. Biology curriculum contains didactic instructions that tell teachers to show connections to other subjects and gainful employment. As do also other subject curricula partially.

Early education has requirements for students to investigate how weather affects them and other living beings, but we have no direct code for that. It is important example of the connections between humanity (even individual students) and the environment.

There is also a subject named Protecting the environment (Varovanje okolja) as cross curricular subject, which is not directly linked to any of the compulsory subjects and it looks more like kind of recommendations.

Introductory paragraphs of social subjects also contain connections to physical/natural environment. Rote and process tasks are envisioned in the introduction to curriculum for implementation of understanding of connections between humanity and nature and the processes of global change. But as such, they still have very little direct references to the individuals' effects on changes in nature, though these are important cognitive base for active citizenship and the changes in the community.

Geography curricula, explicitly names the students as the future governors of the world, which need to be educated for that role.

> *"with the implementation of the subject curricula we want to give to the future "governors of the world" the ground for understanding relationships between humans and nature, especially for understanding environmental problems"* [5]. [6]

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[5] Učni načrt za Geografijo za osnovne šole, 2003, http://www.mss.gov.si/fileadmin/mss.gov.si/pageuploads/podrocje/os/devetletka/predmeti_obvezni/Geografija_obvezni.pdf, p.5

[6] The curricula were updated in 2011, after our analysis was done. In the mentioned quote the element of society was added: "...between humans, society and nature..."

The curricula focuses strongly on the HE (humans affect environment) content, as can be expected of the environmental education, but makes few connections with EH (environment affects humans) and IE (individuals affect environment). Although IE is present, it does not involve active role of students in a direction of mitigating change. In all topics related to economic and social development in the geography curriculum, environmental problems related to those (again, as part of specific 'environmental education') are repeatedly mentioned (e.g. mining, agriculture, industry). They are mentioned specifically in the direction of humans affect the environment and in line with the anthropocentric understanding of nature and the environment – humans as above environment.

In the updated curricula there is more ESD content, especially on the connectedness between humans and nature and protection of the environment, more emphasis is given also to the cultural aspects and broader future thinking perspective. This is a good first step for future educational development. But as in the third phase of the research (phase C) we analyzed practical examples – text books, this does not essentially change our findings.

In the geography curricula on page 25 the environmental questions are put forward and sustainable development is explicitly mentioned, where it states that the pupil should **"understand and responsibly act in line with sustainable development..."7**

4.1.1. General Statements on ESD (General Goals in Subject Curricula)

To present the way sustainable development appears in the curricula some examples are given below:

> *"Knowledge and experiences about oneself, about nature and technology is used for inclusion into the environment, which is responsibly and thoughtfully changed".*
>
> *Natural science and technology 4. and 5. grade (subject curricula), p. 5.*

The education of pupils is expanded to SD life skills, where they do understand broader interconnectedness of people and nature:

7

http://www.mss.gov.si/fileadmin/mss.gov.si/pageuploads/podrocje/os/prenovljeni_UN/UN_geografija.pdf

> *" the pupils …are raised with respect for all nature and consciousness on unavoidable interdependency of individuals, societies with nature and their co-responsibility for the existence of life on Earth"*
>
> *Natural science and technology, 4. and 5. grade (subject curricula), p. 6*

In the subject curricula for "Society" the importance of recognizing the human affect on the environment is stated in a sense of humans affect the environment:

> *"…the aim of the subject is to research the relationships between individuals, society and the environment. It is a process based on experiencing and valuing the environment. By environment it is meant physical, social, emotional, cultural, historical and natural; environment with all its components, interactions and inter dependencies".*
>
> *Society, 5 and 6 grade (subject curricula), p. 5*

And the management of natural resources and the environment (again in line with humans affect the environment):

> The pupils *"…acknowledge the urgency of sustainable use of natural resources and with it protection of the environmental goods for future generations".*
>
> *Geography 6 to 9 grade, p. 7*

4.1.2. ESD Cognitive Content Elements

> ***In the curriculum overall, the environmental cognitive elements of ESD are the most represented, especially topics of human beings as living organisms, natural resources and biodiversity. From the social cultural elements the most represented is human rights and inter-cultural understanding, still much less than environmental elements.***

The situation does not differ significantly across the curricular areas. In the natural sciences section environmental elements strongly dominate, among those mostly related to environmental aspects and **less related to more complex aspects of humanity-environment interactions** (biodiversity, natural resources and 'human beings as living organisms'). Mostly human rights and inter-cultural diversity are included of the social-cultural elements, **whilst the topics related to sustainable development and efficiency were almost not present.**

In terms of cognitive content, overall, this gives the impression that ESD is a matter of environment/nature, and less linked to development and cultural aspects. That is why it might be understood as a specialized environmental, even nature domain by the readers.

There are ESD cognitive content (CC) elements that are not found at all in the curriculum text (overall goals and specific goals of selected subjects: phase A and phase B of the research): New forms of governance (A6), **Climate change** (B8), Rural development (B9), Urbanisation (urban footprint; urban sprawl) (B10), Natural disasters (B11), Poverty (C1) and Market economy (C4). These are all element essential for contemporary understanding of environmental and wider global changes and development, crucial for educating "future governors of the world" (as the geography subject curriculum calls the current students), in line with ESD content and form.

Overall, we might add that **economic elements of ESD are relatively under-represented** considering their importance in a developed society such as Slovenia is and the impact it has on global changes (as a country with a big footprint). We may state that **interaction between humanity and the environment in terms of sustenance and social structures and activities with effects on the non-human environment could be more clearly asked for from every subject curriculum design authority.** Especially in light of full absence of climate change topic and their impact on the production of basics – food, agriculture, social bonds and developments of societies and on economies and the mitigation and adaptation side of it. Also the explicit mentioning of sustainable development in later stages (subject specific curricula – operative goals and in text books) **gives a sign of under-representation of connectedness and interdependency of all the topics included in ESD**. Although "Sustainable development" (C6), as a phrase, was mentioned in phase A more than any other specific code (18 times, followed by natural resources (B1) 12 times and humans as living organisms (B13) 11 times). **This shows again that EDS in Slovenia in understood mostly as environmental education, linked to nature and less to social-cultural and/or economic elements, even more, as nature education, as urban environment was almost completely excluded.**

4.1.2.1. Framing of environmental aspects of ESD

Table 1. First phase of the research (phase A): overall goals in subject curricula

	EH	HE	IE	V
Area A – natural sciences	5	14	14	8
Area B – social sciences	4	5	5	5
Area C – values and ethics education				
Area E - Mathematics			2	1

Table 2. Second phase of the research (phase B): subject specific curricula

	EH	HE	IE	V[8]
Natural sciences and technology 4-5	1	16	18	2
Knowing the environment 1-3	5	12	12	12
Biology 8-9	2	6	7	3
Society 4-5	5	10	9	3
Geography 6-9	17	37	37	17

Of the said environmental elements, most are framed as either explaining how humanity affects the environment (HE) or/and how individuals affect environment or both (HE/IE) in about an equal measure in the phase A of the research. A bit less content is marked as environment affects humans and sustainable development.

From the selected subjects in phase B, where we analyzed 5 subject specific curricula, it came out that in all 5 subjects the operative goals focus mostly on HE and IE and less on sustainable development and environmental impacts on humans.

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[8] Sustainable development was often not mentioned as such, but the description of understanding the interrelationships between humans and nature, linked to responsibilities, was included, although not fully as a while concept (same aspects only).

> *The most balanced and the one with most sustainable development units was "knowing the environment" for the first 3 grades.*

Geography (6 to 9 grade) and Society (4 and 5 grade) were proportionally equal in the redistribution and quantity of units EH (environment affect humanity), with other subjects having less. It came out as a surprise, that the way environment affects humanity is kind of neglected and equally present in society and geography subjects. The aspect of environments effects on humanity are important to understand, as they show we do depend on our environment, which is not made for us to manage and we are interdependent (we do depend on the environment, the environment does not depend on us – it can exist also without humans). This indicates the orientation of curriculum towards a 'mastering' rather than 'harmonizing' view of individual and societal progress.

4.1.3. Economic aspects of ESD

The economic aspects of ESD selected for this analysis (see Annex 1) focus on the basics of dominant economic model, mechanisms of consumption and production of goods required for everyday life, social, ethical and natural limits of natural exploitation of geophysical environment and communities, and calls for sustainable development. Of those, the mechanisms of consumption and production are most often discussed, whilst ethical issues related to production and consumption and the global economic development models are absent from the curricula. Topics of poverty, planetary boundaries and shared responsibility for economic development are almost not raised and they are not in combination with the mechanisms of production and consumption or calls for sustainable development.

Most of the economic topics are found in the **social sciences**, i.e. society, economy, geography, sociology and history, mostly linked to market economy. **But this is valid mostly for secondary schools with almost no mentioning in elementary education**.

In the second phase of the research (phase B – selected subject curricula, see Chapter 3: Methodology) Poverty (C1) and Market economy (C4) were not mentioned at all, surprisingly or not, sustainable development (C6) was rarely mentioned.

4.1.4. Socio-cultural aspects representation

Socio-cultural aspects of ESD are represented in the curricula, but in very small quantity and variety. These aspects are missing in all sections and in all phases,

which was partly shown also in the research done by African center in Slovenia on representations of Africa and Africans, **which shows interculturality and other socio-cultural elements were missing or were not in line with contemporary education guidelines**[9].

In the phase A of the research only in natural sciences two elements only were found, namely Gender equality (A3) and cultural diversity and intercultural understanding (A4). All other were missing.

In phase B New forms of governance (A6) was the only one completely missing, with Human rights (A1) and Cultural diversity and intercultural understanding (A4) most present.

In the selected text books Peace and human security (A2), Gender equality (A3) and New forms of governance (A6) were left out, with Cultural diversity and intercultural understanding (A4) most present in the three of them and Health (A5) most (but only) in the Natural sciences and technology.

4.1.5. Skills and values (SV)

Not all the skills and values from the ESD matrix SV list are represented in the curriculum. The actual spread varies across curricular areas, but it is difficult to make generalizations. **As expected basic science skills dominate in the natural sciences area, whilst respect and responsibility (SV1, SV2) dominate in the citizenship education and social sciences area.** In social science area also understanding complexity (SV4), and a bit less understanding relationships across disciplines and applying learning in different life contexts (SV7, SV8).

In citizenship education also participation in democratic decision making (SV13) is often mentioned.

It is interesting that also values of respect and responsibility are strongly present in natural science area, as well as understanding complexity and applying learning in different life contexts, which we did not expect in the first and the second phase of the research. Again, they were missing in the text book analysis.

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[9] Društvo Afriški center, Afrika v slovenskem šolskem sistemu, Projekt »Izobraževanje za razvoj na trdnih temeljih«, 2011.

An example of a statement from the curricula for Biology for grades 8 and 9:

> *"… accomplish understanding of different, repairable and irreversible changes when humans impact nature and the environment, problems which arise and finding natural solutions to problems which arise" p. 7*

4.2. 'Sustainable development' across the curriculum

This is one of the topics rarely mentioned in all documents analyzed, especially when looking at the text books and direct mentioning of sustainability.

It is possible to see what room for improvement is left. Though not referring specifically to 'sustainable development', some recommendations from the natural sciences and technology section of the curriculum make explicit references to 'sustainability thinking'.

Not referring specifically:

> *"pupils should experience nature and technology, get to know them, change with their work and evaluate interventions from different perspectives. Whilst experiencing nature and technology they learn what is good, beautiful, true, and right.*
>
> *These experience should be used for active engagement into the environment and change it thoughtfully and responsibly. … They learn to maintain and improve their environment and use contemporary techniques and technologies" Natural science and technology, p. 5*

Specifically mentioned

> *"One of important general goals is preservation of natural environment and sustainable management of it." p. 6, knowing the environment (1 to 3 grade)*

Linked to this topic it is worth mentioning that climate change is mostly absent from any of the three types of educational documents analyzed (see Chapter 3: Methodology, Phases A-C).

4.3 The analysis of skills and values

Although the analysis of skills and values has been partially covered in previous chapters here it will be presented more deeply.

Across all subject curricula the value of acting with respect to others (SV2) is the most present following with Understanding complexity/applying systemic thinking (SV4) and Applying learning in a variety of life wide situations (SV8). These are followed by Acting with responsibility locally and globally (SV1).

Table 3. The most frequent skills and values content according to **curriculum area**

Curriculum Area	Skills and Values
Science	Acting with respect to others (SV2) Applying learning in a variety of life wide situations (SV8) Understanding complexity/ applying systemic thinking (SV4) qualitative observing (SV15) inferring based on observation (SV17)
Social Science	acting with responsibility locally and globally (SV1) Understanding complexity/ applying systemic thinking (SV4) Understanding interrelationships across disciplines (SV7) applying learning in a variety of life-wide situations (SV8)
Values and ethics	acting with responsibility locally and globally (SV1) acting with respect to others (SV2) Critical reflective thinking (SV3) Understanding complexity/ applying systemic thinking (SV4) applying learning in a variety of life-wide situations (SV8) Participating in democratic decision making (SV13)
Mathematics	Acting with respect to others (SV1) acting with responsibility locally and globally (SV1) applying learning in a variety of life-wide situations (SV8) Decision making, including in uncertain situations (SV9)

5. Conclusions and recommendations

Filling the gaps and strengthening support for ESD schooling

1. SD should be included not as an additional subject and/or additional topic in the curriculum and the text and task books. It should permeate other topics and be applied throughout the program. Meaning, even if the topic does not seem directly linked to environment/society/economy (although it would be difficult not to touch at least one of them), the ESD approach can be applied.

2. ESD, like education in general, is about more than transferring factual content. Universal skills and a set of values, applicable across many subject areas, are also an essential part of educating for sustainability. It is not only to be education *about* something, but also education in how to see and do things in the desired (i.e. sustainability oriented) way. **The skills and values of participation in democratic decision making, negotiation and consensus building (completely absent from our research), identifying stakeholders and their interests, planning and managing change can be made more visible at all levels of teaching**

3. ESD should be understood in a wider context (more like global education, as example from recent public debates), with all the three components evenly accentuated: economy, environment, society. Thus, not to be understood as environmental education only.

4. Current developments are heading into the right direction: the new white book for schooling (national curriculum) is rich in SD-relevant content, the three components are included: environment, economy and society. The topic permeates this text more than the current subject curricula and the selected text books. The recommendation is to continue building on the document.

> *For example:*
>
> *"Human rights include also the right to healthy natural and encouraging social environment. With this they bind to caring and encouraging responsibility towards natural and social environment."*
>
> *"developing responsibility for own health, preserving the environment and own participation in ensuring a society built on sustainable grounds".*

5. In current subject curricula sustainable development topics are present, but mostly linked to natural environment/nature protection. The social component and even more the economy component were neglected. There are recommendations to take into account the cross-curricular subject "environmental education", but remain on the

level of recommendations (still missing out the economy and society elements). We recommend including the present cross curricular subject even more into the curricula and learning material.

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ANNEX 1 - ESD CONTENT LIST

Below is a list of content elements that will help you map and extract curricular content related to ESD. For ease of use the list is divided into several sections, primarily into **Cognitive content** (*knowledge, facts, learning*) and **Skills and Values** (*skill development, competences; understanding, acquiring and sharing values*).

I	COGNITIVE CONTENT	Description
A	Social Cultural elements	
1	Human rights	Civil and political rights, economic; social and cultural rights; environmental rights (right for clean environment) is currently debated
2	Peace and human security	References to benefits and mechanisms of global peace, and securing "freedom from want" and "freedom from fear" for all persons.
3	Gender equality	In employment, career and salary; in political and social rights
4	Cultural diversity and intercultural understanding	Tolerance to other values and perceptions
5	Health	Human health, health problems, environmental health, ageing
6	New forms of governance	New ways to manage governing of goods and communities, e.g. environmental governance (environmental aspects considered in decision making); democratic decision making (transparent, involving stakeholders).

I	COGNITIVE CONTENT	Description
B	Environmental elements	
1	Natural resources	Minerals, forest, land, soil etc (amount, location, quality)
2	Water	Fresh water, marine water, drinking water (location, quality)
3	Air	Ambient air (quality)
4	Soil	Agricultural soil, forest soil (quality); soil erosion processes
5	Energy	Fossil fuel-based energy, renewable energy (resources, dependence on these sources)
6	Agriculture	Role of agriculture (food, employment); position of agriculture within a wider economics system; forms of agriculture (industrial, small scale, organic, sustainable etc.)

I	COGNITIVE CONTENT	Description
B		**Environmental elements**
7	Biodiversity	Species and habitats (ecosystems) - diversity, quality, loss
8	Climate change	Global phenomenon; reasons and actions (mitigation, adaptation)
9	Rural development	Villages, communities - role, age ratio, employment; position within wider society, economic base
10	Urbanization (urban footprint; urban sprawl)	Cities/towns - size, population, dynamics, city planning, inc transport planning; impact on the landscape and wider environment; quality of life
11	Natural disasters	e.g. floods, droughts, volcano eruptions, tsunamis, extreme weather events
12	Pollution	Air pollution, water pollution, soil pollution; chemical, biological, physical; systemic or accidental
13	Human beings (as living organisms)	Anatomy and physiology of human being as a living organism; human being as a one of the living organisms in ecosystem/biosphere
14	Waste	Solid waste, liquid waste, waste management; recycling

I	COGNITIVE CONTENT	Description
C		**Economic elements**
1	Poverty	Population living below average living standards; sanitation problems, food shortage, health care deficiency, availability of education; relation to natural resources and economics
2	Planetary boundaries	Planet Earth has limited resources for human consumption and emission mitigation (or absorption back into biological cycle).
3	Corporate social responsibility and accountability	Companies work out and implement certain plans on responsible resource use, a positive impact through its activities on the environment, consumers, employees, communities, stakeholders and all other members of the public sphere.
4	Market economy	An economic model; its role in today's global society
5	Production and/or consumption	Elements of contemporary market economy, role of companies, role of customers; cultural effects, environmental effects, examples from students' everyday life.
6	Sustainability, sustainable development	Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

II	SKILLS AND VALUES CONTENT	Description
1	Acting with responsibility locally and globally	
2	Acting with respect to others	In this case 'others' may include other people, other communities (anthropocentric) or other beings (biocentric).
3	Critical reflective thinking	
4	Understanding complexity / applying systemic thinking	Understanding how things influence one another within a whole, for example in ecosystems where air, water, movement, plants and animals combine to a complex effect.
5	Futures thinking	Developing reasoning about possible, probable and preferable futures, understanding worldviews and myths that underlie them. Most clearly evident in projecting from study of history into what is likely to continue, what is likely to change and what is entirely novel. Based on spotting patterns in past and present.
6	Planning and managing change	
7	Understanding interrelationships across disciplines	Being taught how topics and processes from different scientific and artistic disciplines and subjects overlap, how individual issues may be viewed from several disciplines, e.g. physics and economics.
8	Applying learning in a variety of life-wide contents	Being instructed in how to apply the curricular knowledge in everyday life, but also basic pedagogic instructions how to learn from everyday situations (trial and error heuristic).
9	Decision-making, including in uncertain situations	Being taught about the process of decision making, individually, within groups and whole societies. Developing a skill of decision making in situations where there is no predetermined right outcome.
10	Dealing with crisis and risks	Learning about responses to crises and about assessing various risks in the environment. Training in managing one's own response to crises.
11	Ability to identify and clarify values	Developing skills in clarifying one's own and others' values, as well as identifying values that lie behind attitudes and statements.
12	Identifying stakeholders and their interests	Being able to discern who stands behind certain statements and attitudes and what their interests might be. Also being able to observe an issue from the multiple perspectives of different stakeholders and their interests in it.
13	Participation in democratic decision-making	Access to information, participation in decision making (on plans and permits), access to justice
14	Negotiating and consensus building	Resolving conflicts (for example)

| II	SKILLS AND VALUES CONTENT	Description
15	Observing -qualitative	Part of basic science process skills: providing descriptions of the object of interest based on information gathering using one's senses.
16	Measuring - quantitative	Part of basic science process skills: using standard measures or estimations to describe specific dimensions of objects of interest.
17	Inferring - based on observation	Part of basic science process skills: formulating assumptions or possible explanations based upon observations.
18	Classifying	Part of basic science process skills: grouping or ordering objects or events into categories based upon characteristics or defined criteria.
19	Predicting	Part of basic science process skills: guessing the most likely outcome of a future event based upon a pattern of evidence.
20	Communication and understanding graphs and symbols	Part of basic science process skills: using age-appropriate scientific and mathematical symbolic language and graphs.
21	Manipulating mathematical ratios	Mathematical ratios (including equations and inequalities) are representation of relationships which in turn indicate dependency. Dependency concerns the fact that properties and changes of certain mathematical objects may depend on or influence properties and changes of other mathematical objects.

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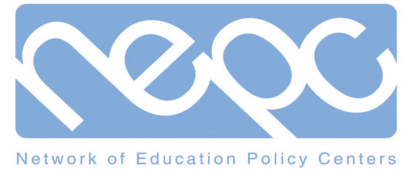
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Project Coordinator
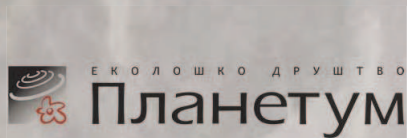Asja Korbar

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This report is a part of a wider ENjoinED initiative **http://www.enjoined.edupolicy.net** that is active in 8 countries. The aims of the initiative are is to uncover the content of the national curricula of the participating countries related to education for sustainable development (ESD), to develop and deliver training activities to those that can and must promote sustainable development, and knit a network of civil society organizations with different backgrounds and competences through a joint mission to exchange know-how for shifting social consciousness towards sustainable development. ENjoinED initiative is born out of Education for Sustainable Development Partnership Initiative (ESdPI) project.

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Location:
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Partners & Associates: