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HIGHER EDUCATION FOR INTERDISCPLINARY STUDIES IN SUSTAINABLE DEVELOPMENT

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Abstract

The commitments of higher education (HE) and in particular universities with regard to the creation of conditions to implement a strategy and pursue a policy for training and research in the field of sustainable development (SD) has critical relevance for the country's future. The continuous lifelong education of students and adults is the prime engine for the establishment of a civil culture, whereby the care for the environment is integrated with the social and economic aspects of social life. The academic community is in need of support by the business, the local and central administration and the legislative branch with a view to applying education models that go beyond the narrow discipline-oriented training that has been implemented so far. Multidisciplinary integration to achieve a balanced and innovative ecological, social, economic and administrative education and research should be taken up and implemented, given that it is a necessary condition for the provision of a sustainable and safe social development. The aim of this paper is to expose the current commitments taken on by the universities in the country regarding the training of specialists in SD, as well as to identify the opportunities to tackle the challenges they involve.

Keywords: higher education (HE), multidisciplinary education, sustainable development (SD), development goals

JEL: I25, A12

Tribute to Dr Pencho Penchev, lecturer at the Department of National and Regional Security at UNWE who accepted as his life mission the development of higher education for sustainable development

Introduction

The aim of this paper is to analyze the role, social commitments, challenges and opportunities that the sector of HE is facing with regard to offering training in SD that is integrated between several professional fields and specialties. Thus the paper aims to stimulate the active behaviour of the universities in the country. It seeks to answer five major questions: what is the role of such education and why is it necessary; what are the major challenges and risks that HE is facing; which

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are the development goals; what is offered at present and which are the major obstacles to offering such education so far; who can perform the necessary steps to provide for the organization, launch and evolution of HE for SD.

The aim is based on the national policy for HE and science, as well as on the response of the universities in the country to realizing the need to implement the strategy and the sustainable development goals. It pertains to the drafting of the section on education of the third version of the National Recovery and Resilience Plan for 2021 – 2024 as an integral part of Europe's Recovery Plan. It involves the related initiatives and actions taken by the national institutions to adopt professional fields and protected specialties that are expected to show a shortage on the labour market in the future, in which the trained students will be exempt from paying tuition fees.[2]

The paper draws on official publications of the UN, the EU, the international and national press on the issues of SD and the role of HE. It makes an overview of the offered specialties in the bachelor's and master's programs of the schools of higher education in the country and abroad. The paper comes up with measures for changing the interaction between universities, central and local government, business, politicians and citizens for the establishment of a flexible and sustainable social behaviour and development.

What is the role of HE in SD and why is it necessary

The environment is inexorably manifesting that the worrying risks are increasing to global, national and local social development. This directly concerns the sector of HE and science, the mission of which is to prepare and direct social change for a decent life. Education allows people to exist and act in line with their own conscience and not under external pressure. Education ensures power, creativity and freedom of human behaviour, more than many other social systems aim at and create. Its potential has been deservedly noted in the Universal Declaration of Human Rights and in a number of UNESCO's publications for "…the exercise of the human abilities to thought, imagination, prediction, innovations and creativity". The declaration identifies as the basic pillars of education "…to be taught to be, know, create and live together" (GUNi, 2019, p. 73). These pillars provide the guidelines to realize the value of life, to transfer knowledge and create skills to take actions for an adequate common life. HE aims to create free and responsible people who are able to tackle the risks and meet the challenges that the environment poses.

[2] Strategy for the development of HE in the Republic of Bulgaria in the 2021 – 2031 period; Report of the minister of education and science on: Council of Ministers' Decree for the adoption of a List of professional fields and protected specilties under article 95, para 7, item 8 of the Higher Education Act.

Education concerns not only the traditionally involved young people but also those that aspire to securing lifelong learning and education. It is closely connected with and an integral part of the chain of science and practice for the application of the acquired and well-reasoned knowledge and skills. Science and its related actions is a generator and a source of knowledge. This is inevitable in the conditions of the third industrial revolution that is under way, which builds a knowledge-based economy, based on cognition that "… secures moving from national economies to a global economy" (Thurow, 2000, p. 18). Without new knowledge, education is transformed into a translator of outdated values that is poorly utilized. Yet it is the efficient practices that test its value. They are those that test and verify the effects for society. They send the signals for the development of science. They ensure the paths towards update, expansion, diversification and completion. The practices that are set up by the contemporary science and HE are the decisive factor for securing information about, and overcoming the impending collapse that societies, local communities and citizens are to experience in the fields of health and social development, climate change and the environment and economic competitiveness.

The mutual interdependence and the acute arising challenges and risks is the reason why sustainability in the future development should be sought. Sustainability is not impossible. It can be achieved through the adequate balancing of the counteraction to the multitude of crippling factors. Today the theory of sustainability seeks to ensure the stabilizing effects for the economic, social and environmental aspects of humankind. It is based on the assumption that these aspects are basic and would guarantee stability without burdening the future generations with the problems today.

The sustainability of development is a basic feature and goal of every human community. It has its time limits that are different and specific for both the family and the bigger social units. Every community is faced with complex economic, social and ecological problems that require a new frame of thought, new knowledge and skills, and new solutions. There is no other institution but HE that can facilitate their establishment. There are no other organizations but universities that can create and integrate knowledge and research with the training to implement them with a view to improving citizens' wellbeing. Universities, unlike the other organizations and institutions, have both the operational and product-related aspect. In operational terms, they bring together and manage a number of students and staff, maintain an education fund of premises and buildings, territorial expanse and can thus play a significant role for the local (municipal and regional) sustainability. In product-related terms they offer society the needed information and prepare well grounded specialists who realize

the need for and relevance of implementing "… intelligent and well integrated programs for sustainability" (Blackburn, 2016).

This role gave Herbert Wells the grounds to claim, back in the mid 20th century, that "Human history becomes more and more a race between education and catastrophe".[3] Seventy years later this insight has not yet been fully realized and embraced as a wake-up call for active action by the societies that are lagging behind in their development.

Which are the relevant risks and challenges that HE faces and that require and immediate change

The picture of the global risks offered at the World Economic Forum does not encompass the private risks to the world. Analysts distinguish between economic, environmental, geopolitical, social and technological risks. The assess them within a five-scale Cartesian coordinate system depending on their impact and the probability of their emergence. Each one of the risks incorporates the assessment of 5-9 private indicators that tend to increase at different paces and directions. The environmental risk dominates, followed by social risk, and they fall within the area of the neccesary immediate counteraction (assessed between 4 and 5 points). The economic, geopolitical and technological risk also require an imperative management, though the assessment ranges between 3.5 up to 4 points (World Economic Forum, 2020, p. 1-5).

The integrated assessment for the global risk to SD, which includes the environmental, social and economic risk, undoubtedly dominates the risk-related picture. The parameters of the environment (extreme changes and failures in actions for climate change, natural disasters caused by man and loss of biodiversity), that are often defined as the negative climate change and its impact on the ecological (biological) systems, natural resources, production, consumption and social life, play a crucial role in the long list of risks that humankind is faced with. At the end of last century and the start of the new one, they gradually replaced the assessment of the traditional risks of geopolitical opposition and armament with weapons of mass destruction that precipitate local and global conflicts. The end of this period is connected with the gradual fading out of global terrorism, forced migration and the enhnaced pandemic of COVID-19 that appeared in the late 2019. The risks that were by then assessed with moderate values climbed up to the top in the global risk scale. After several transitional more limited in scope impulses, the new pandemic risk became a dominant and imperative priority that renders even sharper the problems pertaining to the future development of the world,

[3] A quote by the famous English novelist and historian H. Wells (1866 – 1946) in an interview for the London Tribune.

the regions, and particularly the less developed countries and local communities. This is not an independent risk as it is related to a big set of ecological, economic, and social and ethical unsustainable social practices that result in the undermining of the basic values of human life. The well known way out by a radical change in the world outlook, frame of thought and manner of action for resolving the problems prior to their emergence slowly brings about a change in public policies. People and societies fail to find and fast implement new ways of life and practices that would allow for simultaneous adaptation to the arising negative changes and the prevention of their evolution. The belated response is due to the slow pace of informing about, realizing and understanding of, and finding adequate counteraction to them. This is a symptom of poor risk management at the global or lower levels of social hierarchy. A major way out of this situation is to reinterpret and strengthen the role of science and education, which largely have the means in place to tackle the escalating problems. These problems may be successfully resolved by the expedient and speedy implementation of large-scale programs for public training and impact that unite the efforts of politicians, administration, business, media and the universities in the country. Such a global, regional and local course of action is especially valid for this country and its communities, citizens and universities.

There are many and multilateral instances in a global context of this course of the way out of the escalating crisis and pending disaster. The focus is on these instances in the field of education and in particular HE and this will confine the scope of their overview. Former UN Secretary-General Kofi Annan in a speech to mark World Environment Day in 2000 says the following: "We need a major public education effort. Understanding of the challenges we face is alarmingly low" (United Nations, 2000). The UN General Assembly declared the 2005 – 2014 period as the Decade of education for SD and called on countries to pay heed to the problems and overcoming the emerging challenges. In 2015 the General Assembly of world leaders adopted a new global framework for SD *Agenda 2030* and UN program until 2030. Their core is 17 goals for SD (SDG), with the highlighted commitment to remove poverty and achieve SD. The UN goals are directed at: human dignity; regional and global security; good condition of the planet; justice and resilient societies; the construction of prospering economies (European Commission, 2021, p. 1).

Today the priorities the UN addresses for the scientific and academic community are directed at: the production of food; reasonable utilization and management of water resources; healthcare as a top priority; the environment; education; peace and security. Education should not have any restrictions with regard to access and age. It should be of high quality and free from ideological, religious or any other

restrictions. Its basic pillars for learning are as follows: existence, knowledge, skills and making for living together (GUNi, 2019, pp. 72-73)

The EU has assumed a leading role for the implementation of the UN Program and includes the global goals in the Union's basic priorities. It incorporates the 17 SDG in 10 priorities, identifies 169 related subgoals and actions for their achievement. The EU commits itself to the drafting of a Multilateral Platform at the highest level for the exchange of best practices and for the establishment of a long-term vision beyond 2020. In 2016 the European Commission (EC) identified as major challenges to SD climate change and pollution, youth unemployment, sustainable energy and migration (European Commission, 2016).

In 2018 the Multilateral Platform for SDG defined five areas of EU's policy that have an essential importance for achieving the goals – sustainable consumption, investments in scientific research and innovations, climate and energy, food, agriculture and use of land, and the cohesion policy (European Commission, 2019c). The annual strategy for sustainable growth for 2020 identified the following four decisive directions for the attainment of SDG: environmental sustainability; increased productivity; justice and macreconomic stability (European Commission, 2019a, p. 4).

In the mid 2020, the European Commission came up with recommendations specific for each country, noting that "the EU is facing an unprecedented economic turmoil as a result of the COVID-19 pandemic" and that "The strong concerted European economic response is of decisive importance" (European Commission, 2020b, p. 1). One of the current political steps is the EC's Annual strategy for for sustainable growth for 2021. This document highlights the "sudden and deep recession throughout the world" (European Commission, 2020a, p. 1). Its predictions are that the economy of the euro zone will shrink by 8,7% and of the EU – by 8,3% in 2020. It also states its expectations that there be a respective growth by 6,1% and 5,8% in 2021.

The strategy for 2021 specifies the guidelines prior to the COVID-19 pandemic, noting the many unclarities for the future and the risk of new macroeconomic disbalances. It predicts that the actions under the yearlong financial framework and implementation of the new instrument Next Generation EU will speed up, and that they are aimed at finalizing the legal acts whereby the Union's operational programs will be set in motion within the envisaged time limit. The EU adopted the Mechanism for Recovery and Resilience as one of the basic instruments for recovery, and earmarked about 750 billion euros in the form of loans and aid to be extended in advance for the financial assistance of recovery. It directed the mechanism towards achieving competitiveness by a new growth strategy – The European Green Deal that envisages the transfer to a sustainable and inclusive economic model. The mechanism does not divert from the Annual

strategy for 2020 and defines four dimensions on which the member states should base their plans. These are: the establishment of a continent that is neutral to nature and the climate; productivity through technological independence, digital technologies, cyber security, artificial intelligence and fifth-generation networks; a fair transition inclusive for people; macroeconomic stability by the completion of the establishment of its economic and monetary union (European Commission, 2020a, pp. 1-3). These dimensions have been adopted as guiding principles that direct the member states' plans for the offsetting or the alleviation of risks.

The major risks and challenges that the Union is facing were identified through its response in the planned yearlong financial framework, the new instrument Next Generation EU and the Recovery and Resilience Mechanism, which directs the member states towards the achievement of the EU's goals and policy. The mechanism is based on the European Green Deal as a new strategy for growth aimed at achieving competitive sustainability and cohesion between the member states. It should presumably counteract the challenges and risks by ensuring a transfer towards a sustainable and inclusive (through the implementation of digital and pure technologies) economic model.

HE in member states is facing many challenges and risks that are external for the sector and stem from: protracted ecological transition (the reduction of the emissions of greenhouse gases, the implementation of renewable energy sources, investments in sustainable mobility, circular economy, environmental infrastructure, the protection and recovery of the biological diversity, an environmental policy that is fair in social and other terms); digital transition and productivity (digital transformation of all sectors, high capacity networks, digital skills and infrastructure, avantegarde capabilities); ensuring better justice for the citizens (enemployment, equal opportunities, inclusion in education, fair labour conditions, adequate social protection, tackling forms of inequality in education and healthcare); macroeconomic stability (fiscal support and sustainability, high quality of public finance with a growth potential, environment-friendly taxation and budgeting, the correct development of private debt, investments in fast recovery). To contribute to resolving the Union's problems, the HE in this country should overcome the inherited internal challenges and their risky transformation by bringing its priorities and aims in line with the real national and European context (Capitalism 4.1, Business, 2014).

SD goals for HE in the EU and this country

The growth strategy of the EU provides a set of guiding national policies, priorities and goals, initiated by the UN, for achieving SD of the community. The economic, fiscal, social and ecological policies are of decisive importance. The role of each one of these policies is specific for each country, due to the different

potential, degree of development and the conclusions drawn from specific analyses made of the state and progress of the national programs. Despite the differences, the good balance of these policies determines the center of gravity of the integral policy and is a necessary condition for successfully achieving the results of the SD goals.

The EU SD 2020 report notes that the COVID-19 pandemic is a serious regressive step for the EU and the world, yet the EU will not make a compromise with its previous vision and values. It determines six priorities for the SD goals and its transformation. They include: education, skills and innovations; sustainable energy; sustainable societies, mobility and houses; sustainable food production, healthy eating and protection of biodiversity; clean and circular economy and no pollution, digital transformation (SDSN, IEEP, 2020, p. viii). It allocates a particular and first place to education and science in the general list of its priorities.

High-quality education for the EU ranks fourth in the set of 17 goals, 16 of which were adopted in 2015 by 193 UN member states and a 13th goal was added for Climate actions by the Paris Agreement for Climate Change. The results from the fourth goal are a necessary condition for successfully achieving the other goals. Without good education it is impossible to achieve: eradication of poverty, abolishment of hunger; good health and wellbeing; gender equality; clean water and sewerage; economically accessible and clean energy; worthy labor and economic growth; developed industry, innovations and infrastructure; reduction of inequalities; sustainable towns and cities and communities; responsible consumption and production; actions in the area of climate; life below the water; life on earth; peace, justice and strong institutions; partnership for achieving the goals (European Commission, 2019a, p. 18).

The goals for requalification and raising qualification are of key importance for achieving the other SD goals and the trends of the Fourth Industrial Revolution (Schwab, K, 2016, pp. 62-68). HE should focus on the students' digital skills and the vocational training of all adults. The EU strategy 2021 notes that in 2019, 42 percent of the Europeans have no basic digital skills. It plans to ensure that the share of those with skills, aged 16 to 74, in this respect would increase to 70 percent by 2025. It recommends that special attention should be paid to the marginalized groups, to the women and young people who are entering the labor market. Improving the employment opportunities requires an adequate offering of internship and improved professional knowledge and skills. The implementation of the indicator "By 2025 at least four of five students who have graduated in the field of professional education and training should find a job, and each three of five should make use of professional training at the workplace," requires that the universities should reassess the offered majors from a professional viewpoint (European Commission, 2020a, p. 13)

The government of the country made a decision (Council of Ministers, 2020a, p. 1) and organized a review of the country's performance in fulfilling the UN SD goals (Council of Ministers, 2020b, p. 1). During his statement at the SD summit within the General debate of the UN General Assembly, the Prime Minister noted a serious lag in fulfilling the SD goals. He called for a full mobilization, cooperation and coordinated actions of all stakeholders. He emphasized the necessity of improving the quality of education and healthcare and a reliable implementation of the environment protection legislation. He reported on a plan for building a mechanism for coordinating and fulfilling the UN SD goals with the participation of the government and a large number of stakeholders (Borisov, 2020, p. 1)

The review of the government's governance program for the period 2017 – 2021 includes a big number of priorities, goals and measures for the development of this country (Council of Ministers, 2017). Structurally these goals are divided in 21 directions, which follow to a great extent the industrial and administrative structure of governance. Part 4 Social and demographic policy includes 78 measures regarding 25 goals and 8 priorities of development. Part 13 Environment attacks 3 priorities, 8 goals and 51 measures. Part 16 Economy includes 5 priorities, 8 goals and 39 measures. This expanded and detailed structure compared to the government's Program on Bulgaria's European development for directing the efforts of the administrative governance does not allow a direct assessment of the share and the weight of the efforts for achieving SD (Government's program for European development of Bugaria, 2009 – 2013). It does not include criteria and indicators for assessment of the achievement of the goals and priorities. If in general terms the efforts under the three parts with the noted priorities, goals and measures are united, and it is taken for granted that they are directed toward SD, they will be about 25%, 16% and 17% of the planned efforts respectively. In the other parts of the topical plan, measures related to the country's sustainability can also be identified, however their role cannot be identified easily. The program has not been coordinated with the outlined scenarios for the EU's paths and goals towards a sustainable European economy (Bontoux, Bengtsson, 2015). What the defined Index and Panel for achieving the SD goals, which determine lag and the lowest value (55.8 on a scale 50-90 points) of Bulgaria in Europe, gives grounds to confirm the assessment of the increasing, yet lagging behind other countries, directing of the SD goals on the continent. On the progress panel the country has achieved progress only vis-a-vis the first goal for tackling poverty, it shows regress regarding the quality of education and reducing inequalities and stagnation vis-à-vis fulfilling the other goals (SDSN, IEEP, 2020, p. 5-9).

The publication of OSCE related to the internet connections of the national plans of the member states for sustainable development does not specify a site for our country. The list includes only the East-European countries the Czech Repub-

lic, Greece, Hungary, Slovakia and Poland, but not Bulgaria, which is a candidate for membership in the organization (Annex: Internet Links to OESD, 2018). These negative findings are quite restricted. The development of the global risks in 2020, the spread of COVID-19 and the implementation of urgent measures to overcome the global pandemic require expanding the ideas for the SD range in the world and communities. It is apparent that healthcare, education, culture, domestic order and security, defense, and other sector characteristics directly affect social sustainability. All of them, and the social sector, environment and economy as well, need an imperative analysis of the impact on the current sustainability and development. The design of priorities, goals and criteria for improvement, without a preliminary analysis, will not provide the expected results.

Part 10 on Education and science in the country includes measures on 3 priorities: eliminating illiteracy and compulsory education, raising the quality of the education process, practically oriented to the users on the labor market via motivated, well-prepared and supported teachers; Strengthening and modernizing the scientific organizations in the country for competitive scientific research; Building high-tech parks and centers for accelerated implementation of the results, inventions and patents created by the scientific research in the economy. These priorities are decomposed into 18 goals and 54 measures. They indirectly affect SD, however they do not directly define the role of HE in achieving it, neither the funds and resources with which they will fulfill it (Governance program, 2020).

The European prospects for the quality of HE in the community reports that ¼ of the 15-year-old teenagers fail to solve basic mathematical problems, the other sciences and reading. Progress is connected with the right to get high-quality education and training throughout life, which determines the social and economic status of the people. The SD report for 2020 concludes that "the European long-term prosperity and inclusion can be achieved through bigger investments in innovations, high-quality education and skills for lifelong learning – including investments in digital skills for all" (SDSN, IEEP, p. 43).

What is the current offer of HE for SD and the obstacles for not offering one yet?

An SD major cannot be found in the National Classification of Occupations and Positions in the country (NCOP, 2011). The latter classification is in line with the International Standard Classification of Occupations – ISCO 08 (International Standard Classification of Occupations, 2008). The methodological notes on the classification define a position as "a totality of functions and tasks that a person fulfills at their workplace, including as an employer or self-employed". Occupation is defined as "a totality of positions, the basic functions and tasks of which

are characterized with a high degree of similarity", and the specialty is "a totality of a specific volume of knowledge and skills to perform a given work, which is a subject matter of the social division of labor". The specialty is part of the subject division of labor within the occupation. Although the preface of NCOP-2011 mentions that the developing experts have applied the national legislation in the field of labor relations and education, practically the classification is not applied in HE and the scientific research in the country (NCOP, 2011, pp. 10-17). Classification connects the occupations and positions with education by introducing the term *education and qualification level* as "a totality of knowledge and skills, necessary to fulfill a given position, consistent with the Bulgarian legislation". It classifies 10 levels (from 0 to 9), the fifth, sixth and seventh of which are for the education and qualification degree "professional BA in…", BA and MA as requirements to occupy a position. The positions from the last two degrees 8 and 9 are practiced by vocation and occupation through choice.

The structure of the classification includes the coding of four hierarchical levels: class; subclass, group and single group, with a univalent, bivalent, three-valent and eight-valent digital code. Each one of the 436 single groups of positions is aggregated in groups, subclasses and classes and is classified as an occupation (NCOP, 2011, p. 19). HE in the country is related to the specialties only from the first three classes: leaders; specialists; technicians and applied specialists and their 15 subclasses, 58 groups and 207 single groups. The review of this static structure shows a very poor correspondence with the offered specialties of the universities in this country.

The applied Classifier of the areas of HE and professional fields includes 9 areas: 1/ Pedagogical sciences; 2/ Humanitarian sciences; 3/ Social, economic and law sciences; 4/ Natural sciences, mathematics and informatics; 5/ Technical sciences; 6/ Agrarian sciences and veterinary medicine; 7/ Healthcare and sports; 8/ Arts and 9/ Security and defense. Each of these areas includes a different set of professional fields (Decree № 125 of the Council of Ministers, 2006). These professional fields are in line, on a limited scale and equivocally, with the classification of the occupations in the country. Part of the occupations in the classifier directly refer to single groups. Some, similar to them, refer to other single groups. Due to the slow process of updating, it does not include occupations related to biology, molecular biology, ecology or related ones, connected to the environment of the natural sciences. They are not codified occupations that integrate knowledge from different areas of science, such as sustainable development, cosmology and a lot of other new ones. Outside the classifier remain the occupations from the sector of security and defense. The correspondence with the classification of the specialties of the scholars, which is also outdated (Order № 114-111, 1990), is piecemeal and limited in scope.

Art. 17 (2), item 1 of the HE Act in this country defines the type of higher schools of education (universities, specialized higher schools and colleges). The university "teaches a wide range of specialties and professional fields in at least three of the four basic areas of science – humanitarian, natural, social and technical." The specialized higher school of education teaches in one of the areas, and its name should reflect the specific areas in which it prepares specialists. The individual college teaches only in the BA degree (Higher Education Act, 2020). The universities in the country operate with faculties that usually teach specialties from different areas of HE or professional fields. The bigger ones of them include up to 2-3 areas and up to about 10 fields.

Appendix 1 presents the BA and MA programs offered for training in SD and similar specialties to those in Ecology, Sociology (Social activities) and Economics. The analysis of the programs of the leading universities in this country shows an absence of offering an individual SD major. A lot of them have devised many individual programs in Economics, a more limited number in Social activities and a few in Ecology (Environmental protection). This picture is a clear sign of an underdeveloped national education capacity for resolving the related and increasing interdisciplinary problems of the sustainable social development. In a more detailed manner, what is offered at the beginning of 2021 shows certain differences for a set of 22 universities and two higher schools of education in this country.

The St. Kliment Ohridski University of Sofia with four of its faculties of chemistry and pharmacy, faculty of geology and geography, pedagogy and biology, although it does not offer an individual SD specialty, connects its traditional specialties with SD, social activities, ecology and environmental protection. This is the only university that teaches a BA and MA specialty Bio-management and SD. The Paisii Hilendarski University of Plovdiv offers an interdisciplinary MA program Bio-policy and social health. The St. Cyril and St. Methodius University of Veliko Turnovo enrolls students for the MA program Geography, geo-politics and social development. Other regional universities offer similar programs.

The specialized universities in economics – UNWE – Sofia, EU – Varna, IA D. Tsenov – Svishtov, offer a lot of economic, management and social specialties, yet they are not connected with SD. UNWE enrolled students for training in 3 areas and 6 professional fields in the 2021/2022 academic year. Economics offers 33 specialties, only one of which, Eco-economics, is related to two fields of SD. The other specialties unilaterally and to a different degree are connected with the integral specialty. The only BA and MA specialty Eco-economics unites two components, however it does not integrate their social aspects. The rest universities in this group adhere to individual scientific fields.

The universities in the area of Technical sciences show some differences. TU-Sofia and UACEG offer Engineering ecology, which unites the areas of natural and technical sciences. UCTM has two integral MA specialties Environmental protection and SD and Clean energy and SD. UMG offers and an MA specialization in Assessment of the ecological risk and SD.

The private universities in the country adhere to the basic professional fields. The predominating part of the schools of higher education (High College of Telecommunications and Posts – HCTP – Sofia, European Higher School of Economics and Management Plovdiv – EHSEM, Varna University of Management – VUM) do not yet offer integrated SD programs either. An exception are the University of Agrobusiness and Rural development Plovdiv – UABRD and the Higher School of Transport Todor Kableshkov – HST – Sofia, which offer an MA on one of the SD components.

The reasons for such a behavior of the universities have not been studied yet. We can assume that the basic reason is the candidate's poor interest in studying the specialty. This conclusion ensues from the universities' ambition to offer specialties corresponding to the traditional attitudes of those who have taken their secondary education degree. On the other hand the administration and business sector, which is apparent from National Classification of Professions (NCP), do not offer prestigious positions and jobs in SD which are attractive for the students who have taken their degree.

Not a less important reason is the traditional and conservative division and specialization of HE in professional fields and the emerging administrative obstacles for launching inter-university, inter-faculty and even inter-departmental educational programs on integrated specialties. Practically easier is to build new organizational structures (departments) than coordinating the activity of a couple of narrowly specialized units. Overcoming such an obstacle requires limiting and even the closure of the conservative structures and the implementation of flexible matrix structures for organizing the activity of the university. This is an organizational shift that inevitably requires the intervention of a high administrative structure. This conclusion is confirmed by the attempt to implement new integral specialties. An example is Public Administration, which integrates management, regional-economic and law-related disciplines and develops not through traditional specialties, but through new departmental units. Although this development is applying a foreign experience, the stimulating role of the then Ministry of Public Administration should be noted. Even more complex is the example of the professional field Security and Defense, which inherits the previous development of military science and integrates and transfers knowledge from a lot of sciences to security, considered in a wide and narrow sense, and from defense as a specialized system for force protection.

Third, we can note the low rate of internal development and mutual penetration, absorption and competitive orientation of ecology, sociology and economics. Ecology emerged about 150 years ago as a discipline of the science of life – biology. P. Angelov presents the complicated path of development of the discipline, emphasizes the role of the German natural scientist Ernst Haeckel and the fact that its name was mentioned for the first time in 1866 in his book *Universal Morphology of the Species* (Angelov, 1988, pp. 7-16). In the past decades it has studied the interaction between organisms and the environment. After focusing on the stages of development and studying the zoocenosis (the animal community) and the phytocoenosis (plant community) and the differentiation of the ecology of animals and ecology of plants, the discipline focuses on the balance between man and the environment. Henceforth it identifies and directs its attention to the problem of environmental protection. The capital work of E. Odum *Fundamentals of Ecology* was published in 1971. It outlines the discipline's about 100 years development and ends in sections devoted to the prospects of the ecology of microorganisms, of the space flight and the applied ecology of man (Odum, 1975, pp. 611, 629). What follows is a period of penetration and merging of the discipline with other sciences. The subject matter of the social, engineering, mathematical, population, evolutionary ecology is formed. Ecological chemistry, economics, ecological safety and other disciplines are differentiated. The view about the possibility and compatibility of economic growth and environment protection takes shape. Attention is directed to the applied issues of ecological regulation and governance, the protection of environment and its resources from pollution. In the past years what becomes critically important is the problem of climate change. The ecological studies prove that these changes deeply affect societal prosperity and development. They set for the prompt solution of problems on which mankind's future depends in the short term. They answer the question "Is climate change e terrible threat or only beating the drum?" (Flannery, 2007, p. 13). They show the atmosphere's role for regulating temperature. They connect ecology with the human spirit and the necessary actions which "… strengthen the relationships between civilization and the fragile ecological system on Earth" (Gore, 1995, p. 13).

An objective review of this country's ecological state, the related activities and problems was made by OECD in 1996 (OECD, 1966). Unfortunately, we do not have at our disposal a similar new analysis of OECD, neither an assessment of the impact of the environmental changes on this country's complex state. The EC offers an assessment of the current state in 2019. The report points out three basic challenges: improving the quality of air; ensuring a correct collection and purification of refuse waters and a correct implementation of the environment protection legislation. This document notes some progress on fulfilling the mea-

sures on air pollution. “No considerable progress” is made on collecting and purifying the urban refuse waters. “A comprehensive program vis-à-vis the policy in the area of circular economy has not been adopted”. “The management of waste still is accompanied by challenges, although the generation of municipal waste is below the average level for the EU”. This country has made “considerable progress in ensuring support for the mapping and assessment of the eco-systems and their services, and also in the valuation and design of systems for accountability of the natural capital”. There are challenges related to “the implementation of the environment protection legislation”. The steps “for ensuring rationalized ecological assessments by inclusion in the procedures for EIA of the appropriate assessment” (European Commission, 2019d, p. 3) are noted as a good practice for the country. It is natural to expect that without well-prepared senior specialists and without professional positions in the administration, the EC’s recommendations can hardly be fulfilled.

Religious philosophy that has inherited the ancient mode of thinking shows that before studying the natural dependencies, people have explained to themselves the pressure of natural forces with deified and mutual coercion (Nemesius, 2003, pp. 12, 61-69). The development of social sciences and their stratification leads to the idea that “Sociology studies the human social life, groups and societies. This is an amazing and fascinating discipline that studies our own behavior as social creatures” (Giddens, 2003, p. 6). N. Elias notes that the broadly defined subject matter of sociology is society, logically including in the notion of the separate individual. In research sociology specializes in the relations and interdependence between the people in their formations and society at large in achieving their common goals. One of its major tasks is to develop “a solid basis of secure knowledge” about the interdependence and the coercion that defines the social configurations and behaviour (Elias, 1999, p. 17).

One of the most significant changes and coercion in human life is connected with the subject matter of ecology. Ecological and climate change inevitably involve social life and the social institutions. There is an increasing overall insecurity in life. It is yet again Giddens who identified four groups of major factors in the contemporary social change: the physical environment and the ecological problems; economic factors; political organization and cultural (religion, communication, leadership) factors. In his opinion “the ecological problems pertain not only to the best ways to offset and reduce the damage inflicted by nature and to prevent ecological disasters, but also to the very lifestyle in industrial societies” (Giddens, 2003, pp. 528, 537). Ever more frequntly the changes in the environment are treated as ecological problems. In his book *Chaos of Disciplines*, Andrew Abbott identifies the emblematic role of the ecological transition in American sociology, and also outlines the construction of social

ecology. In his preface to the book, prof. G. Dimitrov writes that "the ecological approach to the development of science is completely unknown in this country, hence special attention should be paid to it" (Abbott, 2004, p. 19).

The interaction and the mutual penetration of sociology and the economy emerged when the subject matter of these sciences took shape. In the traditional economic approach to the natural environment, the latter is treated as a source of resources necessary for human wellbeing. This is so, given that the economic science examines the distribution and allocation of scarce resources in the relation between the means and goals of individuals, groups and societies. This restricted in terms of time and ethics approach inevitably goes into conflict with the Earth as the mother and cradle of human civilization. It runs counter to the understanding of sustainability of social development in time. As a result there arises the idea of sustainability that excludes the current obsession with nature at the expense of the future generations of humankind. This approach refutes the replacement of the future with the present. Such a view contradicts the traditional economic aspirations towards achieving the maximum effect with the disposable resources. It requires that cultural and political, ecological and social restrictions be adopted and responsibility assumed with regard to societies and in particular the ones that are lagging behind in their development and and are on the brink of survival. This is defied by the equally strong conservative nationalist resistance to the boundaries in the search of equilibrium with nature by some societies with the highest living standards. Such limited in scope short-term thinking is typical not only of the poor but also of the citizens and politicians in the world, even though this is the path towards self-destruction. As a result there is a slow pace of development of the ecological and social aspects of utilizing nature within institutionalism and the economic science. There is a slow pace of the expansion of the merger and formation of the eco-economy and socio-economy. This is a process with regard to which this country is falling behind. T. Chavdarova makes an interesting overview of this process involving the formation and the launch of the New economic sociology, a process "… that takes about 20 years: from the border between the 1970s and 1980s until the start of XXI century" (Chavdarova, 2016, p. 21).

In such a situation that is a loss for the graduated specialists and administration, those who may gain benefit are the businesses that could possibly destabilize and destroy SD through a combined ecological and social irresponsibility that they transform into their own profit. The entire society and its security incur losses. What is necessary today, considering the lagging behind of this country, is to form and provide an autonomy for SD as an integrative discipline which arises from the merger of the ecological, social and economic science. Only this can give the impetus for the accelerated merger and mutual penetration of the three sciences in the interest of the public wealth. Unlike this lagging practice, a multitude of

universities across the world offer academic programs for training in SD and its related issues. Appendix 2 offers a set of master's degree programs provided by a sample of about 50 universities across the world. A big portion of these (about 70%) offer training in the interdisciplinary specialty of SD.

An analysis of the leading practices in educating for SD from the European countries is provided by the EU4SD (University educators for sustainable development) project, financed by the Program for Lifelong Learning of the EU supported by the European Commission. The publication including the project's results presents the goals, policy, principles, examples, summing up 13 case studies and a roadmap for the implementation of best education practices. It inspires academic faculty and leaders, politicians and all readers to support their implementation. It is connected with the spirit and the goals of the UN Decade of education for SD, the Global action program and the Strategy of the UN Economic Commission for Europe (UNECE). This piece of research identifies the following four basic barriers to the universities' taking up SD: the lack of pressure on the part of the public at large; academic freedom; unstimulating structure and conservative administration. It identifies the following factors driving change: pressure on the part of partnering institutions; funding sources; scale; coordinating units; leadership; leading and connecting units. It further notes that 27 of 32 countries in Europe в Европа report on the available strategies for HE for SD, a list that does not feature Bulgaria, Croatia, Slovenia, Albania and Romania. With its analysis of the best practices, the project makes an attempt for Bulgaria to set up an informal network of educators that provides for the support to university lecturers to prepare and ensure the self-preparation of the students in SD. The authors of this section are assoc. Prof. Elena Dimitrova and Rumyana Hadzhieva-Zaharieva from the University in Architecture, Construction and Geodesy. This practice was launched by 3 lecturers in 2011 and for 3 years prepared 12 lecturers and PhD students. It was not supported by the university management and remained informal in nature with no ambition for its institutionalization and development. It implemented a modular program for post-graduate training in SD (European Commission, 2015, p. 88). In reality such a practice was disseminated in this country. There are not many lecturers who are well informed and well aware of the relevance of the knowledge in SD and и informally launched, and in the adequate conditions with separate formal lectures and disciplines within the traditional specialties.[4] There is no information about the support for such

[4] Typical is the practice of Dr. Pencho Penchev who for many years taught the discipline of sustainable development in the cirriculum of the specialty Economics of Defense and Security at UNWE. Even though these efforts to launch training in the new discipline and to set up a new department for the soeciality of sustainable development were supported by the department, this initiative failed because of the lack of support on the part of the academic leadership.

practices either by the universities or by the Ministry of Education and Science. No support has been noted by the line ministries on the environment and waters, labour and social policy or the economy. No initiatives have been launched or stimli offered by the leading governmental and other institutions.

It is evident that such initiatives are faced with obstacles that hamper training in an integrated multidisciplinary subject. This is accounted for by the traditional parcelling and structuring of the scientific and professional fields for education-related activities in this country. Students can acquire knowledge separately in ecology, sociology and social policy and economy but not in SD, which integrates knowledge from the three sciences. It will be impossible to ensure that in universities that have not developed the three professional fields and are not inclined to unite their programs. Ecology is a section of biology and natural sciences. Sociology and economy are part of the social sciences. This countries has universities in place that have the potential to teach SD, yet there are reasons for this not to take place.

There are no available data for inter-university or inter-faculty and international programs and training courses. Some isolated practices at universities expose the attitudes to parcel, isolate and even feudalize the academic specialties. Such obstacles involve the specific direction of HE towards the sectors of the economy. The faculties and traditionally part of the universities, in their professional fields are oriented towards and focused on the preparation of cadres that meet the needs of certain public sectors. No integration takes place even at universities such as Sofia University St. Kliment Ohridski, which has faculties in three professional fields. This can be explained by the obstacles to organizing inter-faculty educational programs. The nature of these obstacles stems from the difficulties in organizing, financing and managing costs (other than those for the bachelor's and master's degree programs and cirricula). Another relevant factor is the impossibility to prepare doctoral students at the departments in place. These departments apply for accreditation and gain such again only in the established professional fields and specialties. The lack of specific departments in effect rules out any possibility to prepare doctoral students, or to ensure the professional development and reorientation of lecturers in SD.

Such deficits have a strong negative impact by restricting and even blocking the implementation of the best practices envisaged in the EU4SD project and utilized in other European countries for the development of HE in SD. They hamper the implementation of practices for: the setting up of university networks for education; work meetings; regional actions for the reorientation of university education; training networks by topics; programs for oragnizational changes in universities; working groups on the prescriptions of sustainability; education in a sustainable future; the elaboration of professional modules in responsibility and

sustainability; the elaboration of schemes for aid; reorientation of the attitudes among the academic faculty; mentoring schemes for fledgling lecturers; courses for academic lecturers.

What can be done to ensure that the necessary steps are taken to organize, launch and improve the HE in SD and who can be in charge?

Offering education in SD at the bachelor and master degree is above all the social responsibility of the institutions and the vocation of the universities in this country. What should not be ignored either is the role of all stakeholders in public strucures – research centers, businesses, NGOs and the media. The role of the stakeholders in active HE for SD can be explained and interpreted only if the vision, mission, strategy and the general and sectoral policies needed for coordinating the common efforts are well defined. However even if strategic issues are not resolved, tactical organizational measures to implement the training are necessary. A key outcome of realizing the need to take active commitment to resolving these issues is the authorization of the national institutions to direct research and education towards SD.

What can each university do?

A number of organizations and researchers seek the answer to this question. The Global University Network for Innovations launched a strategy for examining the link between SD and HE (GUNi, 2019, p. 79). This is a response to the adoption of Agenda 2030 and its 17 goals for SD. The university's seventh report come up with an analysis for the academic community, decision makes and politicians that makes a diagnosis of the current state of affairs and makes recommendations that broaden the horizons for the needed extended integration of knowledge. It substantiates the need to reinterpret and transform HE to bring it in line with the ongoing developments, the new risks and challenges and the restrictions, as well as with the needed changes and new goals.

Universities across Europe and the world are aware of the efforts needed to achieve the goals of SD. T. Jorgensen notes that the International Association of Universities encompasses more than 700 institutions that work towards achieving these goals (Jorgensen, 2019, p. 44). He further notes that this activity comprises a small portion of what universities are doing to this effect. They provide evidence pointing to the emerging challenges, suggest possible solutions, such as the development of technologies for renewable energy sources or overcoming social inequality. The author also notes that for many years the political debate on the contribution of academic research pertained to economic competitiveness. The new knowledge sets the path towards innovations, new products and an

expanding economy. The new goals for SD facilitate universities in showing their contribution to overcoming a far wider range of challenges, including the use of nature and citizens' wellbeing. On the other hand, however, universities' contribution is connected with the growing demand for investments in education, research and innovations. Two of the goals, those for high-quality education and investments in innovations, should presumably facilitate the attainment of the other goals. The European Commission underlines the fact that "education, science, technology and innovations are the precondition to achieve a sustainable economy" (European Commission, 2019b, p. 23).

In their activities, universities are facing a number of hindrances they can readily overcome by:

- Adopt their own programs for SD that incorporate the experience and the best practices of leading organizations and define their commitment to society, local communities and citizens with regard to offering new knowldge and new economic, social and ecological practices for sustainability.
- Bring their plans in line with the priorities, the goals and the measures of the national plans for SD and organize the assessment of the results from their fulfilment and direct university research towards the issues of SD.
- Revise their curricula and programs so as to tackle the isolation of disciplines and incorporate the vision, goals and specific tasks for education in the complex issues of SD.
- Offer programs and models of training in SD that are targeted not only at applicant students but also at citizens of all age brackets. Restore the forgotten forms of post-graduate qualification by directing them towards SD. The education of adults can possibly offset the decreasing number of students admitted to university.
- Step up the efforts to render active the links between the departments, faculties and universities, as well as those between universities and the local communities to launch common education programs at the bachelor's and master's degree and to attract applicants for training.
- Focus their attention on the restriction of carbon emissions and unsustainable practices for livelihood and employment that run counter to SD and instead create capabilities to facilitate the attainment of SD and the wellbeing of local communities.

What can businesses do?

Businesses are facing the challenge to incorporate sustainablity-related assumptions in the decision making for its functioning and development. Businesses should take into account the ecological, social and economic restrictions in its activity. They should revise their purchases, investments

and waste, without seeking or taking advantage of loopholes in the regulatory framework. Some specific options are the following:

- Business leaders can develop a vision for what should be achieved for SD and present this vision to society, stakeholders and officials. Thus they will bring their business activities in line with the Green Deal and the EU Scheme for trade and emissions in the transition to climate neutrality.
- Maintain the EU strategy for research and innovations and this country's strategy in terms of interaction with universities.
- Fully comply with the EU principles for corporate social responsibility, human rigths and the fair labour conditions for both employees and customers, and ensure the equal treatment of men and women on the labour market, observe the guidelines for social protection and counteract exclusion.
- Create jobs and invest in the education of new university or high school graduates – experts in SD and among their employees (including the low qualified workers of older age) for lifelong learning in SD.
- If possible, invest in innovative (renewable energy sources), including digital technologies (artificial intellect, the internet of things), that are aimed at ensuring higher productivity and sustainability.
- Apply the principles of the circular economy for zero waste and adopt the standards offered by OECD that are aimed at achieving the SD goals.

What can local government do?

Even though the EU Committee of the Regions targets its recommendations at education in general, there are clear recommendations for HE as well. The Committee assigns the central role for education in SD to local and regional authorities. It comes up with the following recommendations: change in curricula; the creation of an internet portal for the teaching materials; the inclusion in networks for cooperation, environment protection, cultural and other institutions, mass media and the dissemination of the results of education. The Committee offers a wealth of instruments to raise awareness of the principles and function of SD – the expansion of international contacts, programs for mobility of students and lecturers, endorsement of informal training and distance learning, closer ties with the research sector, inclusion of elderly people, among other. It lists a number of best practices. The only example of a good practice in Bulgaria is Dobrich municipality which has held an awareness-raising campaign among children, students and adults with regard to the separated waste collection. The best practices range from the setting up of eco-units, the drawing up of education programs and materials, organizing post-graduate qualification that are applied in Poland (Committee of Regions, 2008). The bodies of local government have the

opportunity to choose among a multitude of best practices. Here are the feasible options that take account of the available funds:

- An assessment of the topical issues for SD of the local community and attracting for participation the territorial schools of higher education and universities.
- Utilizing the available capacity for cleaning the environment from waste and adverse impact substances.
- Initiating demands for the financing of local and regional projects for protection of the environment.
- Organizing regular information campaigns for the local community about the state of affairs in local sustainability.

What can national institutions and the bodies of local government do?

The theoretical foundations of the institutions' behaviour are the subject matter of the classical and the new institutional economy. These disciplines adopt the theory of transactional costs and their impact on organizational behaviour, and explain the impact of non-economic (political, administrative) variable that determine this behaviour. Given the the principal of most of the universities in this country is the state, the latter largely defines their transactional costs. The role of the university management is narrowly rational in the choice of decisions for transaction. According to D. Commans, this role "… is not the exchange of goods, but the alienation and appropriation of property and freedom created by society" (Markov, 2015, p. 111). Without clarifying the nature of transactional costs of the university sector or the number of definitions of institutions, we can accept the assumption of Shotter whereby "institutions are treated as a number of rules that restrict individual behaviour and determine the social results that ensue from individual actions" (Sedlarski, 2013, p. 25). The rules and recommendations for HE in SD are not simply a national issue but a global one.

The defined operational results from the SD process in Agenda 21 of the Declaration from Rio snd the follow-up global strategic documents launch the idea that institutions implement *an adaptive educational process* at a number of levels of the social structure. The same piece of research recommends that national institutions should: pursue a balance between economic, social and ecological dimensions; apply integrated planning; take into consideration the interests of future generations; commit all stakeholders and improve the access to information and justice. The piece of research also specifies the basic ways to organize institutional information in SD through: strategies and integrated planning; a mechanism for horizontal coordination and participation; a guaranteed access to information and justice; the drafting of relevant statistical information; legally prescribed rights of the future generations in legislation; principles,

standards and norms of the broader public goals (United Nations Department on Economic and Social Affairs, 2020, p. 5).

Summed up data for the international commitments in the sphere of HE in SD is provided by UNESCO's publication, which was then led by Ms Irina Bokova, about the roadmap of the Global Action Plan for the sake of SD as of 2014. This document lists the characteristics of education (content of the academic curricula, methods and environment, results of the education and the effects of the transformation of society) and further provides the goals, tasks priority action areas, stakeholders and specific measures and examples for reaching the desired effects (UNESCO, 2014).

These guidelines are specific for the different countries and the levels of the institutional systems, and each guideline specifies and describes the level of commitment for resolving the SD-related problems. The experience of the countries reveals a range of varied measures to tackle the problems. The US experience includes the adoption of a Higher Education Sustainability Act in 2004. This law provides for the funding of six centers for sustainable education in the country for the development and implementation of integrated programs for education in environment protection and economic and social training. The centers are targeted at interdisciplinary research, education and pressure on the institutions of HE (Higher Education Sustainability Act, 2004). An example in this respect is the Center for Neighbourhood Technologies that runs a regional forum for 12 urban zones to assist in drawing recommendations to enhance regional cooperation for SD. It impacts "… how the federal government should be more responsible to regional needs by guaranteeing better access to information, policies and coordinated investments" (The President's Council on Sustainable Development, 1999, p. 66). The recommendations for the improvement of education for SD presented in a summary are given in three major areas: to inform the public at large and politicians about the challenges and opportunities for SD and suggest convincing actions; to institutionalize knowledge and establish local capacity; to secure the recognition, resolution of problems and for the identification of sustainable strategies; to offer accessible information and data for the link between the economy, the environment and social justice; to provide indicators and measurements necessary to track the approach towards the desired goals (The President's Council on Sustainable Development, 1999, p. 70). The section on Education and culture in Russia's Strategy for Sustainable Development highlights the role of educating the citizens, the knowledge of the legal and ethical norms for SD of society. It emphasizes the need for ecological education that forms a careful attitude to nature. It provides for creating a culture for the unity of nature and society on a global scale, as well as values to implement the strategy for SD (Federal Assembly of the Russian Federation, 2002, p. 92-93).

Article 2, para 3 and 5 of the Lisbon Treaty for the EU announces the aspirations towards a contribution to the planet's SD in compliance with and respect for the principles laid down in the UN statute (Lisbon Treaty, 2007). Of particular interest is the vision of the EU and the European Commission on the role of education in SD (Bontoux, Bengtsson, 2020). This vision assumes that the path to the EU's sustainable economy as of 2035 goes in three major directions: green (environment protecting) industries; greening (other industries that accept eco-innovations) industries and eco-innovative solution providers (R&D, new business models, organizational and social innovation, role of integrators). This set of key ideas for achieving the desired results highlights the essential role of education in this regard. Education is assumed to be the basis for social values, the awareness about the role of the environment, the innovation capacity, and other basic factors that determine societal future. This vision distinguishes between two driving factors – social values (individualistic and collective) and fiscal framework (whether it supports or does not support sustainability). Their combination gives rise to four scenarios of development (multiple connected initiatives; shared circular strategies; compact green innovation; local self-reliance).

The role of education in the implementation of the first scenario is to "support new inclusive educational models and lifelong learning opportunities to raise environmental awareness and help build consensus throughout European society on a long-term vision on sustainability, and align skills and talents with demand". In the second scenario, education should "provide knowledge for a longer-term sustainability-oriented worldview that is made adaptive to the dynamically shifting technologies and circumstances, and to educate and train people for capabilities needed for the green economy and for adaptability at once". Under the third scenario, education should "provide stakeholders with the knowledge offered by green fiscality and eco-entrepreneurship and support the government in granting awards and encourage the dissemination of the ideas of competitiveness". Under the scenario for local self-reliance, the recommendations to education are that it should "promote independence, multidisciplinarity and the long-term prospect to guarantee a range of basic skills and essential values for achieving sustainability".

Good examples of specific practices give the papers from the First European conference on education for SD held in Greece in 2007, which shares the experience and the contribution of 12 countries for HE and research in SD (Filho, et al., 2007). Another example for actions taken to reach education in SD gives Croatia. The country prepared an action plan for education for SD, and in it an analysis is made of the current state of affairs in education in all forms, including HE. Croatia adopted an action plan with the general goal, principles and role,

piority areas, time limit and method for implementation and monitoring, possible sources of funding (Action Plan for Education, 2018, pp. 1-24).

In the context of the general human, community and national rules and recommendations, the strategic and operational priorities of this country are the following:

- The drawing up of a strategy and policies to overcome of the potential sources of external and internal disbalances and investments in SD, including in the sphere of climate change and the environment.
- The drawing up of a strategy and action plan for HE for SD and incorporating the key projects in the Plan for Recovery and Resilience and this country's sustainability.
- Stimulating the opening of education at the bachelor or master level, whether integrated or differentiated, in the specialties of SD, eco-economics, ecology, social security, research and innovations, sustainable energy sector, corporate sustainability and security.
- An increase in the share of budget allocations with a horizon of up to 2030 up to 1,5% for science and 4% of GDP for education in this country.
- Investing "record high amounts in avantgarde scientific research and innovations targeted at areas with the highest potential and "the net assets that are most productive to the relief of climate change" to ensure a turning point at the national level (European Commission, 2019a, p. 6).
- Attracting private funding and assistance to the organizers of projects that are aimed at developing green projects deemed appropriate for financing.
- The development and application of an appropriate instrument for the statistical reporting and quantitative assessment of the results from the measures to achieve the goals of SD.
- Budget financing of projects for the education of students in the bachelor's or master's degree in SD.

Conclusion

The issues examined so far give the grounds to make the following generalized conclusions and suggestions:

1. On the role of and the need for education in SD.

- The critical risks to the global, national and local social development have been increasing.
- Education frees people and gives them the strength to take action based on their own discretion and not under external pressure.
- HE offers, builds on and disseminates knowledge, skills, motivation and capabilities to citizens in lifelong learning. It helps tackle the risks and

challenges of the environment and gives people responsibility and ensures value to life.

- HE in SD is no panacea for wellbeing, yet it is the safety net to achieve a development that is balanced with the environment and to avoid the natural disasters in the future.

2. On the major risks and challenges that education in SD is faced with.

- After overcoming the dominant geopolitical, military and technological risks of the near past, the assessment of the ecological, social and economic risks are prevalent in the current risk-related picture of global risk.
- The negative climate change and its effects are the result not only of natural processes but also of the implementation of unsustainable social practices.
- A common challenge to the national society is the shift in the frame of thought, the worldview and the actions taken to prevent or resolve the emerging sustainability-related problems.
- Part of the actions taken in this country include a reinterpretation and strengthening of the role of science and HE with a view to taking a course at both the national and local level for active action with regard to the set priorities.

3. On the goals of HE in the EU and in this country.

- This country has in place a clear hierarchy of goals, criteria and indicators that are recommended by the UN and the EU to ensure high-quality education in SD as well.
- This country determines its goals in compliance with the national and local specificity and notes that it is lagging behind with regard to both attaining the general goals and the goals of HE for SD.
- In the governance program for the 2017 – 2021 period in the section on education and science, there are envisaged three priorities, 18 goals and 54 measures that need criteria and measurements for the achieved operational results.

4. On the current supply of and obstacles to HE for SD.

- The National Classification of Professions and Job Positions does not contain a specialty of SD. The classification of the areas of HE and professional fields includes the area of Humanitarian sciences with Ecology and the area of Social, Economic and Legal sciences with the specialties of Sociology and Economics. These conservative documents are incompatible with the outdated Classification of specialties of scientists in this country. These discrepancies hamper the formation of new specialties and the preparation and training of scientists and educators for their development.
- The universities in this country do not offer academic training in the specialty of SD. Some of them have developed the specialty of Economics,

a smaller number Sociology and the smallest number Ecology. There are few exceptions with the attempts to combine two disciplines and approach the SD issues compared to the leading universities in the world.

- The major reason for this lagging behind is the traditional and conservative division and specialization of HE by areas, professional fields and specialties, which creates adminstrative obstacles to launching inter-university, inter-faculty and even inter-departmental educational projects in integrated disciplines and specialties.
- The pace has been slowed down of internal development and mutual penetration of sciences, including the ecologization of the social and economic science in this country, which is the key engine for overcoming this falling behind with regard to environmental protection.
- Who can do what.
- Each university can adopt a program for SD, and thus orient HE and scientific research towards the priority issues of SD within its range of competencies. Despite the existing obstacles, universities can set up interdisciplinary, inter-faculty and inter-university structures to provide for a balanced training in SD.
- Businesses can align their activity and management with the ecological, social and economic responsibilities for SD, and provide funding for an integrated training and research.
- Local government units can launch awareness-raising campaigns for training, debate and action to implement the best practices to resolve the major SD-related issues.
- The line institutions in charge of SD and stakeholders may define a national vision, mission, strategy and general and sector-specific policies for action and stimulate academic education in SD.
- The top national institutions and central government can align the rules guiding HE with the imperative for SD. If they do so, they will reinterpret and justify the role they have been assigned by society to meet the future challenges that this country is facing.

Reaching a shift in education is impossible without earmarking the necessary funds and resources. The European Commission (EC) gives an idea about this by setting the strategic guidelines for the functioning and financing of the Recovery and Resilence Mechanism (European Commission, 2020). The EC has earmarked more than 750 billion euros in loans and aid under this mechanism for member states' plans that should presumably support the shift in HE as well. It distinguishes between 7 leading project areas, the last of which is Requalification and Qualification increase, which should include projects for adapting the educational systems to the support of digital skills, educational and vocational training for all age brackets. The funds earmerked for this country amount to

about 12 billion euros. In October 2020 the government established a Portal for Public Consultations, addressing all stakeholders and received a number of opinions and comments (Council of Ministers, 2020c). After the first two versions of the national Recovery and Resilence Plan, it was supposed to present a final veriant by the end of April 2021. The planned funds for the Education Component and skills from Pillar 1 Innovative Bulgaria in the plan's first variant accounted for about 750 mln euros, a small part of which are for HE, including for student hostels and education regions (Council of ministersd, 2020c). The second variant added Reform 2 Reform in HE that included: amendments and supplements to the Higher Education Act; Strategy for the development of HE. It included: Investment 2. Modernization of the Education Institutions, including student hostels and education regions (604,5 mln euros); Investment 3. Training in digital skilss and the establishment of a national online platform for the training of adults (279,5 mln euros) and Investment 4. the establishment of centers for the personality development of students and young people in support of the sustainable recovery of municipalities (24 mln euros). The plan for 2021 makes no distinction of the resources planned by specific projects for the implementation of the reforms and investments in HE (Council of Ministers, 2021). After a number of critical remarks were made and considering the eraly general election held in April 2021, the government withdrew the plan so that it could possibly be specified by the newly elected government. The plan's next versions should enclude specific measures with deadlines to overcome the delay in tackling the critical situation in this country and to create favourable conditions for recovery. Yet these will not be adequately implemented, unless they include a set of adequate projects targeted at recovery and transition to education in SD.

The highway to HE and research in SD, combined with the best practices for the transition and the provision of resources, will undoubtedly in the course of time provide for the better balance of a clean and healthy environment with the national action towards economic and societal progress.

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Appendix 1: The education at the bachelor's and master's degree offered in this country

School of higher education	Bachelor's degree (BA)/ Master's degree (MA)	Specialty/programme/specialisation
1	2	3
Sofia University St. Kliment Ohridski, faculty of Chemistry and pharmacy	BA MA	Bio-chemistry Bio-chemistry, programs: Eco-chemistry; Bioanalytical and bioorganic chemistry
Faculty of Geology and Geography	BA MA	Regional development and policy Geography, programs: Climate change and waters management; Environmental management and risk processes; Landscape ecology and natural capital; Development and management of rural areas. Tourism, program: Eco-tourism Administration and management, programs: Planning and management of territorial systems; Regional security
Faculty of Pedagogy	BA MA	Social activities Social activities, programs: Management of the institutions for social work; Social work with childrens and families; Social work with refugees and migrants
Faculty of Biology	BA MA	Biotechnologies Ecology and environmental protection Bio-management and SD Agriculture biotechnology Biology: Biology of development; Biobusiness and bio-entrepreneurship. Biotechnologies: Industrial biotechnologies; Floral biotechnologies; Ecological biotechnologies. Ecology and environmental protection: Ecology; Environmental protection. Biomanagement and SD: Eco-management
Plovdiv University Paisii Hilendarski Faculty of Biology	BA, MA BA MA	Biology, Ecology and environmental protection Biodiversity, ecology and conservation Ecology and ecosystems protection Ecology, management and control of the environment

Continued

1	2	3
Faculty of Pedagogy	BA	Social activities
Filial Luyben Karavelov, Kurzhali	BA	Biology and management of natural на resources
Filial Smolyan	BA	Biology with eco-tourism
Faculty of Philosophy and History	BA MA	Sociology and sciences for man Bio-politics and public health
Veliko Tarnovo University St. Cyril and Methodius Faculty of History Economic Faculty Faculty of philosophy	BA MA BA, MA MA	Regional development and geo-economics Regional development Geography, geo-politics and social development Social activities Social philosophy
Professsor Dr Assen Zlatarov University – Burgas	BA BA, MA	Biotechnologies Food biotechnologies Ecology and environmental protection Ecology and ecological management
Thracian University – Stara zagora Agrarian Faculty Faculty of Medicine Economic Faculty	BA	Ecology and social activities Regional economic and management Regional economic
South-West University Neofit Rilski	BA BA, MA MA	Ecology and environmental protection Sociology Social activities Regional development management Contemporary energy sources and environmental protection Energy management and sustainable energy development Regional development Ecology and environmental protection

Continued

1	2	3
University of National and World Economy, Sofia[5]	BA BA, MA BA BA,MA BA MA	Eco-economics Insurance and social works Economics Macroeconomics Regional development Sociology Healthy and safe labour conditions Eco-economics and Regional Human resources management Regional business and management Development of intelligent cities Social research, analyses and projects Intelligent transport systems Energy business Transport management
Economic University - Varna	BA	Social security and insurance
Economic Academy Dimitur Tsenov - Svishtov	BA MA	Insurance and social works Macroeconomics Economic management Regional development economics Social management
New Bulgarian University	BA	Ecology and environmental protection
Varna Free University Chernorizets Hrabar	BA MA	International economic relations Circular economy
Burgas Free University	BA	Social activities and consulting
Agrarian University - Plovdiv	BA MA	Bio-economics Regional development economics and management Ecology and environmental protection Ecology of rural systems Protection of biological diversity Sustainable environmental utilization and ecological tourism

[5] The BA specialties are determined on a competition principle after the second year of studies.

Continued

1	2	3
Technical University – Sofia Faculty of Energy and Machine Building Faculty and college-Sliven	BA MA	Renewable energy technologies and fluid techniques Electrical energy from renewable energy sources
Technical University – Varna	BA, MA BA MA	Social management Engineering ecology Eurpoean social integration Healthy and safe labour conditions
Technical University – Ruse Agrarian and Industrial Faculty Faculty of Public Health and Health Care Filial of Ruse University – Razgrad	BA	Ecology and tecniques of environmental protection Social activities Biotechnologies
Technical University – Gabrovo Economic Faculty	BA	Social activities
University of Chemical Technology and Metallurgy	BA MA	Biotechnologies Engineering ecology and environmental protection Clean energy and SD Biotechnologies Hydrogen technologies Ecology and environmental protection Environmental protection and SD Renewable energy systems Systems and mechanism for the environmental protection in metallurgy
University of Mining and Geology Faculty of Geology and Exploration	BA MA	Biotechnology Ecology and environmental protection Biotechnology Ecology and environmental protection: Ecology and environmental protection; Ecotechnologies and environmental protection; Waste management and treatment; Ecological risk assessment and SD; Water quality. Enrichment and recycling of raw materials: Management of solid and liquid waste.

Continued

1	2	3
University of Forestry Faculty of Ecology and Landscape Arcitecture Agrarian Economic Faculty	 BA MA	Ecology and environmental protection Floral protection Floral protection/specializations: Control of floral pests; Control and products use for floral protection
University of Architecture, Civil Engineering and Geodesy Faculty of Architecture Faculty of	BA and MA BA and MA MA	Urban planning Environmental engineering Water resources management Water purification
University of Food Technologies – Plovdiv	BA MA	Biotechnologies Industrial and pharmaceutical biotechnologies Cellular and molecular biotechnology
Higher School of Agribusiness and Rural Development – Plovdiv	MA	Regional economics and management
Todor Kableshkov University of Transport	MA	Electrical energy from renewable energy sources

Source: The author based on data from the websites of schools of higher education as of the early 2021.

Appendix 2: Master's degree education offered by leading universities

University	**Country**	**Specialty**
1	2	3
University of *Groningen*	The Netherlands	*Sustainable Entrepreneurship*
University of Sussex	United Kingdom (UK)	*Sustainable* Development (SD)
School of Diplomacy in Barcelona	Spain	SD
University of Örebro	Sweden	Public Planning of SD
The Sapienza University of Rome	Italy	Environmental and Hydraulic Engineering
Queen's *University Belfast*	Ireland	SD
University of Antwerp	The Netherlands	Globalization and Development

Continued

1	2	3
University of Utrecht	The Netherlands	SD
Mälardalen University	Sweden	Environmental Engineering for SD
Erasmus University Rotterdam	The Netherlands	Land Management – Law, Finance, Real Estate and Natural Resources
American University in Cairo	Egypt	SD
Hawaii Pacific University	USA	Global Leadership and SD
European School of Political and Social Sciences in Lille	France	Food Politics and SD
Technical University in Berlin	Germany	Building Sustainablity
Syracuse University	USA	Real Estate Development
Catholic University of America	USA	Management of Integral Economic Development
ESI Business School of Boulogne-*Billancourt*	France	SD and the Environment
Stockholm University	Sweden	Social-Ecological Resilience for SD
National Taiwan University	Taiwan	Climate Change and SD
International Training Center in Turine	Italy	Public Procurment Management for SD; Social Innovation for SD
Raw Materials Academy SUMA in Espoo	Finland	Sustainable Materials
University of Bologna	Italy	Resource Economics Resource and SD; Enviromental Management: Global Change Ecology and SD Goals
Sunway University	Malaysia	SD Management
Linköping University	Sweden	Science for SD
Aucal Business School	Spain	SD Goals
University in Lüneburg	Germany	Sustainablity Science
University of Bradford	UK	SD
University of St Andrews	UK	SD
University of Sorona	Mexico	Specialist in SD
University for Peace	Costa Rica	Responsible Management and Sustainable Economic Development

Continued

1	2	3
Royal Institute of Technology in Stockholm	Sweden	Sustainable Technology; Sustainable Urban Planning and Design; Sustainable Production Development
SIT Graduate Institute of *Brattleboro*	USA	Arts and SD
University of Johannesburg	South Africa	Sustainable Urban Planning
University of Westminster	UK	International Planning and SD
University of the Highlands and Islands	UK	Sustainable Mountain Development
University of Lund	Sweden	Innovation and Global SD
SOAS University of London	UK	SD; Environmental Law and SD
KU in Leuven	Belgium	Human Settlements
Ghent University	Belgium	Sustainable Materials Engineering
International Institute of Management in Paris	France	Management in SD
Divulgazione Dinamica School in Seville	Spain	SD and Social Education
Mid Sweden University in *Östersund*	Sweden	Ecotechnology and SD
Asian Institute of Technology in *Rangsit*	Thailand	Climate Change and SD
South East European University in Skopje	North Macedonia	Energy Management and SD
Australian National University	Australia	Environmental Management and Development
MODUL University Dubai	UAE	SD, Management and Policy
Urban University in Dublin	Ireland	SD Management
Norwegian *University of Life Sciences*	Norway	Environment and Natural Resources – specialization in sustainable water and sanitation, health and development
University INSEAD	France	European Operations Management of SD
Swedish University of Agricultural Sciences	Sweden	SD
University of Greenwich in London	UK	Agriculture for SD; Sustainable Building Design and Engineering

Source: Research by Dr. P. Penchev (2020).