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PARTNERSHIP BETWEEN TECHNICAL UNIVERSITIES FOR PROMOTING KNOWLEDGE ABOUT SUSTAINABILITY STANDARDS WITHIN THE HIGHER EDUCATION CURRICULUM

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ПАРТНЕРСТВО ТЕХНІЧНИХ УНІВЕРСИТЕТІВ ЩОДО ПРОСУВАННЯ ТЕМАТИКИ СТАНДАРТІВ СТАЛОГО РОЗВИТКУ В НАВЧАЛЬНІ ПРОГРАМИ ВИЩОЇ ОСВІТИ

Purpose. Presented research is focused on the issue of integrating knowledge about sustainability standards into the higher education processes through the partnership between technical universities.

Methodology. The main conclusions in this article were elaborated based on the analysis of scientific literature on education for sustainable development, while also taking into account the results of a project on establishment of the International University Network ECO-Campus, which is currently carried out by the Brandenburg University of Technology Cottbus-Senftenberg jointly with the National Mining University.

Findings. ‘University partnership’ is understood as a specific form of cooperation in order to create, develop and promote advanced technologies and knowledge through education and research. For the purpose of promoting sustainable development, such partnership has specific characteristics: 1) it consolidates the management and support of a knowledge system on sustainable development; 2) it expands the potential of teaching based on principles of sustainability; 3) it creates the necessary conditions for the holistic approach to education based on the core values and fundamental needs of the society; 4) it is open to joining of new members to overcome information gaps in education; 5) it is supported by a variety of stakeholders, donors and funds sharing the same goal of promoting education for sustainable development.

Originality. The authors identified the unique nature and investigated the specific characteristics of partnership in the field of higher education for sustainable development.

Practical value. If realised, recommendations made in this article will contribute to the promotion of sustainable development within the curriculum of higher education.

Keywords: *sustainable development, higher education for sustainable development, university partnership*

Problem statement. Chapter 36 of Agenda 21 – adopted during the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, 3–14 June 1992 – emphasised that education is critical for promoting sustainable development and improving capacity of the people to address environmental and development issues [1]. Considering this mission, in December 2002, the UN General Assembly adopted resolution 57/254 on the Decade of Education for Sustainable Development (2005–2014) – ESD, which outlined the goals and objectives of all education levels to achieve a more sustainable and just society [2]. Universities must take on a leading role in building up the sustainability-related skills and behaviour, inspired by creative and critical ways of thinking, in order to come closer to the solution and management of problems standing in the way of sustainable development.

The ESD Monitoring and Evaluation Report ‘Shaping the Education of Tomorrow’, as well as the final document

of the United Nations Conference on Sustainable Development Rio + 20 (Rio de Janeiro, 20–22 June 2012) – ‘The Future We Want’ [3] emphasised that in many countries a genuine progress has been made through the networking and partnership linkages between universities for advancing knowledge about sustainable development and then integrating this new knowledge into curricula of traditional study programmes.

Identification of an unsolved problem. Currently Ukraine is undergoing a complete modernisation of its higher education system; the national higher education model is being changed from education for industrial society towards adaptation of an information society model. Along with this, technical universities should carry out their mission of disseminating knowledge on the formation of production systems and value chains based on the principles of sustainable development.

With the purpose of enhancing the capacity of sustainable production and consumption, various international organisations have developed and adopted frame-

work procedures for the incorporation of environmental and social aspects into the value creation processes, known as Voluntary Sustainability Standards (VSS). These instruments are used on a voluntary basis, as the name implies, and are aimed at establishing fundamentally new quality management systems geared towards the minimisation of environmental risks and social conflicts in production systems and market relations. In Ukraine the demand for knowledge about building the capacity for sustainable development on the basis of VSS exists in all priority areas [4].

Analysis of the recent research. A variety of papers provide a global overview of challenges, progress and opportunities for enhancing educational capacity of universities for sustainable development [5, 7–8]. The majority of authors agree that there is a need for promoting the leading national universities in their ratings, and for enhancing the employment opportunities of their graduates [6–7]. The researchers emphasise the importance of general humanistic priorities and universal shared values that should be acknowledged as the basis for the course curricula in universities [5–8]. A special attention is devoted to the development of new didactic approaches and methods for teaching students with major in economics about various aspects of sustainability [7–8]. In the recent years, Ukrainian academic community, including the National Mining University, is also becoming increasingly engaged in research on issues of sustainable development [8–9]. There is also a rising interest in the post-Soviet countries, such as Ukraine, in developing approaches and methods for adapting national higher education systems to the level of European universities, both in terms of the content of curricula and teaching practices (i. e. didactics).

Identification of the unsolved part of the general problem. Despite numerous discussions on education for sustainable development (ESD) at international, regional and local levels, there is a remaining need to examine this issue in greater detail in the context of the specific conditions of Ukrainian technical universities. In particular, such research should include analysis of methodology for integrating knowledge about sustainability standards into the learning and teaching process for students of non-environmental specialisation, such as economics, management and marketing, etc.

Formulation of the research aim and objectives. This research is focused on the issue of integrating knowledge about sustainability standards into the higher education processes through the partnership between technical universities. In this respect, this article pursues the following research objectives: 1) to identify the possible barriers to the integration of content related to sustainable development and sustainability standards into curricula of study programmes in economics; 2) to define the unique character and specific features of partnership in the field of higher education for sustainable development.

Research methodology. The main conclusions in this article were elaborated based on the content analysis of scientific literature on education for sustainable development in developed countries and countries with economies in transition. Also the results of a project on establishment of the International University Network ECO-Campus,

which is currently carried out by the Brandenburg University of Technology (BTU) Cottbus-Senftenberg jointly with the Institute of Economics of the National Mining University (NMU), were taken into account. Furthermore, the authors made references to the previous results of their own research in the field of sustainability standards and higher education for sustainable development.

Presentation of the research results. It is clear that the concept of higher education for sustainable development goes beyond the process of education in universities and touches upon all aspects of the social and institutional fabric. The origins of goals and the framework of contemporary higher education must be sought in the objectives and initiatives of the UN Conference on Environment and Development held in Rio de Janeiro, Brazil, in June 1992 (also known as the Earth Summit).

Agenda 21, a non-binding, voluntarily implemented action plan of the United Nations regarding sustainable development, which was adopted during this conference, is aimed at the harmonious achievement of a healthy and socially just market economy, while maintaining a high quality of the environment within its carrying capacity.

Chapter 36 of this document defines the triune function of universities as means of achieving these goals: 1) integration of knowledge about sustainable development into education; 2) raising awareness of nations; 3) promotion of professional training in the context of sustainability concept.

In this regard, it should be noted that ideas of higher education for sustainable development are actively promoted at the level of regions, countries, individual universities and their networks. For example, the first Regional Programme ‘The Strategy of Education for Sustainable Development’, which covers 55 countries in Europe, was adopted by the UN Economic Commission for Europe (UNECE) in 2005 [10].

A genuine progress has been made through implementation of the balanced set of sustainability principles in the framework of the United Nations Decade of Education for Sustainable Development [2]. According to these principles, the transmission of traditional knowledge must take into account the following factor: safeguarding and promotion of cultural and natural heritage (both tangible and intangible, immovable and movable) following a holistic approach; linkages between economic growth and biological diversity; goals of environmental safety and social well-being; the rights of indigenous people on the use of natural resources; advancement of a global and holistic approach to the notion of economic development.

A good example of the radical ecologisation of education at all levels can be seen in the experience of Latvia. Section VIII ‘Environmental Education’ of the Latvian Republic Law on Environmental Protection of 15.11.2006 prescribes ‘environment protection’ as an obligatory subject for all curricula of its state universities and colleges, and a course on sustainable development to be included in pedagogical universities and colleges as a compulsory module. A number of strategic documents forming a system of education for sustainable development at national level were also adopted by Great Britain, Sweden, Denmark, Finland, Germany, the Netherlands, Italy, USA and other countries [10].

In post-Soviet countries, similar actions are taken for the development of new educational approaches. For ex-

ample, in 2013 Ukraine adopted the National Strategy for the Development of Education until 2021, which declared the task of ecologisation and informatisation of the educational system, which would allow to train professionals with a new ecological way of thinking, who would be able to prevent environmental risks at all management and administration levels. Nevertheless, S. M. Kvit – the Minister of Education and Science of Ukraine – emphasised that the Ukrainian system of higher education is not developing intensively enough; the country does not have universities that are able to influence the national economy, to solve the fundamental technological and social problems [11].

Experience of the joint BTU/NMU project on the University Network ECO-Campus shows that inclusion of content related to sustainable development into the higher education curricula is an ambiguous and rather complicated process, especially when training students for the subsequent employment in the industrial sector of a country with transitional economy.

Analysis of the relevant regulations and scientific debates in Ukraine, Russia and other post-Soviet countries revealed that there is often a limited approach towards understanding of the educational reforms in the context of sustainable development. Often the teaching strategies for sustainable development are replaced by basic questions of environmental protection without clear understanding of the necessary types and scope of knowledge suitable for specific study programmes.

It should be emphasised that the focal point of environmental education is the formation of professional knowledge, skills and habits in the field of the environmental protection and nature conservation, i.e. management of natural resources, prevention of environmental risks and disasters, etc., as well as the development of a common environmental culture [8].

The essence of ‘greening the curriculum’ is largely associated with problems of the formation of knowledge about sustainable development, although objectives in this area require a broader and deeper answer. ‘Sustainable curriculum’ implies a large-scale penetration of ideas, concepts, principles and methods for managing knowledge about sustainable development through the integration of specialised modules or parts of modules into curricula of various non-environmental study programmes, such as management and economics, civil engineering, law, etc.

As noted by James L. Elder – Director of the Campaign for Environmental Literacy, USA – universities must help students understand the complex connections and interdependencies between energy security, environmental health, economic stability, and community well-being by infusing sustainability concepts into the teaching and curricula [11]. From this point of view, universities must implement methodological shift from traditional knowledge and skills transfer, necessary for professional activity, to the integration of knowledge required for exercising professional activities based on principles of sustainability and the best international practice.

Analysis of the accumulated theoretical knowledge and empirical practice of different universities has revealed three main approaches to the integration of sustainable development concepts into curricula of non-environmental

study programmes that include disciplinary, multidisciplinary and interdisciplinary principles [6–12].

Disciplinary approach is realised by introducing one or more courses focused on the environmental protection and/or other sustainability issues into the curriculum. In this case, issues of sustainable development are included into the curriculum, but they are not integrated into the basic disciplines, and, therefore, the link between professional activities and sustainable development is not provided.

However, the complex nature of contemporary challenges requires inputs from several disciplines during education, placing emphasis on a truly intersectoral and interdisciplinary approach, which eventually constitutes the main comparative advantage of education for sustainable development. Interdisciplinary approach implies the development or ‘upgrading’ the basic courses making up a study programme specialisation by integrating and concurrent reflection in their curricula of various principles and instruments for sustainable development. This approach involves the integration of individual themes or thematic blocks related to sustainable development into all basic disciplines in accordance with the core curriculum. And such approach provides a link between future profession and the best practice of performing professional functions in accordance with principles of sustainable development.

A number of international organisations developed a variety of international (voluntary) sustainability standards (VSS), including sectoral and cross-sector initiatives and codes of good practice for certain business activities. Such standards contain the set of schemes and rules defining the principles and criteria for sustainable (responsible) conduct of businesses. Currently, VSS are becoming a significant element in international trade and in the promotion of sustainable development strategies, especially in the context of globalised markets and global value chains [4]. Ecolabel Index – the largest global directory of sustainability standards and ecolabels – lists currently (as of March 2016) 463 ecolabels in 199 countries, and 25 industry sectors (see more on www.ecolabelindex.com). Considering the global significance of VSS it can be argued that today’s students and future professionals must obtain knowledge from universities of how VSS can be used in order to promote sustainability in their field of specialisation.

Our research conducted at the Institute of Economics of the NMU showed that the topic of VSS is not considered during the development of university curricula; also there is no discussion on how to fill in the gaps in knowledge about sustainability practices. The results of our research and review of publications on experience of other technical universities revealed that the obstacles to the integration of sustainability-related subjects into the curricula can be also attributed to the lack of accurate, complete and up-to-date information on instruments for sustainable development in the particular professions.

In the framework of the Decade of Education for Sustainable Development, UNESCO fully recognised the benefits of universities partnership in the promotion and equitable application of the research results in the field of professional application of instruments for sustainable development [13]. Partnerships, consortiums and networks of universities should become a key mechanism for the

modernisation and upgrading the quality of education and dissemination of knowledge on sustainability [14].

Currently, in the framework of its development strategy, NMU participates as a member in several international educational and training programmes, including the partnership with Universities from the EU and USA, Tempus projects, etc. NMU is involved in various projects devoted to modernisation of curricula according to the Bologna System and European standards. But unfortunately such cooperation and development plans were either little or not related to the subject of sustainability standards.

The turning point was the project on establishment of the International University Network ECO-Campus for cooperation in the field of greening the curricula and development of e-learning, which was initiated during the International Forum of Universities on 28–29 November 2013 in Dnipropetrovsk (Ukraine). The event was launched in the framework of the cooperation between NMU, BTU and the German Society for International Cooperation (GIZ), in order to promote the thematic field of sustainable development within the higher education curricula and to support the networking and collaboration between technical universities.

Memorandum of Understanding was adopted during the Forum by leaders of 20 universities from Ukraine, Russia and Kazakhstan, including National Mining University (Ukraine), Prydniprov'ska State Academy of Civil Engineering and Architecture (Ukraine), National Metallurgical Academy of Ukraine, Donetsk National Technical University (Ukraine), Zhytomyr State Technological University (Ukraine), Dniprodzerzhynsk State Technical University (Ukraine), Priazovsky State Technical University (Ukraine), Kazakh National Technical University after K.I. Satpaev (Kazakhstan), Tula State University (Russia), Moscow State Mining University (Russia), South-Russian State Technical University (Russia), etc.

The ECO-Campus Network seeks to raise awareness of all academic staff and students about sustainability problems to facilitate scientific debates and a search for solutions for these problems. In order to support the partnership, BTU with the support of GIZ has developed the e-learning platform ECO-Campus, which provides the technical basis for cooperation and exchange of information for the stronger integration of sustainability-related subjects into the curricula of participating universities.

The e-learning platform ECO-Campus is based on an internationally popular open source software solution Moodle and acts as a communication centre, through which various learning materials are provided to students. ECO-Campus therewith sets the basis for integrating various subjects that pursue environmentally and socially sustainable way of thinking, planning, action and decision making into the curriculum of regular courses in a form of 'blended learning'.

The two-year collaboration experience within the University Network gave us an opportunity to highlight the unique character and specific features of partnership in the field of higher education for sustainable development:

1. All partners benefit from such cooperation: the partnership consolidates the management and support of a knowledge system on sustainable development, brings improved efficiency and cost savings, and also streamlines the exchange of information in an integrated manner.

2. Expansion of activities: universities are encouraged to launch similar initiatives and to engage in policy processes by working in partnership with ministries of education and various non-governmental organisations, to expand the potential of teaching based on principles of sustainability.

3. Reformist character – the Network has been established to create the necessary conditions for the holistic approach to education based on the core values and fundamental needs of the society.

4. Constructive consolidation and openness – the partnership is open to new members with the same vision of education for sustainable development to overcome information gaps.

5. Financial support – to help partnership perform its role to the fullest extent, universities seek for support by a variety of stakeholders, donors and funds sharing the same goal of promoting education for sustainable development.

Research conclusions and outlook. University partnership is understood as a specific form of cooperation in order to create, develop and promote advanced technologies and knowledge through education and research. Within the partnership framework each university makes an invaluable contribution to the sustainable development of the region, the country and the global community. At the same time universities share a joint responsibility to enhance the understanding of sustainable development. In this direction, the partnership should be one of the main mechanisms for the modernisation and upgrading the quality of education, promoting the ideas of sustainability.

For the purpose of promoting sustainable development, such partnership has specific characteristics: 1) it consolidates the management and support of a knowledge system on sustainable development; 2) it expands the potential of teaching based on principles of sustainability; 3) it creates the necessary conditions for the holistic approach to education based on the core values and fundamental needs of the society; 4) it is open to joining of new members to overcome information gaps in education; 5) it is supported by a variety of stakeholders, donors and funds sharing the same goal of promoting education for sustainable development.

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Мета. Дослідження зосереджено на проблемі інтеграції знань про стандарти сталого розвитку у процеси вищої освіти у форматі партнерства технічних університетів.

Методика. Основні висновки були зроблені на основі аналізу наукових робіт щодо освіти в інтересах сталого розвитку, а також з урахуванням результатів міжнародного проекту “Створення міжнародної мережі університетів ЕСО-Campus”, що здійснюється у Бранденбургському технічному університеті Коттбус-Зенфтенберг спільно з Національним гірничим університетом. Крім того, автори використовували результати власних попередніх досліджень в області проблем вищої освіти в інтересах сталого розвитку.

Результати. Партнерство університетів розуміється як специфічна форма співпраці з метою створення, розвитку та просування передових технологій і знань за допомогою освіти та просвітництва. Для цілей сталого розвитку це партнерство має специфічні властивості: 1) партнерство об’єднує управління й технічне обслуговування у формуванні системи знань в області сталого розвитку; 2) партнерство розширює можливості навчання на засадах сталого розвитку; 3) партнерство створює необхідні умови для комплексного підходу до освіти на основі базових цінностей і основних потреб суспільства; 4) партнерство відкрите для вступу нових членів задля подолання інформаційного розриву у сфері освіти; 5) співробітництво буде підтримуватися з боку різних зацікавлених сторін і фондів фінансової підтримки освіти.

Наукова новизна. Автори дослідили та визначили унікальний характер і специфічні риси партнерства в галузі вищої освіти в інтересах сталого розвитку.

Практична значимість. Реалізація висновків і рекомендацій сприятиме просуванню тематичних областей сталого розвитку в університетські програми вищої освіти.

Ключові слова: сталий розвиток, вища освіта для сталого розвитку, партнерство університетів

Цель. Исследование сосредоточено на проблеме интеграции знаний о стандартах устойчивого развития в процессы высшего образования в формате партнерства технических университетов.

Методика. Основные выводы были сделаны на основе анализа научных работ по образованию в интересах устойчивого развития, а также с учетом результатов международного проекта “Создание международной сети университетов ЕСО-Campus”, что осуществляется в Бранденбургском техническом университете Коттбус-Зенфтенберг совместно с Национальным горным университетом. Кроме того, авторы использовали результаты собственных предыдущих исследований в области проблем высшего образования в интересах устойчивого развития.

Результаты. Партнерство университетов понимается как специфическая форма сотрудничества в целях создания, развития и продвижения передовых технологий и знаний посредством образования и просвещения. Для целей устойчивого развития это партнерство имеет специфические свойства: 1) партнерство объединяет управленческие и технические обслуживание в формировании системы знаний в области устойчивого развития; 2) партнерство расширяет возможности обучения на принципах устойчивого развития; 3) партнерство создает необходимые условия для комплексного подхода к об-

разованию на основе базовых ценностей и основных потребностей общества; 4) партнерство открыто для вступления новых членов для преодоления информационного разрыва в сфере образования; 5) сотрудничество будет получать поддержку за счет содействия различных заинтересованных сторон и фондов финансовой поддержки образования.

Научная новизна. Авторы исследовали и определили уникальный характер и специфические черты партнерства в области высшего образования в интересах устойчивого развития.

Практическая значимость. Реализация выводов и рекомендаций будет способствовать продвижению тематических областей устойчивого развития в университетские программы высшего образования.

Ключевые слова: устойчивое развитие, высшее образование для устойчивого развития, партнерство университетов

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FUNCTIONS OF VOLUNTARY SUSTAINABILITY STANDARDS IN THE GLOBAL VALUE CHAINS

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ФУНКЦІ ДОБРОВІЛЬНИХ СТАНДАРТІВ СТАЛОГО РОЗВИТКУ У ГЛОБАЛЬНИХ ЛАНЦЮЖКАХ СТВОРЕННЯ ВАРТОСТІ

Aim. The aim of the presented research is to define the key functions of voluntary sustainability standards for strengthening the sustainability aspect in global value and supply chains. To achieve this aim the following objectives were formulated: 1) to analyse the current trends and developments in the global value chains; 2) to determine the nature of international sustainability standards and procedures for their realisation; 3) to identify the main fields of application of voluntary sustainability standards that are particularly important for countries with economies in transition.

Methodology. The main findings and conclusions in this article were elaborated based on the analysis of scientific papers and analytical reports dealing with the problem of strengthening sustainability in the global value and supply chains, as well as on the influence of the globalisation processes on structure of business activities in various countries. Furthermore, the authors made references to the previous results of their own research on voluntary sustainability standards as a management tool.

Findings. The study revealed that implementation of voluntary sustainability standards allows a consistent introduction of uniform types of priorities and responsibility along the whole value chain of a product. Four areas of application of voluntary sustainability standards were emphasised, which are particularly important for countries with economies in transition: 1) strengthening of responsibility along the entire value and supply chains; 2) formation of a basis for the improved management and extended dialog with the most promising partners in domestic and external markets; 3) re-orientation towards innovations and a search for the own part in division of labour; 4) restructuring of internal development policy.

Analysis of formal objectives and attributes of voluntary sustainability standards allowed to determine their following functions: regulation, sustainability management, risk management and communication. Several regulatory procedures enable these functions: conformity assessment, eco-labelling, traceability systems and capacity building services.

Originality. Authors suggested several key areas for utilising voluntary sustainability standards as a management tool in countries with transitional economies.

Practical value. Realisation of the suggested recommendations will promote the extended use of sustainability standards for achieving sustainable production and supply chains.

Keywords: *global value and supply chains, sustainable management of global value chains, international voluntary sustainability standards*