

**10 грудня 2019 р.** Вчені НТУ «Дніпровська політехніка» взяли участь у наукових дослідженнях, що проводилися в рамках міжнародного наукового проекту за ініціативою Бранденбурзького технічного університету Коттбус-Зенфтенберг (Німеччина) за підтримки Німецького товариства з міжнародного співробітництва – GIZ. Результати дослідження були опубліковані в спільній монографії «Sustainable Global Value Chains» (Natural Resource Management in Transition Book 2) [Eds.: Schmidt, M., Giovannucci, D., Palekhov, D., Hansmann, B.] 1st ed. 2019, виданої видавництвом Springer.

**10 December, 2019.** The scientists of the National TU Dnipro Polytechnic took part in scientific research, that was within the framework of the international scientific project on the initiative of the Brandenburg University of Technology Cottbus–Senftenberg (Germany) with the support of the German Society for International Cooperation - GIZ. The research results were published as the joint monograph "Sustainable Global Value Chains" [Eds.: Schmidt, M., Giovannucci, D., Palekhov, D., Hansmann, B.] by Springer.



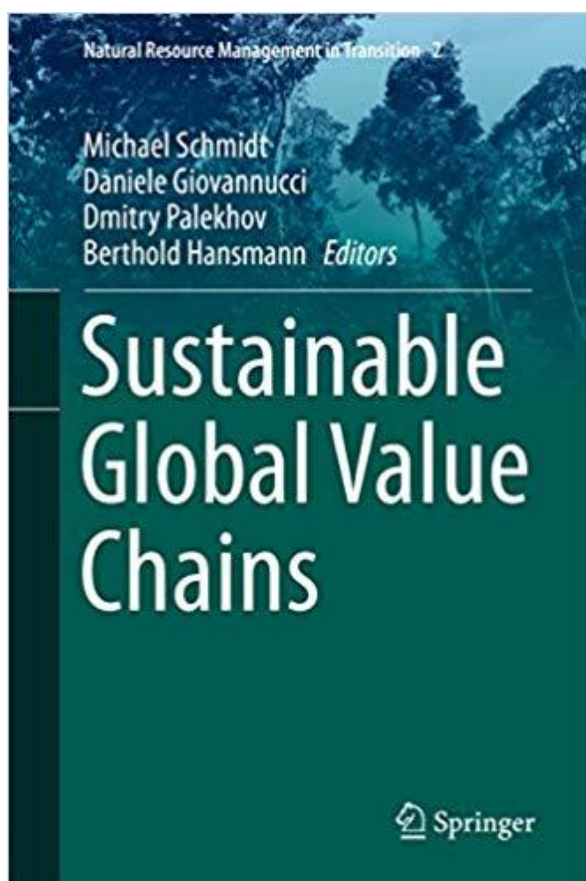
## Детальніше

Вчені НТУ «Дніпровська політехніка» взяли участь у наукових дослідженнях, що проводилися в рамках міжнародного наукового проекту за ініціативою Бранденбурзького технічного університету Коттбус-Зенфтенберг (Німеччина) за підтримки Німецького товариства з міжнародного співробітництва – GIZ.

Результати дослідження були опубліковані в спільній монографії «Сталий розвиток у глобальних ланцюгах створення вартості» видавництвом Springer (Sustainable Global Value Chains / Natural Resource Management in Transition, Book 2. [Eds.: Schmidt, M., Giovannucci, D., Palekhov, D., Hansmann, B.]. Springer; 1st ed. 2019 edition).

Книга була видана завдяки зусиллям відомих вчених з більш сорока університетів світу, у тому числі зі США, Італії, Швеції, Німеччини, Нідерландів, Швейцарії, Кореї, Франції, Великобританії та ін.

Від України в монографії взяла участь **доцент кафедри маркетингу Л.Л. Палехова**. За її співавторством книга містить дві глави: «Відповідальна гірничодобувна діяльність: виклики, перспективи та підходи» та «Зміна парадигми університетської освіти відповідно до завдань сталого розвитку».



## Foreword

Sustainability sits at the heart of the European Union (EU) policy priorities, and its three pillars (social, environmental, and economic) are reflected in both its internal and external policies. Sustainability is no longer considered a luxury, it establishes the foundations for a society that meets its needs, without compromising the ability of the next generations to meet their needs. Doing so will require breaking the link between economic growth and environmental degradation. This is the task the world set itself when it adopted the 2030 Agenda for Sustainable Development in 2015, including the Sustainable Development Goals (SDGs). The sustainable management of natural resources is a vital aspect of these SDGs—indeed 12 of the 17 Goals are directly linked to it. In particular, in its external cooperation policies, the EU actively contributes to the eradication of poverty, which is mainly addressed in SDG 1, through sustainable development measures. And we are well aware of the close link between improved natural resources management and poverty reduction.

Sustainability is essential to both businesses and consumers, and we are reinforcing our work with governments to ensure that sustainability considerations are reflected in EU cooperation programmes and in local governance systems. Both consumers and investors are increasingly keen to promote sustainability in their consumption and production patterns; it is clear that governments have a role in helping them reach sustainable decisions through the provision of information and analysis regarding sustainability.

Voluntary standards represent an important tool in our toolbox to support such sustainable decision-making. These non-governmental schemes respond to the demand for sustainably-produced products, but also seek to create a supply of such products, in addition to raising greater awareness of sustainability issues. Among a broad spectrum of sustainability-related subjects, this publication contributes to a better understanding of how voluntary standards can contribute to generally more sustainable global value chains. I warmly recommend it as a reference document for interested parties.

**Dr. Leonard Mizzi**  
European Commission, Directorate-General (DG) for International Cooperation and Development (DEVCO), Head of Unit for Rural development, food security and nutrition

<b>25 Sustainability in the Banana Sector – Development and Success Factors of the German Action Alliance for Sustainable Bananas.....</b>	<b>467</b>
<i>Alexandra Kessler and Christoph Hermann</i>	
25.1 Introduction.....	467
25.2 The Global Banana Sector.....	468
25.3 Existing Initiatives.....	472
25.4 Multi-Stakeholder-Approach of the Action Alliance for Sustainable Bananas.....	475
25.5 Conclusions and Recommendations.....	480
<b>26 Forest Stewardship Council: Transforming the Global Forestry Sector.....</b>	<b>485</b>
<i>Amparo Arellano Gil, Thomas Colonna, John Hontelez, Marton Karmann and Anakarinya Pérez Oropeza</i>	
26.1 Introduction.....	485
26.2 Introduction to FSC Certification.....	485
26.3 Case Studies from Portugal as Examples of Sector Transformation.....	489
26.4 Outlook.....	496
<b>27 Recent Experiences from the Natural Rubber Industry and its Movement towards Sustainability.....</b>	<b>503</b>
<i>Edward Millard</i>	
27.1 Introduction.....	503
27.2 The Natural Rubber Industry.....	504
27.3 Social and Environmental Issues.....	510
27.4 Movement towards Sector Transformation.....	514
27.5 Conclusion.....	520
<b>28 Responsible Mining: Challenges, Perspectives and Approaches.....</b>	<b>525</b>
<i>Dmitry Palekhov and Ludmila Palekhova</i>	
28.1 Introduction.....	525
28.2 Understanding the Concept of Responsible Mining.....	527
28.3 Overview of the Extractive Industries Transparency Initiative (EITI).....	532
28.4 Prospects for the Implementation of the IRMA Standard in Countries with Economies in Transition.....	539
28.5 Conclusions and Recommendations.....	542
<b>29 Responsible Gold Mining at the Artisanal and Small-Scale Level: A Case Study of Ghana.....</b>	<b>549</b>
<i>Kenneth Bedu-Addo, Dmitry Palekhov, David J. Smyth and Michael Schmidt</i>	
29.1 Introduction.....	549
29.2 Historical Perspective and Current Challenges of Ghana's Mining Industry.....	550

## 28 Responsible Mining: Challenges, Perspectives and Approaches

Dmitry Palekhov<sup>1</sup> and Ludmila Palekhova<sup>2</sup>

- 1 Department of Environmental Planning, Brandenburg University of Technology Cottbus-Senftenberg (BTU), Germany
- 2 Institute of Economics, National Technical University "Dnipro Polytechnic", Dnipro, Ukraine

### 28.1 Introduction

There is no doubt that in the foreseeable future the world economy will continue to grow at the expense of an increased consumption of metals, fossil fuels and mineral resources extracted from the earth's crust. At the same time, numerous studies conducted by international non-governmental organisations (NGOs) confirm an apparent contradiction between the basic values of society and mining practices at all management and decision-making levels (World Economic Forum 2016b). The problems related to extractive industries have become a significant obstacle to the systemic implementation of sustainable development principles in the world economy and international trade.

To begin with, the largest and the most influential mining companies are still primarily oriented towards business performance, while paying insufficient attention to their social responsibility in the field of industrial and occupational safety as well as environmental protection (Goodland 2012; Maier et al. 2014; Bice 2016). Mining operations continue even if they create threats for human health and the environment. According to the International Labour Organization (ILO), mining accounts for ca. 1 % of the world's workforce, but at the same time it is responsible for about 8 % of fatal accidents at work (ILO 2018). Further ore, mining companies show a lack of transparency and accountability in their activities, which often leads to the infringement of the rights of local communities, especially with regards to their participation in decision-making on the use, management and protection of natural resources (Palekhova 2016; Darling 2017; Arthur et al. 2017).

Given the complexity of the challenges, a series of regional and international round tables and conferences have been conducted to discuss and elaborate effective measures for fairer governance in the mining sector. Based upon the modern understanding of sustainable development, examples of best practice and consultations with a wide range of stakeholders, NGOs have developed a number of global guidelines for increasing the responsibilities of the mining industries. In particular, in 2010, the Global Reporting Initiative (GRI) Secretariat under the direction of

<b>38 A Paradigm Shift in University Education towards Sustainable Development.....</b>	<b>713</b>
<i>Dmitry Palekhov, Ludmila Palekhova, Michael Schmidt and Berthold Hansmann</i>	
38.1 Introduction.....	713
38.2 Historical Evolution of Higher Education for Sustainable Development.....	715
38.3 Challenges relating to Education for Sustainable Development in Ukrainian Technical Universities.....	722
38.4 Conclusions and Recommendations: Leadership Strategy for Sustainability.....	728
<b>Subject Index.....</b>	<b>737</b>

## 38 A Paradigm Shift in University Education towards Sustainable Development

Dmitry Palekhov<sup>1</sup>, Ludmila Palekhova<sup>2</sup>, Michael Schmidt<sup>1</sup> and Berthold Hansmann<sup>3</sup>

- 1 Department of Environmental Planning, Brandenburg University of Technology Cottbus-Senftenberg (BTU), Germany
- 2 Institute of Economics, National Technical University "Dnipro Polytechnic", Dnipro, Ukraine
- 3 Division Climate Change, Rural Development, Infrastructure, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Eschborn, Germany

### 38.1 Introduction

'Higher Education for Sustainable Development' (HESD) is a new social phenomenon, which has grown naturally out of global efforts to implement the Sustainable Development Goals (SDGs) and is the result of a continuous evolution of the basic concept 'Education for Sustainable Development' (ESD).

Having adopted the Agenda 21 at the United Nations Conference on Environment and Development in 1992 in Rio de Janeiro, also known as the Earth Summit or the Rio Summit, the participating states agreed that "education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues" (Agenda 21, chapter 36; UN 1993, p. 439). Chapter 36 of Agenda 21 does not explicitly define ESD, but it rather outlines general programme areas for education supporting the transition to sustainability, including the following: (1) reorienting education towards sustainable development (36.3); increasing public awareness (36.8); and promoting training (36.12). Furthermore, the document briefly defines the role of universities in this process. It mentions that universities should: support environmental and development education; offer cross-disciplinary courses available to all students; promote research and develop common teaching approaches on sustainable development; and facilitate knowledge exchange, especially in the field of technologies and know-how (36.5.i).

Over the years, numerous international and regional forums have been working on policy guidelines and practical support measures aimed at systemic changes in higher education in the context of established priorities for sustainable development. A number of thematic studies show that the recommendations adopted by such forums, especially under the aegis of the United Nations, have found support from many governments and organisations (e.g. Tilbury 2012; Tilbury 2013; Barth 2015; Lozano et al. 2015; Leal Filho et al. 2017; Owens 2017).