

The background of the cover is a complex, abstract line drawing in a light beige color on a dark teal background. It features various geometric shapes, including circles, arcs, and polygons, some of which are filled with patterns like hexagons or dots. The lines intersect to form a network-like structure, reminiscent of a technical drawing or a conceptual map.

Routledge Open Business and Economics

ORGANIZING SUSTAINABLE DEVELOPMENT

Edited by
Aneta Kuźniarska, Karolina Mania
and Monika Jedynak



Organizing Sustainable Development

The role and meaning of sustainable development have been recognized in the scientific literature for decades. However, there has recently been a dynamic increase in interest in the subject, which results in numerous, in-depth scientific research and publications with an interdisciplinary dimension. This edited volume is a compendium of theoretical knowledge on sustainable development. The context analysed in the publication includes a multi-level and multi-aspect analysis starting from the historical and legal conditions, through elements of the macro level and the micro level, inside the organization.

Organizing Sustainable Development offers a systematic and comprehensive theoretical analysis of sustainable development supplemented with practical examples, which will allow obtaining comprehensive knowledge about the meaning and its multi-context application in practice. It shows the latest state of knowledge on the topic and will be of interest to students at an advanced level, academics and reflective practitioners in the fields of sustainable development, management studies, organizational studies and corporate social responsibility.

Aneta Kuźniarska is an assistant professor in the Department of Strategic Management at Jagiellonian University, Poland.

Karolina Mania is an assistant professor in the Department of Strategic Management at Jagiellonian University, Poland.

Monika Jedynak is an assistant professor in the Department of Strategic Management at Jagiellonian University, Poland.

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Organizing Sustainable Development

**Edited by
Aneta Kuźniarska, Karolina Mania
and Monika Jedynak**

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Contributors

Katarzyna Filipowicz, PhD in Economics, is an assistant professor in the Department of Mathematical Economics, Jagiellonian University. Her research interests are mathematical models of economic growth and the spatial differentiation of economic development.

Giulia Flamini, PhD, is currently a research fellow in the Department of Management and Law, Tor Vergata University. Her research interests include organization design and human resource management, with a special interest in the new concepts of sustainability. Giulia is now a professor for the courses on Business Organization and Human Resource Management Strategy in the Family Business in Business Administration at the School of Economics of Tor Vergata University.

Paolo Gaiardelli is an associate professor in the Department of Management, Information and Production Engineering, University of Bergamo. His main teaching and research subjects focus mainly on production and service management, with a specific interest in lean management. Recently, his research interests have expanded to exploring the role of lean thinking with reference to major trends in industrial operations. In particular, he is studying how the integration of lean and Industry 4.0 paradigms promotes the design, development and management of sustainable Product-Service Systems.

Marcin Geryk is a researcher at the rank of Professor at the Faculty of Management and Social Communication, Jagiellonian University. His main scientific interests are the higher education market and issues related to the social responsibility of universities. He is the author of over 80 scientific publications regarding, among others, strategic university management, the role of stakeholders in education and the intellectual capital of universities. He also carried out scientific projects on private universities in Poland. He is the founder of two private universities, namely, Gdańsk College of Health and Warsaw College of Health and Engineering.

Luca Gnan is a full professor of Organizational Behaviour at Tor Vergata University. He is also Professor Honoris Causa at the University American College at Skopje (UACS). He is the president of the Italian Association for Organization Studies (ASSIOA) and the past president of the European Academy of Management (EURAM). He is a member of the Central Evaluation Committee of the Tor Vergata University and a board member of the Tor Vergata World University. He is and has been involved in various academic and public associations, including Membership of the Education Ethics Executive Committee of AOM (Academy of Management), AOM BPS Division Representative for Europe, AOM OMT Division Research Committee, Vice-President and Executive Director of EURAM (European Academy of Management), Review Board Member of FERC (Family Enterprise Research Conference), Sub-theme Convenor of EGOS (European Group of Organizational Studies) and Stream Chair of CMS (Critical Management Studies). He is also a Scientific Committee Member of the Master on Internationalization “CorCE Fausto De Franceschi” of the Italian International Trade Institute, responsible for Strategy and Organization. Luca Gnan is editor-in-chief of the *International Journal of Transition and Innovation Systems* and is a guest editor of various journals.

Monika Jedynak is an assistant professor at the Institute of Economics, Finance and Management, Jagiellonian University, Krakow. Her scientific interests focus on inter-organizational cooperation, in particular socially responsible cooperation. A new direction of research is the processes of digital transformation of organizations, the formation of digital identity of organizations and the role of social media in these processes.

Malgorzata Kutera, PhD, is an assistant professor at Jagiellonian University. She is an experienced academic lecturer in financial accounting, audit, financial reporting standards, tax optimization and creative accounting. She is a certified public accountant (CPA) with 20 years of experience auditing entities' financial statements from various sectors, including companies listed on EU-regulated markets. Currently, she participates in the work of the Polish Audit Oversight Agency – an institution that controls the activities of statutory auditors in Poland. She is a member of the European Accounting Association (EAA), International Federation of Accountants (IFAC), European Finance Association (EFA), International Association for Accounting Education & Research (IAAER) and the Polish Chamber of Statutory Auditors (PIBR). She conducts consulting and training activities for statutory auditors, financial directors, chief accountants and judges (mainly in the field of economic crimes). The scientific specialization includes financial audit, theoretical and practical aspects of auditing financial statements, the activity of statutory auditors, methodology of verification processes, economic fraud, financial and accounting fraud, intentional manipulations related to creative

accounting, tax optimization, activities of tax havens, practical aspects of tax law, financial reporting of enterprises, financial accounting in the national and international perspective, financial analysis and assessment of the condition of enterprises.

Aneta Kuźniarska, PhD in Management and Quality Sciences, is an assistant professor at Jagiellonian University, Krakow. Her research interests focus on the topics connected with Human Resource Management (HRM), with particular research in the area of sustainable personnel and green HRM. She is also an academic teacher in full-time studies, part-time studies and postgraduate studies and the author of papers in the fields of sustainable management and HRM.

Zofia Łapniewska is an economist and a feminist. She is a senior lecturer at the Institute of Economics, Finance and Management, Jagiellonian University, Kraków, Poland. In the years 2012–2016, she worked abroad as a postdoctoral researcher among others at the Humboldt University in Berlin and the London School of Economics and Political Science, where she conducted research on commons and energy cooperatives. Her current research interests are in feminist and ecological economics.

Judyta Lubacha is a researcher and works as an assistant professor in the Department of Economics and Innovation, Jagiellonian University, Krakow, Poland. Her research focused on sustainable development and innovative activities. She is a recipient of many scholarships and research grants: the PRELUDIUM grant financed by the National Science Centre; the DAAD Research Grant for PhD students and young scientists; the Polish National Bank Research Scholarship for PhD students; and the Special Award of the Minister of Regional Development in the competition of master's theses "Now Poland Promotion".

Karolina Mania, PhD in Law, is an assistant professor at the Institute of Economics, Finance and Management, Jagiellonian University, and she is an attorney-at-law. She received several prestigious research grants: The National Science Centre, The Kosciuszko Foundation scholarship, SYLFF Research Abroad and The Ryoichi Sasakawa Young Leaders Fellowship Fund Program. She is an expert in funding programmes and tenders managed by the European Commission and other EU bodies in the field of Internet law and ODR. Since 2019, she is the President of the Kosciuszko Foundation Alumni Association. She is the author of a monograph on online dispute resolution (ODR) "Internet domain as the object of amicable settlement of disputes" (Wolters Kluwer Polska, 2016) and multiple papers on the use of electronic communication in a legal sector and legal technology. Her field of research includes internet law, e-Commerce, alternative dispute resolution, online dispute resolution, legal management and legal technology.

Ewa Mazur-Wierzbicka is a professor at the Faculty of Economics and Management, Institute of Human Capital Management, University of Szczecin. She specializes mainly in the field of corporate social responsibility (CSR) (with emphasis on diversity management, ethical and equality-related actions), sustainable development and human capital management. She also deals with the issues of soft competences. She is a member of the Expert Forum of the European Institute for Gender Equality, which mandates a period of 01.12.2018–30.11. 2023. She is an expert in the field of CSR – external expert of the Responsible Business Forum. University of Szczecin’s plenipotentiary to the Technical Committee no. 305 for Social Responsibility operating at the Polish Committee for Standardization, advisor of the Polish Agency for Enterprise Development in terms of CSR. She is the initiator and chair of the cycle of seminars and conferences titled “Corporate social responsibility – the management and economy perspective” associating both researchers and business practitioners. She is an expert of the Polish Accreditation Committee and a business consultant. She cooperates with practitioners in the field of management, training companies and institutions.

Damiano Petrolo, PhD, is a research fellow at Eastern Piedmont University. He graduated with a PhD in Business Economics from the University of Rome “Tor Vergata” and in Business Economics from Hasselt University. His main research interests include, but are not limited to, professionalization and managerialization in family firms, team dynamics and servitization in the automotive sector. Since 2020, he has been the Communication Officer of the Entrepreneurship Strategic Interest Group (SIG) of the European Academy of Management (EURAM), and since 2021, together with a team of young researchers from the Entrepreneurship SIG, he has been a co-organizer of the EURAM SIG Entrepreneurship Paper Development Workshop Series.

Prof. Jerzy Rosiński (PhD) psychologist, PhD and habilitation in management, professor at the Institute of Economics, Finance and Management of the Jagiellonian University, director of the Institute since 2016; Trainer and management consultant with over 25 years of experience. He conducts academic classes and trainings mainly in the field of negotiations, result-oriented communication in the subordinate superior relationship, managing teams in the process of organizational changes, managing teams of specialists and building relationships with clients. He is the author and co-author of books on organizational behaviour, conducting international negotiations, postgraduate training of managers and consumer behaviour. He is the author of over 80 scientific articles in Polish and English, including several articles on competence development, adult development and building competence systems. He is also the substantive editor of Polish editions of books on personnel management, project management and a comprehensive handbook on conflict resolution (*Handbook of Conflict*).

Monika Sady, PhD, is an assistant professor in the Department of Public Management, and earlier in the Department of International Management, at Krakow University of Economics. She is also a guest lecturer at universities in Spain, France, Georgia and the United States. She is the Head of Social and Environmental Development Unit and the Project Manager of “CUE available to everyone” sponsored by the National Centre for Research and Development, which focuses on university availability for people with disabilities. She is also an International MBA Program Director at the Cracow School of Business. She is the PRME Chapter Poland Steering Committee Plenipotentiary for Sustainability Mindset. She is a member of several European Union international scientific and educational projects in the fields of social entrepreneurship, MOOCs and start-up–corporate collaboration. She has a European Consultant of Social Economy certificate and is a member of numerous national initiatives for sustainable development, social responsibility and climate education. Her research interest lies in management, social responsibility, sustainability, ESG, stakeholder relations, social entrepreneurship, start-ups and lobbying. These are also her teaching, training and consultancy areas. She is a reviewer for several international journals and organizes international scientific conferences.

Lucrezia Songini is a full professor in the Department of Sustainable Development and Ecological Transition, University of Eastern Piedmont, where she is in charge of the courses of Servitization Strategy, Managerial Control Systems, Strategic Management in Family Businesses, Cost Management and Performance Management. She is the Rector’s delegate for Third Mission, and Director of the Linguistic Center, the Interuniversity Centre for Studies on Family Business and the Master in Servitization in Automotive Industry at the University of Eastern Piedmont. She is the representative for the University of Eastern Piedmont in the Management Council of the Inter-University Research Center on Innovation and Service Management in Industrial Enterprises. She is an affiliate professor at SDA Bocconi School of Management, a member of the Independent Evaluation Unit of the University of Insubria, an elected Chair of the Country Representatives Council, a member of the Board of European Academy of Management, a past chair of the SIG Entrepreneurship – EURAM, a member of the editorial and review board of the *Journal of Management and Governance* and an author of numerous publications, with publishers and in journals, both international and national (<https://iris.uniupo.it/> – “Songini”).

Izabela Stańczyk is a habilitated doctor of economic sciences in the discipline of management sciences and an associate professor at the Institute of Economics, Finance and Management, Jagiellonian University. She has extensive, several years of professional experience in HR in the capital group. The author’s scientific interest focuses on issues related to human resource

management, with particular emphasis on the perception of organizational support, employment shaping, employment restructuring, competence management, personnel consulting and new trends in HR. She is the author of several dozen works containing monographs and articles in this field published in Poland and around the world.

Magdalena M. Stuss is an academic and didactic employee at the oldest Polish university. She is an associate professor at the Institute of Economics, Finance and Management. Her scientific interests focus on the areas of human resource management in public organizations and enterprises, employer branding, organization of work in managerial positions, as well as searching for the relationship between human resource management and finance – human capital management in the practice of enterprises and contemporary management concepts. She wrote and participated in writing more than 120 scientific dissertations (scientific monographs, chapters and articles). She has participated in 38 research projects, both domestic and international, and conducted lectures and scientific research in 9 foreign universities. She is also the coordinator, tutor or supervisor within the framework of international programmes for students.

Olgiard Swiatkiewicz is a professor at the Setubal School of Technology – Polytechnic Institute of Setúbal, Portugal, and an international expert of the Polish Accreditation Committee. He earned his PhD in Management (Strategy) from Lusíada University of Lisbon; Master of Science in Organizational Behaviour from ISPA – University Institute of Lisbon; and Master of Science in Organization and Management from Warsaw University. Before joining the ESTS/IPS, he was the General Secretary at the Portuguese – Polish Chamber of Commerce and Industry in Portugal; Senior Assistant at CPK-PAP – Warsaw; and Research Assistant at the Institute of Industrial Design – Warsaw. For several years, he worked in trade and industry in Portugal and Sweden. He is a member of the EBEN – Portugal, the Learned Society of Praxeology – Poland, ALENE – Associação Latino-Americana de Ética, Negócios e Economia and IAM – Iberoamerican Academy of Management.

Katarzyna Wiktoria Syrytzyk is a research and teaching assistant in the Organizational Behaviour Unit, Department of Management and Social Communication, Institute of Economics, Finance and Management, Jagiellonian University. She is a graduate in economics and public administration. She has participated in scientific and research projects and authored research papers. Her areas of scientific interest are issues related to marketing, CSR and organizational culture.

Agnieszka Żak graduate of the Cracow University of Economics (MA) and the Jagiellonian University, Faculty of Management and Social Communication (PhD). PhD in economics in the field of management science (2008).

Assistant professor, employee of the Department of International Management at the Cracow University of Economics. Director of postgraduate studies in the field of “Enterprise management - MBA management studies” at the Cracow Business School of the Cracow University of Economics (since 2008). Research interests and article topics include: sustainable development, corporate social responsibility (CSR), corporate community involvement (CCI), cross - sector social partnerships, international management, intercultural communication. Social activities: Zaczytani.org Foundation - Coordinator in Krakow (since 2018).

Patrycja Zwiech is a professor in the Department of Human Capital Management, Faculty of Economics, Finance and Management, Institute of Management, University of Szczecin. She specializes mainly in socio-economic inequality, gender studies, discrimination in the labour market, business ethics and CSR (especially in social aspects). She is also interested in human capital management. She is a research fellow at the Working Lives Research Institute, London Metropolitan University, and at the Universite Jean Moulin, Lyon 3. She is a contractor in the grant “Development of the competitiveness of the labour market and its entities”, 6th Framework Programme, Marie Curie Action and Development Scheme. She received four individual awards from the Rector of the University of Szczecin for scientific achievements. She is a member of the Senate of the University of Szczecin for the term 2020–2024 and a member of the Anti-Mobbing Commission at the University of Szczecin for the years 2020–2024. She is the initiator and organizer of conference cycles titled “Human capital in enterprise and economy – management and economics” and “Corporate social responsibility – the management and economy perspective”.



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Introduction

Sustainable development is one in which the needs of the present generation are met while considering the needs of future generations. The concept has become increasingly important in recent decades as economic development has accelerated dramatically, leading to ecological imbalances. The philosophy also extends to newer and newer areas of the organization's functioning.

Calls for a change in the approach to economic development appeared as early as 1979 with the Report of the World Commission on Environment and Development: Our Common Future. The coherence of three key elements is necessary for sustainable development: economic growth, social inclusion, and environmental protection. They are interconnected and crucial to the well-being of individuals and societies. A better balance between the mentioned elements is to be ensured by the Sustainable Development Goals (SDGs) set out in the United Nations 2030 Agenda for Sustainable Development. They constitute a step forward in the development of the concept and eliminate some systemic barriers to sustainable development.

Sustainable development focuses not only on the environmental dimension. Its task is to meet challenges such as social inequalities, decent working and pay conditions, meeting basic human needs, and peace and justice. In a broader sense, it requires going beyond purely economic issues and considering both: fair working conditions and environmentally friendly production.

Sustainability is now an important challenge for companies. Since organizations have a significant impact on economic, social, and environmental issues, the implementation of sustainable development should include cooperation with stakeholders. As such, they face the challenge of developing new ways to create value for and with stakeholders and new ways to implement technical and socio-ecological changes. Changes in business models are fundamental in the context of implementing innovations for sustainable development.

Increasing emphasis on the activities of business entities for sustainable development and the need to inform about the effects of these activities is reflected in non-financial reporting. Various stakeholders, including investors, assess the long-term development potential of enterprises by analyzing this information.

2 *Introduction*

However, there is no standard specifying how to report – these can be short descriptions included in annual management reports or extensive, separate reports presenting very detailed data. Unfortunately, a reliable assessment of this information and its comparison between individual entities, even within the same industry, is very complicated. Identification of this problem leads to intensive work on standardizing non-financial reporting.

In light of the rapid degradation of the natural environment, the claim that the company's goal is only to maximize profit raises serious ethical concerns. The pursuit of profit, regardless of the consequences, harms both the environment and human interests and is contrary to sustainable development. Despite this, many organizations only declare the implementation of the concept and do not implement it in everyday activities. Profit maximization often comes at the expense of customers and the environment. Such an attitude is not only unethical but also against the principles of corporate social responsibility. Although the pro-ecological behavior of large corporations is slightly improving, the ecological awareness of citizens for the restoration of proper relations between nature and the interests of humanity is not sufficient.

This monograph is an attempt at a holistic description of the approach to sustainable development and its organization. It contains the characteristics of the elements defining sustainable development and its dimensions in both theoretical and practical aspects. Presentation of the concept in a synthetic way – from a purely definitional approach, through a historical description of its creation and implementation, to elements characteristic of implementation in organizations – is an undoubted value of this book. The advantage of the study is also the participation of many authors, selected thematically adequate to the research they conduct and their areas of interest. The authors come from various research centers in Poland and abroad, which makes the monograph present the issues of sustainable development in a cross-sectional way.

The first chapter focuses on sustainable development in historical and definitional terms. The three most important dimensions – social, economic, and environmental – are discussed, which are the pillars of the concept. This section also refers to CSR (Corporate Social Responsibility) as there is a link between these concepts.

The second chapter is a transition to the level of organization and socially and environmentally responsible activities that enterprises should undertake. Taking action at this level is a fundamental step toward implementing sustainable development guidelines. The chapter describes, among others, sustainable activities in the field of production, logistics, services, marketing, and indispensable human participation.

The third chapter focuses on the environment of the organization. The elements influencing sustainable development described in it, such as globalization, innovation, education, the influence of stakeholders, or multidimensional reporting, are important aspects affecting the way of perceiving, evaluating, and adjusting activities to market expectations.

Part 1

The concept of sustainable development



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1 Legal and historical aspects of sustainable development

Karolina Mania

Introduction

The role and meaning of sustainable development have been recognized in the scientific literature for decades (Paul, 2008). However, the latter has shown a dynamic increase in interest in the subject, which has resulted in numerous, in-depth scientific research and publications with an interdisciplinary dimension (Mensah, 2019).

The concept of sustainable development functions in the literature in economic, management, social, and legal contexts (Jabareen, 2008). In this chapter, the historical background of sustainable development will be described, showing the development of the subject, while analysing the specificity of the discussed issues of *multifarious* nature (Borowy, 2013). Moreover, the author will discuss the legal aspects of sustainable development in the context of international and European Union law. The issues of human rights, environmental law, and elements of constitutional law will be discussed, which will allow us to understand the meaning of legal provisions and their role in shaping sustainable development.

Sustainable development in the context of international law

Sustainable development is an economic development concept based on achieving economic goals while respecting the environment and social change (Parris, & Kates, 2003; Imran, Alam, & Beaumont, 2014). Its focus on the three types of capital – economic, human, and natural – allows it to be translated into many areas of human activity. The concept centres around not only the current state of society but also its future (Rogers, Jalal, & Boyd, 2012; Emas, 2015).

An important point in the history of the term and the development of the concept itself was the establishment of the Club of Rome in 1968, which was a kind of ‘think tank’, that is, a group of people representing the world of politics, science, and business initiating a discussion on social responsibility at a global level (Weizsäcker, Lovins, & Lovins, 1998). In 1973, they published *Limits to Growth*,

making predictions about the future of humanity in terms of a growing population, shrinking natural resources, the catastrophic effects of industrialization processes, and the growing problem of poverty (Dror, 2012). The authors of the study were Donella H. Meadows, Dennis L. Meadows, Jørgen Randers, and William W. Behrens III (Meadows, Meadows, Randers, & Behrens, 2018). Despite criticism of some of the premises contained in the book (including the postulate of zero growth based on freezing economic growth at its then-current level), it helped to initiate an international discussion on development issues, placing environmental and social issues at the centre of the discussion and thus establishing the basis for the concept of sustainable development (Colombo, 2001).

At about the same time, the term ‘sustainable development’ was officially used for the first time at the 1972 United Nations Conference on the Environment held in Stockholm on 5–16 June 1972 linking the concept to the environmental context. The leading outcome of the conference was the adoption on 16 June 1972 of a Declaration on the Human Environment called the UN Stockholm Declaration introducing 26 principles of international environmental law. Within this declaration, for the first time, a part of the international community, with 77 states voting in favour, declared that matters of an environmental nature should be given due prominence (Brunnée, 2009; Pallemarts, 2014). The Declaration was therefore important in laying the foundations of international cooperation, although the act itself had no binding force (Boer, 1995).

The concept of sustainable development itself was formulated in the 1980s. Its promoters are considered to be D. Pearce, E. Barbier, A. Markandya, and R. Turner, emphasizing the role of the social objectives of states (Pearce, Turner, & Turner, 1990). In parallel, its foundations can also be found in reports and publications of the Club of Rome (Pearce, & Atkinson, 1993; Pearce, Barbier, & Markandya, 2013). The history of the concept under consideration is directly linked to a series of initiatives, mainly of the United Nations and the OECD, and to the acts passed on various occasions relating directly or indirectly to the topic of sustainable development. Various documents defined sustainable development in more or less detail or specified its terminological scope (Waas, Verbruggen, & Wright, 2010).

The 1980s led to the establishment of the World Commission on Environment and Development (WCED) in 1983, known as the Brundtland Commission. In its resolution 38/161 of 19 December 1983, the UN General Assembly established a special commission to produce a report on the environment and to promote sustainable development. The Brundtland Commission’s report *Our Common Future* issued in 1987 (paragraph 27) indicated that the process of sustainable development is based on meeting today’s needs without the risk of preventing future generations from meeting theirs (Brundtland, 1985). Some wanted to see a definition of sustainable development there, yet the report in question did not in fact initiate a discussion on the definition of the concept itself, operating on a vague explanation without describing how to achieve the declared goals.

An important moment for the promotion of the concept was the convening by the WCED of the Conference on Environment and Development (UNCED), also known as the 'Earth Summit', held in Rio de Janeiro in 1992 and was devoted to the environment and development. The conference drew on ideas voiced 20 years earlier at the Stockholm Conference and went beyond it, focusing on the themes of environmental protection and simultaneous economic and social development. The conference attracted huge public interest, bringing together 183 government delegates, including heads of states and governments. All this helped to catch the attention of decision-makers and popularize the topic (Hens, 2005). Five documents were adopted during the Conference, of which only the last two were binding:

- 1 Rio Declaration on Environment and Development (The Rio Declaration)¹
- 2 Agenda 21²
- 3 Declaration on the Principles of Forest Management³
- 4 Convention on Biological Diversity⁴
- 5 United Nations Framework Convention on Climate Change (UNFCCC).⁵

The first document contained 27 principles of human conduct towards the environment, referring to the Stockholm Declaration. The need to create a global partnership to achieve sustainable development and a higher quality of life (Principle 8) and a series of actions by the international community (e.g., Principles 4, 5, and 9) were identified as the primary objective. Interestingly, the Declaration did not contain a definition of sustainable development, and although it was not legally binding, it is the basis for countries to accept the concept and procedural rules such as the principle of environmental assessment or the right to information (Atapattu, 2001).

The second document was referred to as Agenda 21, which is a set of recommendations to achieve sustainable development by respecting the environment, combating poverty, supporting agriculture or reducing consumption on the eve of the 21st century (Porras, 2014).⁶ This act is a development of the principles included in the Declaration, divided into four parts, focused on (1) the economic and social aspects of environmental protection; (2) the protection and management of natural resources; (3) the strengthening of the role of different social groups and organizations; and (4) the feasibility of sustainable development.

The third document was the Declaration on the Principles of Forest Management, addressing, *inter alia*, forest governance issues. The fourth binding document was The Convention on Biological Diversity, centred on the idea of protecting endangered plant and animal species. The last document was the UNFCCC, which is an international agreement setting out the principles for international cooperation on reducing greenhouse gas emissions affecting the phenomenon of global warming.

Shortly afterwards, in 1997, the Protocol on Greenhouse Gas Emissions was adopted in Kyoto, Japan, which entered into force on 16 February 2005 and was ratified by 183 countries.⁷ The Kyoto Protocol was the first follow-up document to the UNFCCC, and importantly, it was of legally binding. The main objective of the Protocol was to reduce greenhouse gas emissions by 5% between 2008 and 2012 compared to 1990 levels and to introduce a number of mechanisms to achieve the climate goals, that is, Emission Trading, the carbon market, and the Clean Development Mechanism.

Another important event that took place in terms of developing the idea of sustainable development was The Millennium Summit of the United Nations held from 6 to 8 September 2000 in New York.⁸ The 189 members of the United Nations adopted a document called The Millennium Declaration, which assessed the current state of the Earth's environment and laid out a list of goals focused on environmental protection, with the cooperation and collaboration of states anchored in the process.⁹ These objectives included, according to the chapters of the Declaration: (1) peace, security and disarmament; (2) development and the eradication of poverty; (3) protection of the common environment; (4) human rights, democracy, and good governance; (5) protection of the vulnerable, including children; (6) the special needs of Africa; and (7) strengthening the institutions of the United Nations.

Following on from earlier declarations, the United Nations convened the World Summit on Sustainable Development (WSSD) in Johannesburg on 26 August–4 September 2002.¹⁰ Its main objective was to review the process of attaining the objectives set earlier (Wilkins, 2008). In addition, it was decided to identify the five most relevant areas previously established in Agenda 21, revolving around the subject under discussion, namely (1) water protection, access to sanitation and to drinking water of adequate quality; (2) energy provision while respecting the environment; (3) health protection; (4) agriculture and its importance in economic and social development; and (5) biodiversity protection and ecosystem management. The deliberations resulted in the issuing of a document, the Implementation Plan, which was mainly focused on the theme of poverty (Ruhl, 2008).¹¹

The Millennium Summit required a review of its objectives after five years, and hence, another World Summit was convened in New York on 14–16 September 2005.¹² At that time, the focus was on debt, world trade, poverty, as well as combating malaria, HIV, AIDS, and other diseases. The resolution adopted at that time emphasized the importance of sustainable development for the United Nations and the importance of democracy as being necessary for good governance (Dernbach, 2002; Ross, 2009).

Another significant event in the history of the development of the notion of sustainable development was the 'Green Growth Strategy' summit convened in 2011 by the Organisation for Economic Cooperation and Development (OECD).¹³ In the midst of the ongoing financial crisis, it was decided to hold a

meeting to highlight the objectives of the concept of sustainable development and to revise them taking into account the prevailing global economic situation, as described in The Development Co-operation Report.¹⁴

Twenty years after the Earth Summit, on 20–22 June 2012, the United Nations organized an event – The United Nations Conference on Sustainable Development, again in Rio de Janeiro, later called Rio+20.¹⁵ Once again, the previously established goals adopted in Agenda 21 and the tenets of The 2000 Millennium Declaration were reviewed (Stevens, & Kanie, 2016). The meeting resulted in the issuance of a number of resolutions, including The Future We Want, defining more precisely further goals in line with the concept of sustainable development¹⁶ (Lafferty, & Eckerberg, 2013).

On 25 September 2015, during the United Nations Summit of Member States held in New York, another agenda was adopted with the primary goal of eradicating global poverty by 2030.¹⁷ The 2030 Agenda for Sustainable Development contained 17 Sustainable Development Goals (SDGs) and 169 specific targets. The new UN programme Transforming our world: the 2030 Agenda for Sustainable Development established a set of Sustainable Development Goals, pointing to the importance of human rights, poverty prevention, and well-being guarantees, among others (Lee et al., 2016).¹⁸ They all address achievements in five areas – the so-called 5xP: people, planet, prosperity, peace, and partnership. The goals cover a wide range of challenges including hunger, poverty, health, education, gender equality, climate change, sustainable development, and peace. They replaced the Millennium Development Goals, which were to be met by 2015 (Li, 2020).

At around the same time, an important step in promoting respect for the environment in correlation with economic planning was the adoption of the Paris Agreement in 2015 at the COP21 (UNFCCC, 21st Conference of the Parties), a binding document implementing the demands of the Framework Convention on Climate Change.¹⁹ The long-term goal of the Agreement, as set out in Article 2, was to respond to ongoing climate change, respecting the goals of sustainable development, by (1) limiting global warming well below 2°C and ultimately to 1.5°C relative to the pre-industrial era to reduce the risks and damages caused by climate change; (2) low-carbon development; and (3) respecting climate targets. The agreement also sought to achieve carbon neutrality by 2050 and committed all countries to present long-term scenarios for reducing greenhouse gas emissions by 2020. The agreement was accepted by all 195 participating countries, and the start date for signatures was set for 22 April 2016.

Searching for a definition of sustainable development, one could contemplate the jurisprudence of international courts, yet this is scarce indeed. The judgement of 25 September 1997 of the International Court of Justice (ICJ) in Hungary v. Slovakia, known as the Gabčíkovo-Naymaros Project case, has become important in the field of sustainable development, determining the voice of the majority of doctrine representatives considering that sustainable development

does not have the status of international common law.²⁰ The judgement recognizes that sustainable development is a concept of international law without being normative (Boyle & Freestone, 2001; Nanda, 2005). However, this does not change the fact that sustainable development has gained wide social acceptance and certainly has continued and will continue to exert a significant influence on policy decisions and the choices of decision-makers (Segger, 2009).

Sustainable development in the context of European law

The principle of sustainable development recognized in international law is also reflected in European law. However, rather than being a distinct feature in the European Union, the notion operates in all policies as one of a more universal nature. This makes it related not only to environmental protection but is treated much more broadly and horizontally.

Environmental protection was already included as a legally protected category in the Single European Act, issued on 17 February 1986 amending the Treaty of Rome.²¹ Within the European Union itself, however, the manifestations of sustainable development can be found in environmental policy, and it is within the framework of environmental policy that sustainable development has become a systemic principle of the European Union (Baker, Kousis, Young, & Richardson, 1997; Kastrinos, & Weber, 2020).

Analysing historical legislation, the Maastricht Treaty in 1992 (hereafter the ‘TEU’) had already underlined the importance of sustainable development.²² The preamble of the TEU sets out the following objectives:

to promote economic and social progress for their peoples, taking into account the principle of sustainable development and within the context of the accomplishment of the internal market and of reinforced cohesion and environmental protection, and to implement policies ensuring that advances in economic integration are accompanied by parallel progress in other fields.

The principle of sustainable development here goes beyond the environmental protection perspective to also include the principle of cohesion and the demand for the completion of the internal market (Sjåfjell, 2011). The repetition of these assumptions in the wording of Article 3(2) of TEU confirmed that the principle of sustainable development was not only a premise but also contained a binding normative layer for EU bodies (Philip, 2014). While the inclusion of the principle of sustainable development in the preamble can only be regarded as a postulated administrative policy direction or an accepted interpretative formula, its repetition in the specific provision referred to above means that this principle is not just a postulate (Stetter, 2001). Moreover, subsequent provisions of the TEU (i.e., Articles 3(5) and 21(2)) mandate the EU bodies to be guided by the principle of sustainable development not only in their internal relations but also

to promote this principle in their external relations, thus clearly underlining its importance (de Sadeleer, 2015).

The subsequent EU treaty was the Treaty of Amsterdam (1997), whose main objective turned out to be to clearly define the values that unite the European Union, based on freedom, democracy, respect for human rights, and fundamental freedoms.²³ Hence, it can be concluded that the social dimension of sustainable development was formalized at the community level in this very treaty (Aviles, 2011).

As regards the subject in question, an extremely important event was the adoption of a socio-economic development plan for the European Union at the Lisbon meeting in 2000 (Douma, 2017).²⁴ The Lisbon Strategy 2000 aimed to improve the competitiveness of the EU economies on the global stage (Bartels, 2013). A comprehensive strategy for introducing the concept of sustainable development was developed shortly afterwards in 2001 (A European Union Strategy for Sustainable Development, endorsed by the European Council at its meeting in Gothenburg and then modified within the European Council on 16 June 2006 as a complement to the Lisbon Strategy – The EU’s Renewed Strategy on Sustainable Development).²⁵ The main objective formulated in the documents was to develop initiatives to ensure a better quality of life by promoting environmental and social innovation (Vedder, 2010).

In yet another EU treaty, Treaty on the Functioning of the European Union (TFEU), there is only one provision referring directly to the principle of sustainable development, namely Article 11.²⁶ According to it, environmental protection requirements must be taken into account in the definition and implementation of the Union’s policies and activities, in particular with a view to promoting the concept of sustainable development (Kenig-Witkowska, 2017). Hence, the principle of sustainable development as enshrined in Article 11 is a kind of link between environmental protection requirements and other Union policies. The TEU refers to the principle of sustainable development in much narrower terms, only with regard to the relationship of environmental protection requirements with other EU policies. However, the scope of coverage in Article 11 TFEU applies to all aspects of EU administration, including European integration (Avilés, 2012).

The Charter of Fundamental Rights of the European Union (Charter) was adopted and signed on 7 December 2000 at the Nice European Council and then again with amendments at the Lisbon Summit on 12 December 2007. The document is binding thanks to the Lisbon Treaty. Because of the importance and significance of the Charter’s provisions, the document could not ignore the important context of the principle of sustainable development (Toner, 2006). In the preamble of the Charter, it is indicated that the European Union’s pursuit of sustainable and balanced development is framed in isolation from its specific sphere of activity, which can be understood as the need to interpret its provisions putting the concept discussed here as a point of reference (Lock, 2019).

In the contents of the Charter itself, the concept of sustainable development appears in Article 37 stating that a high level of environmental protection must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development (Quirico, 2021). However, when attempting to interpret the provision and trying to find the context of human rights, it must be stated that the specificity of the Charter and its vague provisions only help to point in a certain direction for policies and further initiatives rather than provide a basis for the creation of rules within the environmental or other areas (Gentimir, 2020).

The lack of success in implementing the Lisbon Strategy made it necessary to redefine the goals in view of the ongoing financial crisis and the economic changes in Europe taking place in the EU Member States. Hence, in March 2010, the document *Europe 2020: A strategy for smart, sustainable and inclusive growth* was formulated with the objective of sustainable development using existing resources.²⁷ At the same time, this topic has also become a priority in the European Union's long-term programme for social and economic development 2010–2020 *Europe 2020*, referred to as 'sustainable growth'.²⁸ The strategy adopted on 17 June 2010 replaced the Lisbon Agenda, which had been in place since 2000. Its basic assumptions were based on building a stable foundation for a sustainable future for the European Union based on intellectual growth, sustainable growth, and inclusive development (Harkiolakis, Prinia, & Mourad, 2012). The *Europe 2020* strategy was very detailed in setting out the objectives under specific headings, such as increasing the employment rate for specific age groups, CO₂ emissions, and poverty indicators.

The multitude of acts relating to sustainable development, growth, and environmental protection at the European Union level shows its importance and relevance to this organization. EU treaty provisions clearly define sustainable development as one of the fundamental legal principles of European integration, but secondary legislation also refers to it. Examples of acts (at the EU level) that have referred directly or indirectly to the subject in question can be multiplied. These include White Papers – documents from the European Commission proposing changes to the common policy, for example, White Paper on the Future of Europe (2017),²⁹ Green Papers – documents dedicated to discussions and consultations on selected topics, for example, Green Paper – European Strategy for Sustainable, Competitive and Secure Energy (2006),³⁰ communiques from the Commission of the European Communities, or opinions of the European Economic and Social Committee.

Results

In common international law, there exists no legal definition of the concept of sustainable development. Its definitions appearing in non-binding acts do not have universal applicability, which determines its nature and the specificity of

the lack of substantive legal consequences of its violation. The principle of sustainable development itself is not of a normative nature either. However, some of its constituent norms do have such a character, although the principle itself is an example of soft law.

At the level of the European Union, on the basis of the very treaty provisions, that is, EU primary law, it should be acknowledged that there is no clear legal definition of the concept of sustainable development, but it is nevertheless one of the key principles of European integration. At the EU level, the concept of sustainable development represents the idea of improving the economies of individual Member States in terms of more efficient use of resources, which in turn translates into environmental aspects and maintaining the competitiveness of economies (Bomberg, 2004; Muserra, Papa, & Grimaldi, 2020).

Looking at the extensive history of legal acts directly referring to the notion in question, both at international and EU levels, it is clear that the concept of sustainable development is widely respected and has had a significant impact on political decisions and directions of further development chosen by countries despite the vagueness of its conceptual framework.

Notes

- 1 The Rio Declaration: [https://daccess-ods.un.org/access.nsf/Get?OpenAgent&DS=A/CONF.151/26/Rev.1\(vol.I\)&Lang=E](https://daccess-ods.un.org/access.nsf/Get?OpenAgent&DS=A/CONF.151/26/Rev.1(vol.I)&Lang=E).
- 2 Agenda 21: <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf>.
- 3 The Declaration on the principles of forest management: <https://www.un.org/esa/documents/ga/conf151/aconf15126-1.htm>.
- 4 The Convention on Biological Diversity: <https://www.cbd.int/doc/legal/cbd-en.pdf>.
- 5 The United Nations Framework Convention on Climate Change (UNFCCC): https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf.
- 6 United Nations Conference on Environment & Development Rio de Janeiro, Brazil, 3 to 14 June 1992, AGENDA 21.
- 7 Kyoto Protocol: <https://unfccc.int/process-and-meetings/the-kyoto-protocol/what-is-the-kyoto-protocol/kyoto-protocol-targets-for-the-first-commitment-period>.
- 8 The Millennium Summit: <https://www.un.org/en/conferences/environment/newyork2000>.
- 9 The Millennium Declaration: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N00/559/51/PDF/N0055951.pdf?OpenElement>.
- 10 Report of the World Summit on Sustainable Development, 2002, Johannesburg, South Africa, 26 August–4 September, A/CONF.199/20: <https://www.un.org/en/conferences/environment/johannesburg2002>.
- 11 The Implementation Plan: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N02/636/93/PDF/N0263693.pdf?OpenElement>.
- 12 The 2005 World Summit: <https://www.un.org/en/conferences/environment/newyork2005>.
- 13 Towards Green Growth (2011): <https://www.oecd.org/greengrowth/48012345.pdf/>.
- 14 The Development Co-operation Report: <https://www.oecd.org/dac/developmentco-operationreport2011.htm>.

- 15 United Nations Conference on Sustainable Development, Rio+20: <https://sustainabledevelopment.un.org/rio20>.
- 16 A/RES/66/288 – The Future We Want: https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/66/288&Lang=E.
- 17 The 2030 Agenda for Sustainable Development: <https://sdgs.un.org/goals>.
- 18 A/RES/70/1 Transforming our world: the 2030 Agenda for Sustainable Development: <https://undocs.org/en/A/RES/70/1>.
- 19 UNFCCC: <https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>.
- 20 Gabčíkovo-Nagymaros Project – (Hungary/ Slovakia), ICJ Reports, 1997.
- 21 Jednolity Akt Europejski [Single European Act] *OJ L 169*, 29.6.1987, pp. 1–28: <https://eur-lex.europa.eu/legal-content/PL/TXT/?uri=CELEX:11986U/TXT>.
- 22 Traktat o Unii Europejskiej [Treaty on European Union] *OJ C 191*, 29.7.1992, pp. 1–112: <https://eur-lex.europa.eu/legal-content/PL/TXT/?uri=CELEX:11992M/TXT>.
- 23 Treaty of Amsterdam amending the Treaty on European Union, the Treaties establishing the European Communities and certain related acts (*C 340, 10/11/1997 P. 0001–0144*): <https://eur-lex.europa.eu/eli/treaty/ams/sign>.
- 24 The Lisbon Strategy: https://www.europarl.europa.eu/meetdocs/2009_2014/documents/empl/dv/lisbonstrategybn_lisbonstrategybn_en.pdf.
- 25 A European Union Strategy for Sustainable Development: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52001DC0264&from=EN>. The EU's Renewed Strategy on Sustainable Development: <https://data.consilium.europa.eu/doc/document/ST-10917-2006-INIT/en/pdf>.
- 26 The Treaty on the Functioning of the European Union *OJ C 326*, 26.10.2012, pp. 47–390: <https://eur-lex.europa.eu/legal-content/PL/TXT/?uri=celex%3A12012E%2FTXT>.
- 27 COM/2010/2020 final. Europe 2020 A strategy for smart, sustainable and inclusive growth: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52010DC0202&from=PL>.
- 28 Europe 2020: http://www.europedirect-gdansk.morena.org.pl/wp-content/uploads/2015/08/europa_2020.pdf.
- 29 The White Paper on the Future of Europe (2017): https://ec.europa.eu/info/future-europe/white-paper-future-europe_en.
- 30 Green Paper – A European Strategy for Sustainable, Competitive and Secure Energy (2006): <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52006DC0105&from=PL>.

References

- Atapattu, S. (2001). Sustainable development, myth or reality: A survey of sustainable development under International Law and Sri Lankan Law. *Georgetown Environmental Law Review*, 14, 265.
- Aviles, L. A. (2011). Sustainable development and the legal protection of the environment in Europe. *Sustainable Development Law & Policy*, 12, 29.
- Avilés, L. A. (2012). Sustainable development and the legal protection of the environment in Europe. *Sustainable Development Law & Policy*, 12(3), 7.
- Baker, S., Kousis, M., Young, S., & Richardson, D. (Eds.). (1997). *The politics of sustainable development: Theory, policy and practice within the European Union*. Psychology Press.
- Bartels, L. (2013). Human rights and sustainable development obligations in EU free trade agreements. *Legal Issues of Economic Integration*, 40(4), 297–313.

- Boer, B. (1995). Institutionalising ecologically sustainable development: The roles of national, state, and local governments in translating grand strategy into action. *Willamette Law Review*, 31, 307.
- Bomberg, E. (2004). Adapting form to function?: From economic to sustainable development governance in the European Union'. In W. Lafferty (Ed.), *Governance for Sustainable Development: The Challenge of Adapting Form to Function* (pp. 61–94). Edward Elgar. <https://doi.org/10.4337/9781845421700.00011>
- Borowy, I. (2013). *Defining sustainable development for our common future: A history of the World Commission on Environment and Development (Brundtland Commission)*. Routledge.
- Boyle, A. E., & Freestone, D. (Eds.). (2001). *International law and sustainable development: Past achievements and future challenges*. Oxford University Press.
- Brundtland, G. H. (1985). World commission on environment and development. *Environmental Policy and Law*, 14(1), 26–30.
- Brunnée, J. (2009). The Stockholm declaration and the structure and processes of international environmental law. In Aldo Chircop & Ted McDorman, (Eds.), *The Future of Ocean Regime-Building*, (pp. 41–62). Kluwer Law.
- Colombo, U. (2001). The Club of Rome and sustainable development. *Futures*, 33(1), 7–11.
- Dernbach, J. C. (2002). Making sustainable development happen: From Johannesburg to Albany. *Albany Law of Environmental Outlook*, 8, 173.
- Douma, W. T. (2017). The promotion of sustainable development through EU trade instruments. *European Business Law Review*, 28(2), 197–216.
- Dror, Y. (2012). *The capacity to govern: A report to the Club of Rome*. Routledge.
- Emas, R. (2015). The concept of sustainable development: Definition and defining principles. *Brief for GSDR, 2015*, 10–13140.
- Gentimir, A. (2020). Environmental protection as fundamental right guaranteed to the European Level. *Present Environment & Sustainable Development*, 14(2), 121–130.
- Harkiolakis, N., Prinia, D., & Mourad, L. (2012). Research initiatives of the European Union in the areas of sustainability, entrepreneurship, and poverty alleviation. *Thunderbird International Business Review*, 54(1), 73–78.
- Hens, L. (2005). *The Rio declaration on environment and development. Regional sustainable development review: Africa*. Eolss Publishers.
- Imran, S., Alam, K., & Beaumont, N. (2014). Reinterpreting the definition of sustainable development for a more ecocentric reorientation. *Sustainable Development*, 22(2), 134–144.
- Jabareen, Y. (2008). A new conceptual framework for sustainable development. *Environment, Development and Sustainability*, 10(2), 179–192.
- Kastrinos, N., & Weber, K. M. (2020). Sustainable development goals in the research and innovation policy of the European Union. *Technological Forecasting and Social Change*, 157, 120056.
- Kenig-Witkowska, M. M. (2017). The concept of sustainable development in the European Union Policy and Law. *JCULP*, 1, 64.
- Lafferty, W. M., & Eckerberg, K. (Eds.). (2013). *From the Earth Summit to Local Agenda 21: Working towards sustainable development*. Routledge.

- Lee, B. X., Kjaerulf, F., Turner, S., Cohen, L., Donnelly, P. D., Muggah, R.,... & Gilligan, J. (2016). Transforming our world: Implementing the 2030 agenda through sustainable development goal indicators. *Journal of Public Health Policy*, 37(1), 13–31.
- Lock, T. (2019). Rights and principles in the EU charter of fundamental rights. *Common Market Law Review*, 56(5), 1–20.
- Li, X. (2020). Transforming our world: The 2030 agenda for sustainable development: An appeal of global cooperation for building green civilization. In Li.X. *Green civilization*, Springer, 17–35.
- Meadows, D. H., Meadows, D. L., Randers, J., & Behrens, W. W. (2018). The limits to growth. In Conca, K. & G.D. Dabelko, (Eds.), *Green planet blues* (pp. 25–29). Routledge.
- Mensah, J. (2019). Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Cogent Social Sciences*, 5(1), 1653531.
- Muserra, A. L., Papa, M., & Grimaldi, F. (2020). Sustainable development and the European Union Policy on non-financial information: An Italian empirical analysis. *Corporate Social Responsibility and Environmental Management*, 27(1), 22–31.
- Nanda, V. P. (2005). Sustainable development, international trade and the Doha agenda for development. *Chapman Law Review*, 8, 53.
- Pallemarts, M. (2014). International environmental law from Stockholm to Rio: Back to the future?. In P. Sands, (Ed.) *Greening International Law* (pp. 1–19). Routledge.
- Parris, T. M., & Kates, R. W. (2003). Characterizing and measuring sustainable development. *Annual Review of Environment and Resources*, 28(1), 559–586.
- Paul, B. D. (2008). A history of the concept of sustainable development: Literature review. *The Annals of the University of Oradea, Economic Sciences Series*, 17(2), 576–580.
- Pearce, D. W., & Atkinson, G. D. (1993). Capital theory and the measurement of sustainable development: An indicator of “weak” sustainability. *Ecological Economics*, 8(2), 103–108.
- Pearce, D., Barbier, E., & Markandya, A. (2013). *Sustainable development: Economics and environment in the third world*. Routledge.
- Pearce, D. W., Turner, R. K., & Turner, R. K. (1990). *Economics of natural resources and the environment*. Johns Hopkins University Press.
- Philip, A. B. (2014). The European Union: Environmental policy and the prospects for sustainable development. In *Governance and environment in Western Europe* (pp. 253–276). Routledge.
- Porras, I. M. (2014). The Rio Declaration: A new basis for international cooperation. In *Greening international law* (pp. 20–33). Routledge.
- Rogers, P. P., Jalal, K. F., & Boyd, J. A. (2012). *An introduction to sustainable development*. Routledge.
- Ross, A. (2009). Modern interpretations of sustainable development. *Journal of Law and Society*, 36(1), 32–54.
- Ruhl, J. B. (2008). Law for sustainable development: Work continues on the Rubik’s Cube. *Tulsa Law Review*, 44, 1.
- de Sadeleer, N. (2015). Sustainable development in EU law: Still a long way to go. *Jindal Global Law Review*, 6(1), 39–60.
- Segger, M. C. C. (2009). Sustainable development in international law. In D. Armstrong, (Ed.), *Routledge Handbook of International Law* (pp. 381–400). Routledge.
- Sjåfjell, B. (2011). Sustainable development, EU law and companies: The EU law framework for the sustainable companies project. *International and Comparative Corporate Law Journal*, 8(1), 1–14.

- Stetter, S. (2001). Maastricht, Amsterdam and Nice: The environmental lobby and greening the treaties. *European Energy and Environmental Law Review*, 10(5), 150–159.
- Stevens, C., & Kanie, N. (2016). The transformative potential of the sustainable development goals (SDGs). *International Environmental Agreements: Politics, Law and Economics*, 16(3), 393–396.
- Toner, H. (2006). Impact assessments and fundamental rights protection in EU law. *European Law Review*, 31(3), 316.
- Quirico, O. (2021). Integrating Human Rights and Environmental Duties: Prospective Implications of Article 37 of the EU Charter of Fundamental Rights. *Boston University International Law Journal*, 39, 41.
- Vedder, H. (2010). The Treaty of Lisbon and European environmental law and policy. *Journal of Environmental Law*, 22(2), 285–299.
- Waas, T., Verbruggen, A., & Wright, T. (2010). University research for sustainable development: Definition and characteristics explored. *Journal of Cleaner Production*, 18(7), 629–636.
- Weizsäcker, E. U., Lovins, A. B., & Lovins, L. H. (1998). *Factor four: Doubling wealth-halving resource use: The new report to the Club of Rome*. Earthscan.
- Wilkins, H. (2008). The integration of the pillars of sustainable development: A work in progress. *McGill International Journal of Sustainable Development Law & Policy*, 4, 163.

2 Sustainable development goals – assessment and relationships

Aneta Kuźniarska

Introduction

A common element of the majority of the definitions of sustainable development is emphasising on the importance of the interrelationship between the development of civilisation and the protection and restoration of the natural and social environment. The definitions essentially indicate the need to protect the social and environmental *equilibrium* in the process of economic development, and their implementation is possible thanks to the global goals set, which in a more or less precise manner indicate the directions in which organisations and people should follow to care for both the environment and each other.

The strategic Sustainable Development Goals (SDGs) Developed by a broad *consensus* of the business milieus, political milieus and non-governmental organisations, constitute, first, new growth opportunities for businesses and, second, a chance to build sustainable, long-term competitive advantage. Its important sources include the possibility of creating and developing innovative products and services that meet the needs of increasingly aware and responsible consumers, as well as improving the reputation of enterprises. It is worth bearing in mind that, in addition to the opportunities arising from this, they also face challenges that are difficult to overcome in a changing environment (Urbaniec, 2018a). Accomplishing the SDGs is rendered more difficult because of numerous compromises accepted for the sake of economic growth at the expense of social well-being and the preservation of the environment; on the other hand, the concept of inclusive development emphasises the three dimensions of development: social, environmental and political (Fonseca et al., 2020). Regardless of the fact that the SDGs are of a global character, activities undertaken within their frameworks are of a local character, and depend on how far countries are from achieving the goals, and the sheer degree of development and commitment to sustainable development of each country influences its domestic interests and actions (Salvia et al., 2019).

SDGs in the past and now

The outline of the history of the concept of sustainable development presented in Chapter 1 translates directly into change, or rather an evolution of goals adopted within its framework. Nevertheless, it does not change the fact that the crucial role in disseminating the idea of sustainable development is still played by the United Nations (UN) and its agencies.

A decisive influence upon the development of the concept of sustainable development was the report, published in 1987 and prepared by the World Commission on Environment and Development of the UN, where the main goal was to meet the needs of present and future generations in full compliance with the natural environment (WCED, 1987). Initiated at the Earth Summit in 1972, the concept of sustainable development, developed and perfected in the following years, took shape for the first time when its assumed premises were adopted as the basis for a plan of action at the second Earth Summit in Rio de Janeiro in 1992. It was then that the two most important documents were drawn up (United Nations, 1992):

- 1 *Rio Declaration on Environment and Development*, which contained the general philosophy and rationale for sustainable development; it additionally included assumptions of an ideological and postulative nature, indicating that not only material development but also the intellectual and spiritual development of the individual is crucial, and therefore a re-evaluation of existing lifestyles and ethical norms must be carried out to create a ‘conscious’ human being acting in a sustainable manner,
- 2 *Agenda 21*, that is, a plan containing the detailed principles and processes relevant to the implementation of this concept.

The conditions for sustainable development at that time included (among others)

- combating poverty,
- eradicating the unsustainable system of production and consumption,
- the protection of the environment, and its interdependence with peace and development,
- economic growth, which ought to result in increasing social cohesion (including, among others, the reduction of social stratification, the prevention of marginalisation and discrimination), and be conducive to the improvement of environmental quality (among others, by reducing the harmful effects of production and consumption on the state of the environment and the protection of natural resources) (United Nations, 1992; Dyr et al., 2019)

The declaration contained the postulates indicating that all human beings, societies and generations have the right to a healthy and productive life, and also to

develop in harmony with nature (United Nations, 1992). The passage of time, nevertheless, showed that the postulates contained therein were seen to be insufficient, excessively general and lacking precision, and work began that resulted in the UN Millennium Declaration prepared by world leaders in 2000. In this document, eight global development goals (MDGs – Millennium Development Goals) were adopted to improve the situation of people in developing countries, and these related to poverty reduction, access to education, gender equality, reduction of child mortality, reduction of the spread of HIV/AIDS and other major diseases, environmental protection and a global partnership for development. The Millennium Development Goals and their accompanying tasks are included in Table 2.1.

According to the declaration, the goals implemented from 2000 until 2015 were aimed at poorer, developing countries, and the cost of the implementation of relevant programmes was estimated to amount to, approximately, 600 billion USD (Rokicka & Woźniak, 2016). According to expert assessments, the goals have not been fully accomplished, especially in terms of social inequality, unemployment or the excessive exploitation of natural resources, and, moreover, the extent to which MDGs were accomplished in different countries was also different. Instead, their implementation has proven that different actors: national governments, the private sector, civil society and scientists can work together successfully.

Accomplishing the Millennium Development Goals was jeopardised throughout the entire period of 15 years by numerous determinants of various natures. The first group of barriers was politically motivated and related to authoritarian or even totalitarian governments, the lack of democracy, the rule of law and respect for human rights. The second group of jeopardising factors was connected with an excessively strong, and mostly negative influence of culture and religion on the education of children and the behaviour of large social groups. The third group was linked to demographical phenomena related to natural movement, influencing rapid population growth in underdeveloped countries, which unequivocally exacerbated their social, economic, political and environmental problems, migratory movement (e.g. from rural areas to cities and from economically backward regions to highly developed countries) resulting in the amplification of selected threats (slums) and their spread to highly developed countries (Czaja, 2016). However, according to the UN, it has succeeded, among other things, in reducing extreme poverty, increasing access to clean drinking water and to primary education (Gruchelski & Niemczyk, 2016).

The above-mentioned goals came under fire because of (1) not being particularly challenging – they were seen as ineffective drivers of progress, (2) the lack of well-founded reasons for choosing these specific goals whilst rejecting others (Deneulin & Shahani, 2009), (3) the lack of resources to implement them (Kabeer, 2010), and (4) a very simplistic concept of development connected with

Table 2.1 Summary of the sustainable development goals

<i>Name and year of publication of goals</i>	<i>Goals and tasks</i>	<i>Number of indicators</i>
1972 1987	Call for strengthening environmental management policies while developing global economies Meeting the needs of present and future generations in full compliance with the needs of the environment	NONE NONE
Millennium Sustainable Development Goals (MDGs) 1992	<p>1. Eliminating extreme poverty and hunger:</p> <p>a. Reducing by half by 2015, compared to 1990, the number of people whose daily income is below 1 USD</p> <p>b. Reducing by half by 2015, compared to 1990, the number of people suffering from hunger</p> <p>2. Achieving global primary education</p> <p>a. Ensuring that by 2015, children around the world – both boys and girls – will be able to complete primary education</p> <p>3. Empowering women and promoting gender equality:</p> <p>a. Eliminating gender disparity in primary and secondary education by 2005, and in all levels of education by 2015.</p> <p>4. Reducing child mortality:</p> <p>a. Reducing the under-five mortality rate in the period between 1990 and 2015</p> <p>5. Improving maternal health:</p> <p>a. Reducing by 2015, compared to 1990 the maternal mortality ratio by 75%</p> <p>6. Ensuring environmental sustainability:</p> <p>a. Integrating the principles of sustainable development into every nation's policies and programmes and also reversing the depletion of environmental resources</p> <p>b. Reducing by half the proportion of the universal population without sustainable access to clean and safe drinking water and basic sanitation by 2015</p> <p>c. Achieving substantial improvement in the lives of a minimum of 100 million slum dwellers by 2020.</p>	60

(Continued)

Table 2.1 (Continued)

<i>Name and year of publication of goals</i>	<i>Goals and tasks</i>	<i>Number of indicators</i>
2030 Agenda (SDGs) 2015	7. Combating AIDS, malaria and other diseases: a. Halting and having started by 2015 to reverse the spread of AIDS b. Having ceased and started the reversal of the incidence of malaria and other major diseases by 2015	230
	8. Developing and intensifying global partnerships for development: a. Ensuring the further development of an open, predictable, rule-based, non-discriminatory trading and economic system, including a commitment to good governance, development and poverty reduction – both nationally and internationally b. Addressing the special needs of the least developed countries and, in particular, allowing these countries to export without tariffs or quotas; expanding the debt relief programme for the most indebted poor countries and cancelling debts incurred through bilateral aid; more generous government development assistance to countries committed to poverty reduction c. Addressing the special needs of small island developing States and landlocked developing countries (within the framework of the Programme of Action for the Sustainable Development of Small Island Developing States and the recommendations of the XXII Extraordinary Session of the UN General Assembly) d. Dealing exhaustively with the debt problems of developing nations by taking the necessary measures domestically and internationally to maintain long-term debt sustainability e. Developing and implementing, in collaboration with developing countries, strategies rendering it possible for young people to find decent work f. Providing access to affordable essential drugs in the developing world – in collaboration with pharmaceutical companies g. Availing benefits of new technologies, especially information and communications, in collaboration with the private sector	
	1. No Poverty: End poverty in all its forms, everywhere (<i>Economic</i>) 2. Zero Hunger: End hunger, achieve food security and improved nutrition and promote sustainable agriculture (<i>Economic</i>)	

3. **Good Health and Well-Being:** Ensure healthy lives and promote well-being for all at all ages (*Economic*)
4. **Quality Education:** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (*Social*)
5. **Gender Equality:** Accomplish gender equality and empower all women and girls (*Social*)
6. **Clean Water and Sanitation:** Ensure available and sustainable management of water and sanitation for all (*Economic*)
7. **Affordable and Clean Energy:** Ensure access to affordable, reliable, sustainable and modern energy for all (*Economic*)
8. **Good Jobs and Economic Growth:** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all (*Economic*)
9. **Industry, Innovation and Infrastructure:** Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation (*Economic*)
10. **Reduced Inequalities:** Reduce inequality within and among countries (*Social*)
11. **Sustainable Cities and Communities:** Make cities and human settlements inclusive, safe, resilient and sustainable (*Environment*)
12. **Responsible Consumption and Production:** Ensure sustainable consumption and production patterns (*Environment*)
13. **Climate Action:** Take urgent action to combat climate change and its impacts (*Environment*)
14. **Life Below Water:** Conserve and sustainably use the oceans, seas and marine resources for sustainable development (*Environment*)
15. **Life on Land:** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss (*Environment*)

(Continued)

Table 2.1 (Continued)

<i>Name and year of publication of goals</i>	<i>Goals and tasks</i>	<i>Number of indicators</i>
	16. Peace, Justice and Strong Institutions: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels (<i>Social</i>)	
	17. Partnerships for the Goals: A successful sustainable development agenda requires partnerships between governments, the private sector and civil society. These inclusive partnerships built upon principles and values, a shared vision, and shared goals that place people and the planet at the centre, are needed at the global, regional, national and local levels (<i>Social</i>)	

Source: Own elaboration upon the basis of United Nations (1992, 2015a); WCED (1987).

meeting basic needs, without the challenges of integration, and also sustainable growth and development (Moore, 2015). However, there were also uncritical supporters of the implementation of the Millennium Development Goals, who presented the results achieved by 2015 in a rather optimistic way. The detractors indicated that not only did the particular goals and tasks remain unaccomplished, but in certain aspects, the situation also had even deteriorated.

The continuation of the Millennium Development Goals is the 2030 Agenda, which was drawn up in 2015, and for which another 15-year period of implementation was planned. While the goals of the Millennium Declaration were mostly focused on the poorest countries, the reason for the creation of the SDGs was to include goals that attract and encourage action by all countries and to target these actions to domestic socio-economic policies, as well as the implementation of the global Paris Agreement (of December 2015) on halting climate change (Fayomi et al., 2018).

It was also important to develop the goals that focus on the interdependencies between two or more dimensions so that they are addressed in an integrated way, ensuring the desired outcomes for both (Griggs et al., 2014).

The integral part of the 2030 Agenda are the tools for its implementation, contained in the so-called *Addis Ababa Action Plan*, including tools and means (resources), both provided by the budgets of particular countries and coming from private sources, as well as relief funds, rendered available to support the development of poorer countries (United Nations, 2015b). World leaders and heads of government signing the resolution, from both developed and developing countries, pledged to make concerted efforts to achieve sustainable development. According to the provisions of this resolution, implementation should involve governments of all countries, parliaments, UN structures, various international institutions, local authorities, societies, academia, business and the private sector (United Nations, 2015b).

The 2030 Agenda includes 17 main SDGs, 169 specific tasks and 230 monitoring indicators, under the economic, environmental and social dimensions (Dlouhá & Pospíšilová, 2018). The goals of the 2030 Agenda, its tasks and categorisation relevant to the 3 dimensions of sustainable development, are presented in Table 2.1.

It is assumed that the stakeholders of Agenda 2030 include enterprises from both the private and public sectors, and their economic, social and environmental goals should be consistent with the above-mentioned SDGs. A factor conducive to meeting the postulates arising from the SDGs is the fact that many systemic requirements are imposed on enterprises wishing to operate the market – both obligatory and optional (Wiśniewska & Wyrwa, 2022).

While it was claimed that none of the MDGs were sufficiently ambitious, some of the SDGs are claimed to be excessively ambitious and impossible to be accomplished. For example, the MDGs were about reducing poverty, and the SDGs were about eradicating poverty (which doesn't seem possible). Some

adhere to the opinion that SDGs are theoretical, that all are treated as priorities, and that means that none of them is really a priority (Easterly, 2015).

The negative assessment also relates to the tools in use; both kinds of goals were, and still are, assessed with the application of different methods and varied tools, frequently varying from country to country, which renders it difficult to compare them properly and to analyse progress (Pogge & Sengupta, 2015). As researchers on the topic point out, more goals and indicators prepared for them does not mean that these goals will be better; on the contrary, in fact, in many cases, they might cause an unwelcome confusion (Zondervan, 2017). Some of them ought to be limited and a set of feasible, measurable and transparent targets should be established to facilitate both easier and more effective decision-making as well as comparisons (Venkatesh, 2021).

It is worth remembering that a key role in accomplishing the SDGs is played by the private sector, and, here, the starting point for consideration is the hypothesis that larger and/or more powerful companies, by engaging in relationships with smaller actors, can both contribute to and impede the achievement of the goals. Elements of the organisation that may strongly influence them include certain values, for example greed or rivalry, which may be perceived as normatively neutral, and even as required qualities (Zawadzki, 2014). Other barriers to goal implementation include a lack of state support in the implementation of the SDGs, their excessive distance from business goals or a low culture of collaboration in accomplishing non-business goals (Urbaniec, 2018b).

The unsatisfactory extent of accomplishing the SDGs may be the result of the behaviours of enterprises resulting from the influence of the ideology of building shareholder value. It motivates enterprises to retain as much of their value as possible, and it should be borne in mind that the active involvement of large companies in the achievement of certain goals may risk a lack of growth in retained value and therefore, may result in a failure to generate further profits for the shareholders (Gulski, 2021).

The COVID-19 pandemic also poses a threat to the SDGs, with negative impacts on developed countries and even more unfavourable impacts on developing countries, which do not have the resources to cope with the economic and social challenges caused by the pandemic. The economic stagnation associated with COVID-19 is estimated to plunge 420–580 million people into poverty, increasing global poverty for the first time since 1990 (Sumner et al., 2020).

COVID-19 led to the lower achievement of the SDGs (Shulla et al., 2021), but at the same time, contributed to the development of the digitalisation and consolidation of health, educational and social services, as pro-growth government spending, often during a crisis, has significant positive effects in the social care, health and education sectors (Reeves et al., 2013). In terms of meeting environmental goals, COVID-19 has resulted in improved air quality and reduced CO₂ emissions (Shulla et al., 2021).

The threats to the implementation of the SDGs resulting from the pandemic include (Kaczmarek, 2020)

- the focus of governments on their own country and its own goals and tasks;
- reducing official development aid and other sources of development financing;
- weakening the system of global collaboration;
- changing political priorities at the expense of economic development;
- re-prioritising research funding hitherto aimed at solving problems in developing countries;
- undermining the free market and seeking a new paradigm for the global economy.

Relationship between the SDGs

The concept of the SDGs, in contrast to that of the MDGs, indicates an integrated approach to decision-making and includes a policy focusing not only on individual components/dimensions of sustainable development separately but also takes into account their interconnectedness and interdependence to reduce compromises, as well as create and use the synergy effect (van Tulder, 2018). Synergies between sustainability goals largely outweigh compromises, but interestingly, negative correlations are observed across all the SDGs. Moreover, correlations are systematically assessed not only between goals but also between SDG indicators, and so (Pradhan et al., 2017):

- 1 a statistically significant positive correlation between a pair of SDG indicators is identified as a synergy,
- 2 a statistically significant negative correlation between pairs of SDG indicators is classified as a compromise.

As part of the process of assessment, the synergies and compromises between the pairs of the SDGs are categorised on the domestic and global scale, so as to, in further course, identify the most frequent interactions occurring between them (Pradhan et al., 2017). The crucial issue within the frameworks of the described interactions of the SDGs, encompassing the compromises and synergies between goals (SDG) and within the frameworks of their indicators, are contradictions between economic growth and the sustainable use of resources (Nilsson et al., 2016). Nevertheless, it ought to be indicated that the negative interactions are regarded as the perfect introduction to a dialogue between science and politics (Obersteiner et al., 2016), which frequently stimulates further work within a relevant field. The inconsistency and incoherence in the sustainability goals relate to indicators in the quantitative dimension – although research presents the indicators, they are hampered by severe data limitations and do not inform decision-makers about which of the underlying economic, social or

environmental pillars have a significant impact on sustainability, and from an organisational perspective this is crucial (Bali Swain & Yang-Wallentin, 2020; Spaiser et al., 2017).

Based on the research conducted so far, three general types of interactions between SDG targets have been identified (Nilsson et al., 2016):

- a positive dynamics – positive interactions between the SDGs occur when the SDGs are active, reinforcing or indivisible,
- b neutral or coherent dynamics – describe a situation where contributions towards one goal do not result in significant positive or negative interactions with another goal,
- c negative dynamics – interactions arise when goals are constraining, counter-acting, or cancelling.

There are few SDGs that focus exclusively on social issues or solely on environmental or relational issues. All of them quite substantively link at least two of the three dimensions. The exceptions are SDG 11, which includes all three elements, and SDG 17, which moves relational issues to the operational level (Gupta & Vegelin, 2016).

The cause-and-effect relationships between the SDGs can be seen from the first cursory analysis – they can be seen, for example, between increasing employment and reducing poverty, between reducing poverty and improving the natural environment. It is worth noting that improvements towards one SDG can enhance or harm the development or improvement of another goal (Barbier & Burgess, 2019). Other relationships of the SDGs are outlined below:

- 1 no poverty (SDG1) may be enhanced by the benefits of improved water quality and sanitation (SDG6), and also zero hunger (SDG2) (Fuso Nerini et al., 2018)
- 2 SDG12 (responsible consumption and production) is the goal most closely related to commerce (Pradhan et al., 2017)
- 3 SDG 02 (Zero hunger) and SDG 01 (No poverty) and SDG 03 (Good health and well-being).
- 4 SDG 03 (Good health and well-being) and SDG 08 (Decent work and economic growth).
- 5 SDG 06 (Clean water and sanitation) and SDG 12 (Responsible consumption and production).
- 6 SDG 07 (Affordable and clean energy) and SDG1 (No poverty), SDG2 (Zero hunger), SDG3 (Good health and well-being), SDG8 (Decent work and economic growth), SDG13 (Climate action).
- 7 SDG7 (Affordable and clean energy) and SDG6 (Clean water and sanitation)
- 8 SDG8 (Decent work and economic growth) and SDG1 (no poverty) (Singh et al., 2018).

- 9 SDG 11 (Sustainable cities and communities) and SDG 03 (Good health and well-being).
- 10 SDG 12 (Responsible consumption and production) and SD6 (Clean water and sanitation).
- 11 SDG13 (Climate action) and SDG15 (Life on land).
- 12 SDG13 (Climate action) and SDG14 (Life below water)
- 13 SD14 (Life below water) and SDG1 (No poverty), SDG2 (Zero hunger) and SDG8 (Decent work and economic growth).
- 14 SDG15 (Life on land) and SDG1 (No poverty), SDG2 (Zero hunger), SDG8 (Decent work and economic growth), SDG13 (Climate action) and SDG14 (Life below water).
- 15 SDG7 (Affordable and clean energy) and SDG6 (Clean water and sanitation)

Conclusions

The development, both quantitative and qualitative, of the SDGs that have been developed and adopted in successive years shows how strongly global problems related to human activities are escalating. The transition from the 1987 principal goal to the Millennium Goals to the 2030 Agenda goals indicates ever-expanding problems in all dimensions of sustainable development. The road to quantifying and monitoring the SDGs is still challenging – there is a need for a deep understanding of sustainable development, commitment and capacity to operationalise and implement its multidimensional goals, access to data, expertise, analysis and interpretation of results. As practice shows, there is still a conflict between socio-economic development and the environmental dimension, making it difficult to identify and implement the most effective strategy for creating sustainable development (Redclift, 2005). In addition, doubts arise to what extent such a broad and global sustainable development program such as the 2030 Agenda can be effectively implemented, especially in the face of the diverse economic and political interests of various social groups, states and blocs, the oligarchisation of certain economies, the weakening role of states with the parallel strengthening of the role of transnational corporations and global finance (Gruchelski & Niemczyk, 2016). Perhaps the biggest reason for the failure to establish global sustainable socio-economic development is also the structure of aid offered to poor countries. To a greater extent, these countries are provided, for commercial reasons, with means of consumption, instead of means of production and infrastructure (Gruchelski & Niemczyk, 2013).

References

- Bali Swain, R., & Yang-Wallentin, F. (2020). Achieving sustainable development goals: Predicaments and strategies. *International Journal of Sustainable Development & World Ecology*, 27(2), 96–106. <https://doi.org/10.1080/13504509.2019.1692316>

- Deneulin, S., & Shahani, L. (2009). *An introduction to the human development and capability approach. Freedom and agency*. Earthscan International Development Research Centre.
- Dlouhá, J., & Pospíšilová, M. (2018). Education for sustainable development goals in public debate: The importance of participatory research in reflecting and supporting the consultation process in developing a vision for Czech education. *Journal of Cleaner Production*, 172, 4314–4327. <https://doi.org/10.1016/j.jclepro.2017.06.145>
- Dyr, T., Misiurski, P., & Ziółkowska, K. (2019). Costs and benefits of using buses fuelled by natural gas in public transport. *Journal of Cleaner Production*, 225, 1134–1146. <https://doi.org/10.1016/j.jclepro.2019.03.317>
- Easterly, W. (2015). The trouble with the sustainable development goals. *Current History*, 114(775), 322–324. <https://doi.org/10.1525/curh.2015.114.775.322>
- Fayomi, O. S. I., Okokpuije, I. P., & Udo, M. (2018). The role of research in attaining sustainable development goals. *IOP Conference Series: Materials Science and Engineering*, 413(1), 012002. <https://doi.org/10.1088/1757-899X/413/1/012002>
- Fonseca, L. M., Domingues, J. P., & Dima, A. M. (2020). Mapping the Sustainable Development Goals Relationships. *Sustainability*, 12(8), 3359. <https://doi.org/10.3390/su12083359>
- Fuso Nerini, F., Tomei, J., To, L. S., Bisaga, I., Parikh, P., Black, M., Borrión, A., Spataru, C., Castán Broto, V., Anandarajah, G., Milligan, B., & Mulugetta, Y. (2018). Mapping synergies and trade-offs between energy and the sustainable development goals. *Nature Energy*, 3(1), 10–15. <https://doi.org/10.1038/s41560-017-0036-5>
- Griggs, D., Stafford Smith, M., Rockström, J., Öhman, M. C., Gaffney, O., Glaser, G., Kanie, N., Noble, I., Steffen, W., & Shyamsundar, P. (2014). An integrated framework for sustainable development goals. *Ecology and Society*, 19(4), art49. <https://doi.org/10.5751/ES-07082-190449>
- Gruchelski, M., & Niemczyk, J. (2013). Zrównoważony unijny rozwój społeczno-gospodarczy z uwzględnieniem polskiego sektora rolno-żywnościowego i wsi; ocena trafności działań. *Postępy Techniki Przetwórstwa Spożywczego*, 1, 125–135.
- Gruchelski, M., & Niemczyk, J. (2016). The 2030 Agenda for sustainable development goals and sustainable development goals – chances of implementation. *Postępy Techniki Przetwórstwa Spożywczego*, 1, 122–126.
- Gulski, B. (2021). Nieetyczne zachowania w relacjach między przedsiębiorstwami jako zagrożenie dla realizacji Celów Zrównoważonego Rozwoju i wynikających z nich zadań. *Nowe Tendencje w Zarządzaniu*, 1(1), 7–43. <https://doi.org/10.31743/NTZ.13156>
- Gupta, J., & Vegelin, C. (2016). Sustainable development goals and inclusive development. *International Environmental Agreements: Politics, Law and Economics*, 16(3), 433–448. <https://doi.org/10.1007/s10784-016-9323-z>
- Kabeer, N. (2010). *Can the MDGs provide a pathway to social justice?: The challenge of intersecting inequalities*. Institute of Development Studies. United Nations Development Programme.
- Kaczmarek, F. (2020). Pandemia COVID-19 a Cele Zrównoważonego Rozwoju. In K. Hajder, M. Kacperska, & Ł. Donaj (Eds.), *Konsekwencje pandemii COVID-19* (pp. 159–172). Świat i gospodarka.

- Moore, H. L. (2015). Global Prosperity and Sustainable Development Goals. *Journal of International Development*, 27(6), 801–815. <https://doi.org/10.1002/jid.3114>
- Nilsson, M., Griggs, D., & Visbeck, M. (2016). Map the interactions between Sustainable Development Goals. *Nature*, 534, 320–322.
- Obersteiner, M., Walsh, B., Frank, S., Havlik, P., Cantele, M., Liu, J., Palazzo, A., Hertero, M., Lu, Y., Mosnier, A., Valin, H., Riahi, K., Kraxner, F., Fritz, S., & van Vuuren, D. (2016). Assessing the land resource–food price nexus of the sustainable development goals. *Science Advances*, 2(9). <https://doi.org/10.1126/sciadv.1501499>
- Pogge, T., & Sengupta, M. (2015). The sustainable development goals (SDGs) as drafted: Nice idea, poor execution. *Washington International Law Journal*, 24(3), 571–587.
- Pradhan, P., Costa, L., Rybski, D., Lucht, W., & Kropp, J. P. (2017a). a systematic study of sustainable development goal (SDG) Interactions. *Earth's Future*, 5(11), 1169–1179. <https://doi.org/10.1002/2017EF000632>
- Redclift, M. (2005). Sustainable development (1987–2005): An oxymoron comes of age. *Sustainable Development*, 13(4), 212–227. <https://doi.org/10.1002/sd.281>
- Reeves, A., Basu, S., McKee, M., Meissner, C., & Stuckler, D. (2013). Does investment in the health sector promote or inhibit economic growth? *Globalization and Health*, 9(1), 43. <https://doi.org/10.1186/1744-8603-9-43>
- Rokicka, E., & Woźniak, W. (2016). *W kierunku zrównoważonego rozwoju. Koncepcje, interpretacje, konteksty*. Uniwersytet Łódzki.
- Salvia, A. L., Leal Filho, W., Brandli, L. L., & Griebeler, J. S. (2019). Assessing research trends related to Sustainable Development Goals: local and global issues. *Journal of Cleaner Production*, 208, 841–849. <https://doi.org/10.1016/j.jclepro.2018.09.242>
- Shulla, K., Voigt, B.-F., Cibian, S., Scandone, G., Martinez, E., Nelkovski, F., & Salehi, P. (2021). Effects of COVID-19 on the sustainable development goals (SDGs). *Discover Sustainability*, 2(1), 15. <https://doi.org/10.1007/s43621-021-00026-x>
- Singh, G. G., Cisneros-Montemayor, A. M., Swartz, W., Cheung, W., Guy, J. A., Kenny, T.-A., McOwen, C. J., Asch, R., Geffert, J. L., Wabnitz, C. C. C., Sumaila, R., Hanich, Q., & Ota, Y. (2018). A rapid assessment of co-benefits and trade-offs among Sustainable Development Goals. *Marine Policy*, 93, 223–231. <https://doi.org/10.1016/j.marpol.2017.05.030>
- Spaiser, V., Ranganathan, S., Swain, R. B., & Sumpter, D. J. T. (2017). The sustainable development oxymoron: Quantifying and modelling the incompatibility of sustainable development goals. *International Journal of Sustainable Development & World Ecology*, 24(6), 457–470. <https://doi.org/10.1080/13504509.2016.1235624>
- United Nations. (1992). *Agenda 21 – United Nations Conference on Environment & Development Rio de Janeiro*, United Nations.
- United Nations. (2015a). *Transforming our world: The 2030 agenda for sustainable development*, United Nations.
- United Nations. (2015b). *Resolution adopted by the General Assembly on 27 July 2015. A/RES/69/313*, United Nations.
- Urbaniec, M. (2018a). Rola przedsiębiorczości w kontekście zrównoważonego rozwoju. *Przedsiębiorczość – Edukacja*, 14, 26–39. <https://doi.org/10.24917/20833296.14.2>
- Urbaniec, M. (2018b). Rola przedsiębiorczości w kontekście zrównoważonego rozwoju. *Przedsiębiorczość – Edukacja*, 14, 26–39. <https://doi.org/10.24917/20833296.14.2>

- van Tulder, R. (2018). *Business & the sustainable development goals: A framework for effective corporate involvement*. Rotterdam School of Management, Erasmus University.
- Venkatesh, G. (2021). Sustainable development goals – Quo Vadis, cities of the world? *Problemy Ekorozwoju*, 16(1), 171–179. <https://doi.org/10.35784/pe.2021.1.18>
- WCED. (1987). *Our common future*. World Commission on Environment and Development.
- Wiśniewska, M., & Wyrwa, J. (2022). *Bezpieczeństwo żywności i żywnościowe w okresie pandemii: ujęcie interdyscyplinarne*.
- Zondervan, R. (2017). The scientific and techno-logical community in the sustainable development goal process. *Environmental Scientist*, 26(3), 34–38.

3 The economic dimension of sustainable development

Judyta Lubacha

Introduction

Extensive research offers evidence that economic growth has a negative impact on the environment. Economic welfare is based on the exploitation of natural resources (Kalimeris et al., 2020). Many developing countries export raw and primary materials, especially those rich in minerals and fuel deposits (Abou-Ali & Abdelfattah, 2013; West et al., 2014). Economic growth is related to the increase in energy consumption (Ozcan et al., 2020; Sarwar et al., 2017). Moreover, the consumption of energy and oil leads to an increase in pollution and CO₂ emissions (Omri, 2013). Research shows a strong positive correlation between economic growth and CO₂ emissions (Leitão et al., 2022). In the age of globalisation emissions are transferred to countries of production, which causes the deepening of global inequalities (Cadarso et al., 2012). Developed countries like USA, EU and Japan are the main carbon importers, and developing countries such as China and Southeast Asian countries are major carbon exporters (Y. Wang et al., 2022).

In this chapter sustainable economic development is discussed from the perspective of three main economic actors: business sector, household sector (consumers) and governmental sector. Two main questions are addressed in the chapter: (1) How do economic actors create pressure on the natural environment? (2) How can economic actors reduce their negative impact on the natural environment? The systematic literature review is based on the results of the query “sustainable development” in the Web of Science Citation Index with Abstracts in WoS Category Economics. From 5,170 records (download date September 2022) those related to business, households and governmental sector were chosen for analysis.

Business sector

Each of the business sectors (agricultural, industrial and services) creates environmental pressure in different ways. Nevertheless, all sectors are responsible for greenhouse gases (GHGs) emission (Table 3.1).

Table 3.1 Main areas of environmental pressure in agriculture, industry and services

<i>Agriculture</i>	<i>Industry</i>	<i>Services</i>
<ul style="list-style-type: none">• Greenhouse gas emission (de Pinto et al., 2016; Jorgenson & Birkholz, 2010)• Freshwater irrigation (Albornoz-Mendoza & Mainar-Causapé, 2019)• Soil erosion (Suleimenov & Oram, 2000)• Deforestation (Mechiche-Alami et al., 2021)• Species extinctions (Chaudhary & Brooks, 2019)	<ul style="list-style-type: none">• Greenhouse gas emission (Dhar et al., 2020; Gingrich et al., 2011)• SO₂ emission (Apsimon & Warren, 1996; Tang et al., 2022)• High water withdrawal (Alkon et al., 2019; Pan et al., 2012)• Exposure to toxic substances (Kuwayama et al., 2017)	<ul style="list-style-type: none">• Greenhouse gas emission (Mattila & Antikainen, 2011; Saidi, 2021)• Particulate matter emission (Chen et al., 2022; Zhang et al., 2022)• Food waste (Son-nino & McWilliam, 2011)

Source: Own study.

Innovations are one of the means to achieve the goal of sustainable agriculture (Aldy et al., 1998). Food production requires water and energy use and alternatives for fossil fuels are already in place – solar energy for irrigation (Lefore et al., 2021) and biofuels (Kung, 2018). Although bioethanol and biodiesel production use water and fuel, the sustainability biofuel depends on the production technology used (Rosegrant et al., 2013). Water use may be reduced by more efficient irrigation techniques (Odegard & van der Voet, 2014). Crop diversification may decrease soil erosion (Alkon et al., 2020). The decrease in GHG emissions from agriculture as well as decrease of deforestation may be achieved through the reduction of pasture land (de Pinto et al., 2016). Adoption of sustainable agricultural practices should take into account informal norms and beliefs. Direct implementation of “western” “scientific” approach may be counterproductive in developing countries. Social change needs to be developed based on local values and beliefs (Shah et al., 2017). Social capital in the form of social networks (relatives, traders) and memberships in professional organisations increases the probability of adoption of sustainable practices in agriculture (González, 2012; Teklewold et al., 2013).

Electricity and heat sectors are responsible for the highest GHG emissions (Alajmi, 2021; Gingrich et al., 2011), cement, steel and iron manufacturing are the second largest emitters (Dhar et al., 2020). SO₂ emission is related to coal combustion (Apsimon & Warren, 1996). Renewable energy sources such as solar photovoltaic and wind are widely used as alternatives to fossil fuel combustion (Xie & Jamaani, 2022). However, it should be noted that the production of energy from solar and wind farms requires scarce materials like copper, lithium, and aluminium (García-Olivares et al., 2012). Biogas produced from municipal waste is another alternative to non-renewable energy sources. Moreover, the

reuse of recyclables allows for a reduction in energy use in production (Lino & Ismail, 2011). Another important way of reduction of greenhouse emission is energy saving and increase of energy productivity and efficiency by means of technological innovation and changes in the production process (E. Z. Wang et al., 2022; Xie & Jamaani, 2022).

Freight and passenger transport are the main sources of CO₂ emission (accounting for 1/4 of the world's emissions) (Mattila & Antikainen, 2011; Saidi, 2021; Zegras, 2007). The main way for transport decarbonisation is the adaptation of environmentally-friendly means of transportation such as electric or hybrid vehicles for passenger transport (Corazza et al., 2016; Kołós & Taczanowski, 2016) and rail freight transportation (Behrends, 2017; Dinwoodie, 2006). However, electric vehicles are not a sustainable solution without changing the energy production sources like fossil fuels (Zawieska & Pieriegud, 2018).

Households sector

Consumers' environmental pressure is related to various business sectors (Figure 3.1). Household food consumption, housing (heating and energy use) and mobility are seen as the most damaging factors to the environment (Spangenberg & Lorek, 2002).

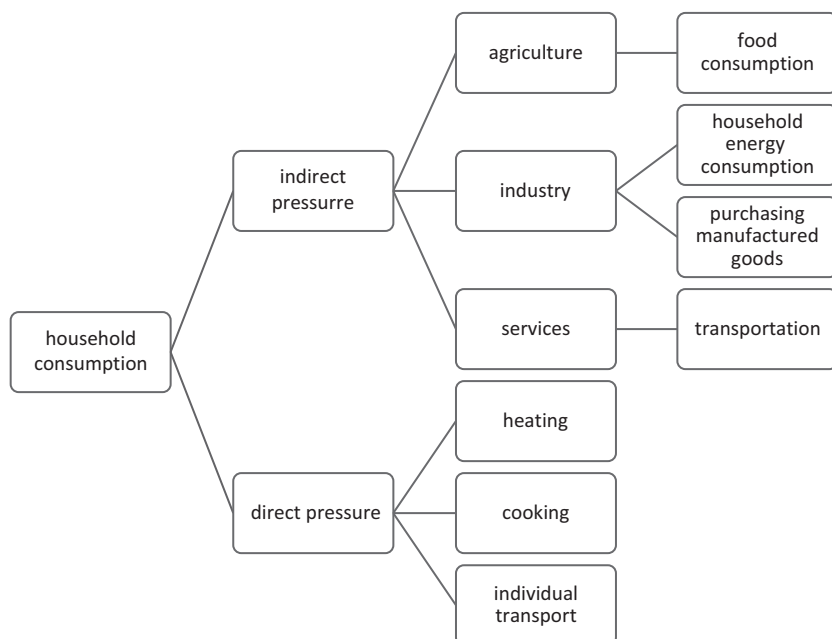


Figure 3.1 Main areas of ecological pressure in consumption in relation to business sectors

Animal food production causes GHG emissions, deforestation and intensive use of water and land (Odegard & van der Voet, 2014). One of the solutions for decreasing the negative impact on the production of meat and dairy products is a shift from animal products to plant-based diet (de Boer et al., 2006; Jallinoja et al., 2016), cultured meat and insects are other alternatives (Gómez-Luciano et al., 2019). Households are responsible for the majority of food waste, its reduction could significantly reduce CO₂ emissions (Amicarelli et al., 2022; Reynolds et al., 2019).

Consumption of goods and services by individual consumers does not cause direct GHG emissions; nevertheless, the production of those goods is linked to energy use, and GHG emissions (Duarte et al., 2013). Reduction of consumption and a shift towards sharing economy is one of the possible ways of reducing environmental pressure (Davies et al., 2017). With the rise in household income, the propensity to consume increases (Duarte et al., 2021), which may result in a further increase in emissions in developing countries that are fighting poverty (Yuan & Wang, 2021). Solutions are needed that reduce inequalities while reducing CO₂ emissions (Wan et al., 2022).

Direct environmental pressure is exerted by individual heating and cooking appliances, especially in rural areas (Malla, 2013; Matsika et al., 2013). Solid fuel heating and cooking causes not only CO₂ emissions but also high air pollution with particulate matter, which has negative health consequences (Kurata et al., 2020; Masera et al., 2000). Replacing solid fuel with LPG and other low-emission energy sources is one of the possible solutions to reduce the negative environmental impact on households. However, for this investment in infrastructure and state intervention are required (Adjei-Mantey & Takeuchi, 2022; Troncoso & Soares da Silva, 2017).

The modern lifestyle requires high energy consumption – housework, hygiene, entertainment and cooking are all linked to the use of electric equipment (Jalas & Juntunen, 2015; Vringer & Blok, 2000). The negative impact on energy consumption may be reduced by decreasing the energy demand by means of energy efficiency improvements and energy-saving behaviour (Huimin, 2013; Sardanou, 2007) as well as by increasing the production of renewable energy by households and local communities (Aklin et al., 2018; McGovern, 2021).

Individual car transport is responsible for increased CO₂ emissions (Lee & Lee, 2014). The alternative is public transport, especially in the form of low-polluting rail transit (Lin & Du, 2017), ridesharing (Furuhata et al., 2013) and electric micromobility (Nigro et al., 2022).

Change in consumer behaviours is a very complex process – psychological (Jackson, 2002; van Dam & van Trijp, 2011), cultural (Liobikiene et al., 2016), educational (Filippini et al., 2020) and economic factors (Kułyk et al., 2017) play a role in decision-making. Therefore, policies directed towards more sustainable consumption should take into account this complexity.

Government sector

Governments, policy makers, international organisations create a regulatory framework for changes towards sustainable development. The main areas of interventions are the energy and manufacturing sectors. In the Kyoto Protocol (Cole, 2012) and subsequently in the Paris Agreement (Mele et al., 2021) the international community agreed to collectively reduce GHG emissions, with emissions trading as one of the tools (Newell et al., 2014). The transition to low-carbon and renewable energy requires investment in the private sector (business and households) (Hak et al., 2017; Shem et al., 2019). Governments can support these investments with subsidies, public loans and favourable regulatory frameworks such as net metering, feed-in tariffs and tax incentives (Chang et al., 2016; Koo, 2017). However, it should be noted that some renewable resources are not stable (such as wind and solar energy) and should be supported with hydropower or biomass to secure constant energy production (Stocker et al., 2011). Nevertheless, developing countries with limited access to electricity can benefit more from investing in renewable energy instead of relying on fossil fuel-based electrification (Chapel, 2022; Mahumane & Mulder, 2019). On the other hand, energy conservation and energy efficiency should be prioritised as one of the solutions to reduce GHG emissions. Awareness of the importance of energy conservation should be built in society (Golubchikov & Deda, 2012; Owens & Drifill, 2008).

The extraction of significant production-related resources can be reduced under the pressure of environmental taxes and incentives for resource-efficient technologies (Behrens et al., 2007; Wilts & O'Brien, 2019). A circular economy model with material reuse and waste recycling is another option to reduce resource extraction (Korhonen et al., 2018; Millar et al., 2019). Adaptation of the circular economy model is supported by the European Union and national governments in the form of reforms of waste management systems (Gregson et al., 2015) and the development of an EU Circular Economy Action Plan (Skvarciany et al., 2021). In addition, institutional quality (Agovino et al., 2020) and institutional changes driven by society (bottom-up) and government (top-down) (de Jesus & Mendonça, 2018) are crucial in implementing a circular economy system.

Although transport is responsible for a high share of GHGs emission, there is a lack of significant policies supporting changes in this sector (Gössling et al., 2016). It is emphasised that the transition from individual car mobility to more sustainable means of transport (buses, trains, bicycles, walking) is linked to urban planning, space design and the availability of adequate infrastructure (Curtis, 2008; Glaser & Krizek, 2021). The introduction of sustainable mobility solutions would require a significant transformation of urban space (Kębłowski et al., 2019), facing conflicts between various stakeholders (Hrelja et al., 2013) and changing individual motivations (Redman et al., 2013). Similarly, building sustainable agriculture does not occur due to the complexity of the agricultural system (Béné, 2022).

Conclusions

The transition to sustainable development is crucial for the survival of humanity. There is no doubt that economic activity causes negative pressure on the environment. The question is how producers, consumers and governments can reduce this negative impact. As outlined in the literature review conducted, two main solutions are adapted: (1) environmental innovation, increasing energy efficiency and resource productivity along with technological change; (2) reducing resource exploitation through reuse and recycling (the circular economy model).

There is no single solution, there is a need for an integrated change of the economic model using various tools such as sharing and collaborative economy, the circular economy and the bioeconomy (D'Amato & Korhonen, 2021; Svenfelt et al., 2019). Moreover, technology and innovation are not the ultimate solutions, what matters most is social change, changing the behaviour of consumers and producers and transforming the current economic model (Arvesen et al., 2011; Vandeventer et al., 2019). Further research should be focused on how this social change can occur.

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References

- Abou-Ali, H., & Abdelfattah, Y. M. (2013). Integrated paradigm for sustainable development: A panel data study. *Economic Modelling*, 30(1), 334–342. <https://doi.org/10.1016/j.econmod.2012.09.016>
- Adjei-Mantey, K., & Takeuchi, K. (2022). Risk aversion and cleaner cooking fuel choice: An empirical study in Ghana. *Environment and Development Economics*, 1–19. <https://doi.org/10.1017/s1355770x22000122>
- Agovino, M., Ferrara, M., Marchesano, K., & Garofalo, A. (2020). The separate collection of recyclable waste materials as a flywheel for the circular economy: The role of institutional quality and socio-economic factors. *Economia Politica*, 37(2), 659–681. <https://doi.org/10.1007/s40888-019-00153-9>
- Aklin, M., Bayer, P., Harish, S. P., & Urpelainen, J. (2018). Economics of household technology adoption in developing countries: Evidence from solar technology adoption in rural India. *Energy Economics*, 72, 35–46. <https://doi.org/10.1016/j.eneco.2018.02.011>
- Alajmi, R. G. (2021). Factors that impact greenhouse gas emissions in Saudi Arabia: Decomposition analysis using LMDI. *Energy Policy*, 156. <https://doi.org/10.1016/j.enpol.2021.112454>
- Albornoz-Mendoza, L., & Mainar-Causapé, A. J. (2019). Analysis of the social and environmental economic sustainability in the territory of Yucatan (Mexico). *Papers in Regional Science*, 98(2), 1215–1238. <https://doi.org/10.1111/pirs.12390>

- Alcon, F., Marín-Miñano, C., Zabala, J. A., de-Miguel, M. D., & Martínez-Paz, J. M. (2020). Valuing diversification benefits through intercropping in Mediterranean agroecosystems: A choice experiment approach. *Ecological Economics*, 171. <https://doi.org/10.1016/j.ecolecon.2020.106593>
- Aldy, J. E., Hrubovcak, J., & Vasavada, U. (1998). The role of technology in sustaining agriculture and the environment. *Ecological Economics*, 26(1), 81–96. [https://doi.org/10.1016/S0921-8009\(97\)00068-2](https://doi.org/10.1016/S0921-8009(97)00068-2)
- Alkon, M., He, X., Paris, A. R., Liao, W., Hodson, T., Wanders, N., & Wang, Y. (2019). Water security implications of coal-fired power plants financed through China's belt and road initiative. *Energy Policy*, 132, 1101–1109. <https://doi.org/10.1016/j.enpol.2019.06.044>
- Amicarelli, V., Lagioia, G., Sampietro, S., & Bux, C. (2022). Has the COVID-19 pandemic changed food waste perception and behavior? Evidence from Italian consumers. *Socio-Economic Planning Sciences*, 82. <https://doi.org/10.1016/j.seps.2021.101095>
- Apsimon, H. M., & Warren, R. F. (1996). Transboundary air pollution in Europe. *Energy Policy*, 24(7), 631–640. [https://doi.org/10.1016/0301-4215\(96\)00052-3](https://doi.org/10.1016/0301-4215(96)00052-3)
- Arvesen, A., Bright, R. M., & Hertwich, E. G. (2011). Considering only first-order effects? How simplifications lead to unrealistic technology optimism in climate change mitigation. *Energy Policy*, 39(11), 7448–7454. <https://doi.org/10.1016/j.enpol.2011.09.013>
- Behrends, S. (2017). Burden or opportunity for modal shift? – Embracing the urban dimension of intermodal road-rail transport. *Transport Policy*, 59, 10–16. <https://doi.org/10.1016/j.tranpol.2017.06.004>
- Behrens, A., Giljum, S., Kovanda, J., & Niza, S. (2007). The material basis of the global economy. Worldwide patterns of natural resource extraction and their implications for sustainable resource use policies. *Ecological Economics*, 64(2), 444–453. <https://doi.org/10.1016/j.ecolecon.2007.02.034>
- Béné, C. (2022). Why the Great Food Transformation may not happen – A deep-dive into our food systems' political economy, controversies and politics of evidence. *World Development*, 154. <https://doi.org/10.1016/j.worlddev.2022.105881>
- Cadarso, M. Á., López, L. A., Gómez, N., & Tobarra, M. Á. (2012). International trade and shared environmental responsibility by sector. An application to the Spanish economy. *Ecological Economics*, 83, 221–235. <https://doi.org/10.1016/j.ecolecon.2012.05.009>
- Chang, Y., Fang, Z., & Li, Y. (2016). Renewable energy policies in promoting financing and investment among the East Asia Summit countries: Quantitative assessment and policy implications. *Energy Policy*, 95, 427–436. <https://doi.org/10.1016/j.enpol.2016.02.017>
- Chapel, C. (2022). Impact of official development assistance projects for renewable energy on electrification in sub-Saharan Africa. *World Development*, 152. <https://doi.org/10.1016/j.worlddev.2021.105784>
- Chaudhary, A., & Brooks, T. M. (2019). National consumption and global trade impacts on biodiversity. *World Development*, 121, 178–187. <https://doi.org/10.1016/j.worlddev.2017.10.012>
- Chen, J., Hu, X., Razi, U., & Rexhepi, G. (2022). The sustainable potential of efficient air-transportation industry and green innovation in realising environmental sustainability in G7 countries. *Economic Research-Ekonomska Istrazivanja*, 35(1), 3814–3835. <https://doi.org/10.1080/1331677X.2021.2004190>
- Cole, J. C. (2012). Genesis of the CDM: The original policymaking goals of the 1997 Brazilian proposal and their evolution in the Kyoto protocol negotiations into the

- CDM. *International Environmental Agreements: Politics, Law and Economics*, 12(1), 41–61. <https://doi.org/10.1007/s10784-010-9132-8>
- Corazza, M. V., Guida, U., Musso, A., & Tozzi, M. (2016). A new generation of buses to support more sustainable urban transport policies: A path towards “greener” awareness among bus stakeholders in Europe. *Research in Transportation Economics*, 55, 20–29. <https://doi.org/10.1016/j.retrec.2016.04.007>
- Curtis, C. (2008). Planning for sustainable accessibility: The implementation challenge. *Transport Policy*, 15(2), 104–112. <https://doi.org/10.1016/j.tranpol.2007.10.003>
- D’Amato, D., & Korhonen, J. (2021). Integrating the green economy, circular economy and bioeconomy in a strategic sustainability framework. *Ecological Economics*, 188. <https://doi.org/10.1016/j.ecolecon.2021.107143>
- Davies, A. R., Donald, B., Gray, M., & Knox-Hayes, J. (2017). Sharing economies: Moving beyond binaries in a digital age. *Cambridge Journal of Regions, Economy and Society*, 10(2), 209–230. <https://doi.org/10.1093/cjres/rsx005>
- de Boer, J., Helms, M., & Aiking, H. (2006). Protein consumption and sustainability: Diet diversity in EU-15. *Ecological Economic*, 59(3), 267–247. <https://doi.org/10.1016/j.ecolecon.2005>
- de Jesus, A., & Mendonça, S. (2018). Lost in transition? Drivers and barriers in the eco-innovation road to the circular economy. *Ecological Economics*, 145, 75–89. <https://doi.org/10.1016/j.ecolecon.2017.08.001>
- de Pinto, A., Li, M., Haruna, A., Hyman, G. G., Martinez, M. A. L., Creamer, B., Kwon, H. Y., Garcia, J. B. V., Tapasco, J., & Martinez, J. D. (2016). Low emission development strategies in agriculture. An agriculture, forestry, and other land uses (AFOLU) perspective. *World Development*, 87, 180–203. <https://doi.org/10.1016/j.worlddev.2016.06.013>
- Dhar, S., Pathak, M., & Shukla, P. R. (2020). Transformation of India’s steel and cement industry in a sustainable 1.5°C world. *Energy Policy*, 137. <https://doi.org/10.1016/j.enpol.2019.111104>
- Dinwoodie, J. (2006). Rail freight and sustainable urban distribution: Potential and practice. *Journal of Transport Geography*, 14(4), 309–320. <https://doi.org/10.1016/j.jtrangeo.2005.06.001>
- Duarte, R., Mainar, A., & Sánchez-Chóliz, J. (2013). The role of consumption patterns, demand and technological factors on the recent evolution of CO₂ emissions in a group of advanced economies. *Ecological Economics*, 96, 1–13. <https://doi.org/10.1016/j.ecolecon.2013.09.007>
- Duarte, R., Miranda-Buetas, S., & Sarasa, C. (2021). Household consumption patterns and income inequality in EU countries: Scenario analysis for a fair transition towards low-carbon economies. *Energy Economics*, 104. <https://doi.org/10.1016/j.eneco.2021.105614>
- Filippini, M., Kumar, N., & Srinivasan, S. (2020). Energy-related financial literacy and bounded rationality in appliance replacement attitudes: Evidence from Nepal. *Environment and Development Economics*, 25(4), 399–422. <https://doi.org/10.1017/S1355770X20000078>
- Furuhata, M., Dessouky, M., Ordóñez, F., Brunet, M. E., Wang, X., & Koenig, S. (2013). Ridesharing: The state-of-the-art and future directions. *Transportation Research Part B: Methodological*, 57, 28–46. <https://doi.org/10.1016/j.trb.2013.08.012>

- García-Olivares, A., Ballabrera-Poy, J., García-Ladona, E., & Turiel, A. (2012). A global renewable mix with proven technologies and common materials. *Energy Policy*, 41, 561–574. <https://doi.org/10.1016/j.enpol.2011.11.018>
- Gingrich, S., Kušková, P., & Steinberger, J. K. (2011). Long-term changes in CO₂ emissions in Austria and Czechoslovakia-identifying the drivers of environmental pressures. *Energy Policy*, 39(2), 535–543. <https://doi.org/10.1016/j.enpol.2010.10.006>
- Glaser, M., & Krizek, K. J. (2021). Can street-focused emergency response measures trigger a transition to new transport systems? Exploring evidence and lessons from 55 US cities. *Transport Policy*, 103, 146–155. <https://doi.org/10.1016/j.tranpol.2021.01.015>
- Golubchikov, O., & Deda, P. (2012). Governance, technology, and equity: An integrated policy framework for energy efficient housing. *Energy Policy*, 41, 733–741. <https://doi.org/10.1016/j.enpol.2011.11.039>
- Gómez-Luciano, C. A., Vriesekoop, F., & Urbano, B. (2019). Towards food security of alternative dietary proteins: A comparison between Spain and the Dominican Republic. *Amfiteatru Economic*, 21(51), 393–407. <https://doi.org/10.24818/EA/2019/51/393>
- González, H. (2012). Agroecological Reconfiguration: Local Alternatives to Environmental Degradation in Mexico. *Journal of Agrarian Change*, 12(4), 484–502. <https://doi.org/10.1111/j.1471-0366.2012.00357.x>
- Gössling, S., Cohen, S. A., & Hares, A. (2016). Inside the black box: EU policy officers' perspectives on transport and climate change mitigation. *Journal of Transport Geography*, 57, 83–93. <https://doi.org/10.1016/j.jtrangeo.2016.10.002>
- Gregson, N., Crang, M., Fuller, S., & Holmes, H. (2015). Interrogating the circular economy: The moral economy of resource recovery in the EU. *Economy and Society*, 44(2), 218–243. <https://doi.org/10.1080/03085147.2015.1013353>
- Hak, M., Matsuoka, Y., & Gomi, K. (2017). A qualitative and quantitative design of low-carbon development in Cambodia: Energy policy. *Energy Policy*, 100, 237–251. <https://doi.org/10.1016/j.enpol.2016.10.017>
- Hrelja, R., Isaksson, K., & Richardson, T. (2013). Choosing conflict on the road to sustainable mobility: A risky strategy for breaking path dependency in urban policy making. *Transportation Research Part A: Policy and Practice*, 49, 195–205. <https://doi.org/10.1016/j.tra.2013.01.029>
- Huimin, L. (2013). The impact of human behavior on ecological threshold: Positive or negative? -Grey relational analysis of ecological footprint, energy consumption and environmental protection. *Energy Policy*, 56, 711–719. <https://doi.org/10.1016/j.enpol.2013.01.044>
- Jackson, T. (2002). Evolutionary psychology in ecological economics: consilience, consumption and contentment. *Ecological Economics*, 41(2), 289–303. [https://doi.org/10.1016/S0921-8009\(02\)00040-X](https://doi.org/10.1016/S0921-8009(02)00040-X)
- Jalas, M., & Juntunen, J. K. (2015). Energy intensive lifestyles: Time use, the activity patterns of consumers, and related energy demands in Finland. *Ecological Economics*, 113, 51–59. <https://doi.org/10.1016/j.ecolecon.2015.02.016>
- Jallinoja, P., Niva, M., & Latvala, T. (2016). Future of sustainable eating? Examining the potential for expanding bean eating in a meat-eating culture. *Futures*, 83, 4–14. <https://doi.org/10.1016/j.futures.2016.03.006>
- Jorgenson, A., & Birkholz, R. (2010). Assessing the causes of anthropogenic methane emissions in comparative perspective, 1990–2005. *Ecological Economics*, 69(12), 2634–2643. <https://doi.org/10.1016/j.ecolecon.2010.08.008>

- Kalimeris, P., Bithas, K., Richardson, C., & Nijkamp, P. (2020). Hidden linkages between resources and economy: A “Beyond-GDP” approach using alternative welfare indicators. *Ecological Economics*, 169. <https://doi.org/10.1016/j.ecolecon.2019.106508>
- Kębłowski, W., van Criekingen, M., & Bassens, D. (2019). Moving past the sustainable perspectives on transport: An attempt to mobilise critical urban transport studies with the right to the city. *Transport Policy*, 81, 24–34. <https://doi.org/10.1016/j.tranpol.2019.05.012>
- Koloś, A., & Taczanowski, J. (2016). The feasibility of introducing light rail systems in medium-sized towns in Central Europe. *Journal of Transport Geography*, 54, 400–413. <https://doi.org/10.1016/j.jtrangeo.2016.02.006>
- Koo, B. (2017). Examining the impacts of feed-in-tariff and the clean development mechanism on Korea’s renewable energy projects through comparative investment analysis. *Energy Policy*, 104, 144–154. <https://doi.org/10.1016/j.enpol.2017.01.017>
- Korhonen, J., Honkasalo, A., & Seppälä, J. (2018). Circular economy: The concept and its limitations. *Ecological Economics*, 143, 37–46. <https://doi.org/10.1016/j.ecolecon.2017.06.041>
- Kułyk, P., Michałowska, M., & Patelska, M. (2017). Consumer attitudes in the light of the concept of sustainable consumption in Lubuskie voivodeship against the background of trends in consumption in Poland. *Oeconomia Copernicana*, 8(2), 181–197. <https://doi.org/10.24136/oc.v8i2.12>
- Kung, C. C. (2018). A dynamic framework of sustainable development in agriculture and bioenergy. *Agricultural Economics (Czech Republic)*, 64(10), 445–455. <https://doi.org/10.17221/281/2017-AGRICECON>
- Kurata, M., Takahashi, K., & Hibiki, A. (2020). Gender differences in associations of household and ambient air pollution with child health: Evidence from household and satellite-based data in Bangladesh. *World Development*, 128. <https://doi.org/10.1016/j.worlddev.2019.104779>
- Kuwayama, Y., Roeshot, S., Krupnick, A., Richardson, N., & Mares, J. (2017). Risks and mitigation options for on-site storage of wastewater from shale gas and tight oil development. *Energy Policy*, 101, 582–593. <https://doi.org/10.1016/j.enpol.2016.11.016>
- Lee, S., & Lee, B. (2014). The influence of urban form on GHG emissions in the U.S. household sector. *Energy Policy*, 68, 534–549. <https://doi.org/10.1016/j.enpol.2014.01.024>
- Lefore, N., Closas, A., & Schmitter, P. (2021). Solar for all: A framework to deliver inclusive and environmentally sustainable solar irrigation for smallholder agriculture. *Energy Policy*, 154. <https://doi.org/10.1016/j.enpol.2021.112313>
- Leitão, J., Ferreira, J., & Santibanez-González, E. (2022). New insights into decoupling economic growth, technological progress and carbon dioxide emissions: Evidence from 40 countries. *Technological Forecasting and Social Change*, 174. <https://doi.org/10.1016/j.techfore.2021.121250>
- Lin, B., & Du, Z. (2017). Can urban rail transit curb automobile energy consumption? *Energy Policy*, 105, 120–127. <https://doi.org/10.1016/j.enpol.2017.02.038>
- Lino, F. A. M., & Ismail, K. A. R. (2011). Energy and environmental potential of solid waste in Brazil. *Energy Policy*, 39(6), 3496–3502. <https://doi.org/10.1016/j.enpol.2011.03.048>
- Liobikiene, G., Mandravickaitė, J., & Bernatoniene, J. (2016). Theory of planned behavior approach to understand the green purchasing behavior in the EU: A cross-cultural study. *Ecological Economics*, 125, 38–46. <https://doi.org/10.1016/j.ecolecon.2016.02.008>

- Mahumane, G., & Mulder, P. (2019). Expanding versus greening? Long-term energy and emission transitions in Mozambique. *Energy Policy*, 126, 145–156. <https://doi.org/10.1016/j.enpol.2018.10.056>
- Malla, S. (2013). Household energy consumption patterns and its environmental implications: Assessment of energy access and poverty in Nepal. *Energy Policy*, 61, 990–1002. <https://doi.org/10.1016/j.enpol.2013.06.023>
- Masera, O. R., Saatkamp, B. D., & Kammen, D. M. (2000). From linear fuel switching to multiple cooking strategies: A critique and alternative to the energy ladder model. *World Development*, 28(12), 2083–2103. www.elsevier.com/locate/worlddev
- Matsika, R., Erasmus, B. F. N., & Twine, W. C. (2013). Double jeopardy: The dichotomy of fuelwood use in rural South Africa. *Energy Policy*, 52, 716–725. <https://doi.org/10.1016/j.enpol.2012.10.030>
- Mattila, T., & Antikainen, R. (2011). Backcasting sustainable freight transport systems for Europe in 2050. *Energy Policy*, 39(3), 1241–1248. <https://doi.org/10.1016/j.enpol.2010.11.051>
- McGovern, G. (2021). Capturing community value in civic energy business model design. *Energy Policy*, 156. <https://doi.org/10.1016/j.enpol.2021.112468>
- Mechiche-Alami, A., Yagoubi, J., & Nicholas, K. A. (2021). Agricultural land acquisitions unlikely to address the food security needs of African countries. *World Development*, 141. <https://doi.org/10.1016/j.worlddev.2020.105384>
- Mele, A., Paglialunga, E., & Sforza, G. (2021). Climate cooperation from Kyoto to Paris: What can be learnt from the CDM experience? *Socio-Economic Planning Sciences*, 75. <https://doi.org/10.1016/j.seps.2020.100942>
- Millar, N., McLaughlin, E., & Börger, T. (2019). The circular economy: Swings and roundabouts? *Ecological Economics*, 158, 11–19. <https://doi.org/10.1016/j.ecolecon.2018.12.012>
- Newell, R. G., Pizer, W. A., Raimi, D., Burtraw, D., Ellerman, D., Kerr, S., Stavins, R., & Wiener, J. (2014). Carbon markets: Past, present, and future. *Annual Review of Resource Economics*, 6, 191–215. <http://www.nber.org/papers/w18504>
- Nigro, M., Castiglione, M., Maria Colasanti, F., de Vincentis, R., Valenti, G., Liberto, C., & Comi, A. (2022). Exploiting floating car data to derive the shifting potential to electric micromobility. *Transportation Research Part A: Policy and Practice*, 157, 78–93. <https://doi.org/10.1016/j.tra.2022.01.008>
- Odegard, I. Y. R., & van der Voet, E. (2014). The future of food - scenarios and the effect on natural resource use in agriculture in 2050. *Ecological Economics*, 97, 51–59. <https://doi.org/10.1016/j.ecolecon.2013.10.005>
- Omri, A. (2013). CO₂ emissions, energy consumption and economic growth nexus in MENA countries: Evidence from simultaneous equations models. *Energy Economics*, 40, 657–664. <https://doi.org/10.1016/j.eneco.2013.09.003>
- Owens, S., & Driffill, L. (2008). How to change attitudes and behaviours in the context of energy. *Energy Policy*, 36(12), 4412–4418. <https://doi.org/10.1016/j.enpol.2008.09.031>
- Ozcan, B., Tzeremes, P. G., & Tzeremes, N. G. (2020). Energy consumption, economic growth and environmental degradation in OECD countries. *Economic Modelling*, 84, 203–213. <https://doi.org/10.1016/j.econmod.2019.04.010>
- Pan, L., Liu, P., Ma, L., & Li, Z. (2012). A supply chain based assessment of water issues in the coal industry in China. *Energy Policy*, 48, 93–102. <https://doi.org/10.1016/j.enpol.2012.03.063>

- Redman, L., Friman, M., Gärling, T., & Hartig, T. (2013). Quality attributes of public transport that attract car users: A research review. *Transport Policy*, 25, 119–127. <https://doi.org/10.1016/j.tranpol.2012.11.005>
- Reynolds, C., Goucher, L., Quested, T., Bromley, S., Gillick, S., Wells, V. K., Evans, D., Koh, L., Carlsson Kanyama, A., Katzeff, C., Svenfelt, Å., & Jackson, P. (2019). Review: Consumption-stage food waste reduction interventions – What works and how to design better interventions. *Food Policy*, 83, 7–27. <https://doi.org/10.1016/j.foodpol.2019.01.009>
- Rosegrant, M. W., Ringler, C., Zhu, T., Tokgoz, S., & Bhandary, P. (2013). Water and food in the bioeconomy: Challenges and opportunities for development. *Agricultural Economics (United Kingdom)*, 44(SUPPL1), 139–150. <https://doi.org/10.1111/agec.12058>
- Saidi, S. (2021). Freight transport and energy consumption: What impact on carbon dioxide emissions and environmental quality in MENA countries? *Economic Change and Restructuring*, 54(4), 1119–1145. <https://doi.org/10.1007/s10644-020-09296-3>
- Sardianou, E. (2007). Estimating energy conservation patterns of Greek households. *Energy Policy*, 35(7), 3778–3791. <https://doi.org/10.1016/j.enpol.2007.01.020>
- Sarwar, S., Chen, W., & Waheed, R. (2017). Electricity consumption, oil price and economic growth: Global perspective. *Renewable and Sustainable Energy Reviews*, 76, 9–18. <https://doi.org/10.1016/j.rser.2017.03.063>
- Shah, S. H., Angeles, L. C., & Harris, L. M. (2017). Worlding the intangibility of resilience: The case of rice farmers and water-related risk in the Philippines. *World Development*, 98, 400–412. <https://doi.org/10.1016/j.worlddev.2017.05.004>
- Shem, C., Simsek, Y., Hutfilter, U. F., & Urmee, T. (2019). Potentials and opportunities for low carbon energy transition in Vietnam: A policy analysis. *Energy Policy*, 134. <https://doi.org/10.1016/j.enpol.2019.06.026>
- Skvarciany, V., Lapinskaite, I., & Volskyte, G. (2021). Circular economy as assistance for sustainable development in OECD countries. *Oeconomia Copernicana*, 12(1), 11–34. <https://doi.org/10.24136/oc.2021.001>
- Sonnino, R., & McWilliam, S. (2011). Food waste, catering practices and public procurement: A case study of hospital food systems in Wales. *Food Policy*, 36(6), 823–829. <https://doi.org/10.1016/j.foodpol.2011.09.003>
- Spangenberg, J. H., & Lorek, S. (2002). Environmentally sustainable household consumption: from aggregate environmental pressures to priority fields of action. *Ecological Economics*, 43(2–3), 127–140. www.elsevier.com/locate/ecolecon
- Stocker, A., Großmann, A., Madlener, R., & Wolter, M. I. (2011). Sustainable energy development in Austria until 2020: Insights from applying the integrated model “e3.at.” *Energy Policy*, 39(10), 6082–6099. <https://doi.org/10.1016/j.enpol.2011.07.009>
- Suleimenov, M., & Oram, P. (2000). Trends in feed, livestock production, and rangelands during the transition period in three Central Asian countries. In *Food Policy* (Vol. 25). www.elsevier.com/locate/foodpol
- Svenfelt, Å., Alfredsson, E. C., Bradley, K., Fauré, E., Finnveden, G., Fuehrer, P., Gunnarsson-Östling, U., Isaksson, K., Malmaeus, M., Malmqvist, T., Skånberg, K., Stigson, P., Aretun, Å., Buhr, K., Hagbert, P., & Öhlund, E. (2019). Scenarios for sustainable futures beyond GDP growth 2050. *Futures*, 111, 1–14. <https://doi.org/10.1016/j.futures.2019.05.001>
- Tang, Y., Wu, S., & Chen, S. (2022). Evaluating the influence of environmental R&D on the SO₂ intensity in China: Evidence from dynamic spatial Durbin model analysis.

- Economic Research-Ekonomska Istrazivanja*, 36(1), 1886–1905. <https://doi.org/10.1080/1331677X.2022.2094438>
- Teklewold, H., Kassie, M., & Shiferaw, B. (2013). Adoption of multiple sustainable agricultural practices in rural Ethiopia. *Journal of Agricultural Economics*, 64(3), 597–623. <https://doi.org/10.1111/1477-9552.12011>
- Troncoso, K., & Soares da Silva, A. (2017). LPG fuel subsidies in Latin America and the use of solid fuels to cook. *Energy Policy*, 107, 188–196. <https://doi.org/10.1016/j.enpol.2017.04.046>
- van Dam, Y. K., & van Trijp, H. C. M. (2011). Cognitive and motivational structure of sustainability. *Journal of Economic Psychology*, 32(5), 726–741. <https://doi.org/10.1016/j.joep.2011.06.002>
- Vandeventer, J. S., Cattaneo, C., & Zografos, C. (2019). A degrowth transition: Pathways for the degrowth niche to replace the capitalist-growth regime. *Ecological Economics*, 156, 272–286. <https://doi.org/10.1016/j.ecolecon.2018.10.002>
- Vringer, K., & Blok, K. (2000). Long-term trends in direct and indirect household energy intensities: A factor in dematerialisation? *Energy Policy*, 28(10), 713–727.
- Wan, G., Wang, C., Wang, J., & Zhang, X. (2022). The income inequality-CO₂ emissions nexus: Transmission mechanisms. *Ecological Economics*, 195. <https://doi.org/10.1016/j.ecolecon.2022.107360>
- Wang, E. Z., Lee, C. C., & Li, Y. (2022). Assessing the impact of industrial robots on manufacturing energy intensity in 38 countries. *Energy Economics*, 105. <https://doi.org/10.1016/j.eneco.2021.105748>
- Wang, Y., Xiong, S., & Ma, X. (2022). Carbon inequality in global trade: Evidence from the mismatch between embodied carbon emissions and value added. *Ecological Economics*, 195. <https://doi.org/10.1016/j.ecolecon.2022.107398>
- West, J., Schandl, H., Krausmann, F., Kovanda, J., & Hak, T. (2014). Patterns of change in material use and material efficiency in the successor states of the former Soviet Union. *Ecological Economics*, 105, 211–219. <https://doi.org/10.1016/j.ecolecon.2014.06.013>
- Wilts, H., & O'Brien, M. (2019). A policy mix for resource efficiency in the EU: Key instruments, challenges and research needs. *Ecological Economics*, 155, 59–69. <https://doi.org/10.1016/j.ecolecon.2018.05.004>
- Xie, P., & Jamaani, F. (2022). Does green innovation, energy productivity and environmental taxes limit carbon emissions in developed economies: Implications for sustainable development. *Structural Change and Economic Dynamics*, 63, 66–78. <https://doi.org/10.1016/j.strueco.2022.09.002>
- Yuan, R., & Wang, J. (2021). Impacts of poverty alleviation on household GHG footprints in China. *Energy Economics*, 103. <https://doi.org/10.1016/j.eneco.2021.105602>
- Zawieska, J., & Pieriegud, J. (2018). Smart city as a tool for sustainable mobility and transport decarbonisation. *Transport Policy*, 63, 39–50. <https://doi.org/10.1016/j.tranpol.2017.11.004>
- Zegras, P. C. (2007). As if Kyoto mattered: The clean development mechanism and transportation. *Energy Policy*, 35(10), 5136–5150. <https://doi.org/10.1016/j.enpol.2007.04.032>
- Zhang, H., Razzaq, A., Pelit, I., & Irmak, E. (2022). Does freight and passenger transportation industries are sustainable in BRICS countries? Evidence from advance panel estimations. *Economic Research-Ekonomska Istrazivanja*, 35(1), 3690–3710. <https://doi.org/10.1080/1331677X.2021.2002708>

4 The social dimension of sustainable development

Katarzyna Filipowicz

Introduction

As a complex issue, the social dimension of sustainable development is easier to define using indicators. Indicators can be a part of disaggregated scoreboards (Sustainable Development Goals (SDGs), Doughnut Economics) or highly aggregated measures. Both approaches have some advantages as well as some limitations. Non-aggregated indicators allow us to see differences in individual categories and identify areas requiring intervention. On the other hand, aggregated measures perform very well in cross-country comparisons.

The social dimension in SDGs and Doughnut economics

SDGs related to the social dimension

The general concept of SDGs has already been discussed in Chapter 2. In this section, the focus will be on eight SDGs related to the social dimension. These goals call for the eradication of poverty and hunger, peace and social justice, access to quality healthcare and education, and highlight the aspects of gender equality, sustainable urban development and access to clean energy (DSDG, n.d.). It should be emphasised that the goals of sustainable development are interrelated. The foundation for social development is the appropriate protection of the biosphere, and the above-mentioned social goals are the basis for those related to the economy (Stockholm Resilience Centre, 2017).

Table 4.1 presents the social goals of sustainable development and the number of targets and indicators related to these goals. In total, the social dimension is described by 74 targets and 124 indicators.

The selected problems and data related to the social goals of sustainability are discussed below. The described challenges and indicators can be a starting point for further debate about this complex issue.

Table 4.1 SDGs related to the social dimension of sustainable development

<i>Goals</i>	<i>Targets</i>	<i>Indicators</i>
Goal 1: No poverty	7	14
Goal 2: Zero hunger (No hunger)	8	13
Goal 3: Good health and well-being	13	28
Goal 4: Quality education	10	11
Goal 5: Gender equality	9	14
Goal 7: Affordable and clean energy	5	6
Goal 11: Sustainable cities and communities	10	15
Goal 16: Peace, justice and strong institutions	12	23
Total	74	124

Source: own study based on SDG Tracker (n.d.).

Table 4.2 Global poverty lines with harmonised national poverty lines

<i>Income classification</i>	<i>Median (2017 PPP)</i>	<i>Number of countries (observations)</i>
Low-income countries	2.15	28
Lower-middle income countries	3.63	54
Upper-middle income countries	6.85	37
High-income countries	24.36	38
Total		157

Source: Jolliffe et al. (2022).

No poverty

The first challenge for the social dimension of sustainable development is to end poverty in all its forms everywhere (DSDG, n.d.). There is no single, accepted definition of poverty. Poverty is a very subjective category – poverty in Ethiopia is something different from poverty in the US. In 1990 The World Bank, together with a group of independent researchers, created a methodological framework for the international poverty line (IPL). Currently, IPL is calculated as the median of the 28 national poverty lines of the poorest countries. It is expressed in the 2017 PPP (World Bank Data Help Desk, n.d.). In September 2022, the World Bank set a new IPL at a level of \$2.15 per person per day, replacing the previous limit of \$1.90 per person per day (World Bank, 2022).

Table 4.2 shows the medians of national poverty lines for different income groups of countries. The poverty line in high-income countries is \$22.21 higher than in low-income countries (i.e. IPL). Therefore, it is very difficult to make international comparisons of this issue.

Zero hunger

The second social challenge is ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture (DSDG, n.d.). The Food and Agriculture Organization (FAO) defines hunger as:

an uncomfortable or painful physical sensation caused by insufficient consumption of dietary energy. It becomes chronic when the person does not consume a sufficient amount of calories (dietary energy) on a regular basis to lead a normal, active and healthy life.

(FAO, n.d.)

Figure 4.1 shows two indicators: the global number of people undernourished and the prevalence of undernourishment in 2004–2021. In 2021, the number of people undernourished was 767.9 million, and the prevalence of undernourishment was 9.8%. In the years 2004–2010, there was a noticeable downward trend in both indicators, then in 2011–2018 the indicators were at a stable level, and then from 2019, an upward trend can be observed. The COVID-19 pandemic is indicated as the main cause of the increasing number of people undernourished in recent years (FAO, 2022).

Good health and well-being

The third social goal is to ensure healthy lives and promote well-being for all at all ages (DSDG, n.d.). One of the main factors influencing the health of a society is the quality of its healthcare. The quality of healthcare is mostly determined by the health spending in a given country. According to Global Burden of Disease (GBD) estimates, health expenditure per capita in 2016 in high-income countries

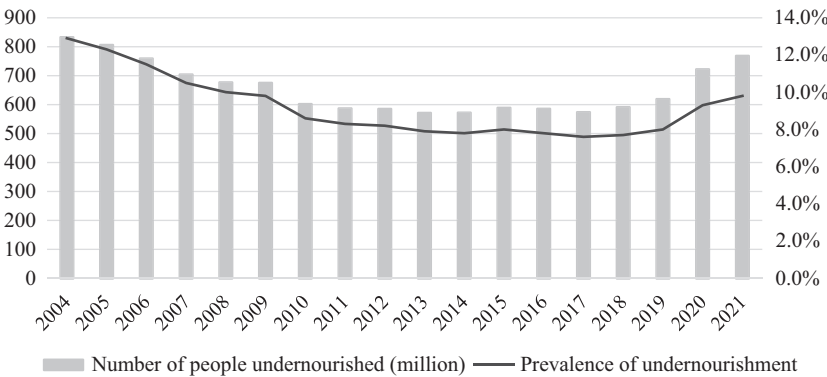


Figure 4.1 Global number of people undernourished and prevalence of undernourishment in 2004–2021

Source: Based on data from FEOSTAT.

was \$5621, and in low-income countries \$125. The government plays an important role in the system of healthcare – the share of government expenditure in health expenditure in high-income countries was 79.6% and in low-income countries 26.3% (see Table 4.3).

Quality education

The fourth social issue is to ensure inclusive and quality education for all and to promote lifelong learning (DSDG, n.d.). Historical data on the literate and illiterate world population are moderately optimistic. The global percentage of people who could read in 2020 was around 87%, in 1950 it was around 56% (see Figure 4.2 (Roser & Ortiz-Ospina, 2016)).

Table 4.3 Health spending for different income groups of countries in 2016

<i>Income classification</i>	<i>Health spending per capita, 2016 (\$PPP)</i>	<i>Health spending per GDP, 2016</i>	<i>Government health spending per total health spending, 2016</i>
High income	5,621 (5,548–5,693)	10.8% (10.6–10.9)	79.6% (78.2–81.1)
Upper-middle income	1,009 (948–1,072)	5.0% (4.7–5.3)	53.9% (49.9–58.6)
Lower-middle income	274 (247–303)	3.2% (2.9–3.5)	32.1% (28.4–36.1)
Low income	125 (119–132)	5.1% (4.9–5.4)	26.3% (23.3–29.5)

Source: Global Burden of Disease Health Financing Collaborator Network (2019).

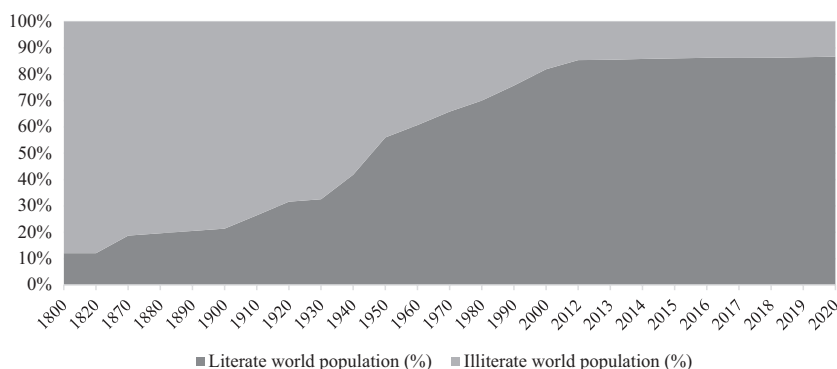


Figure 4.2 Literate and illiterate world population (among people aged 15 and older)

Source: Based on data from the website Our World in Data and The World Bank.

However, the disparities between high and low-income countries in this basic indicator are still significant. In 2020, in low-income countries, the proportion of the literate population was at the level of 61%, and in upper-middle income countries 96% (see Table 4.4).

Gender equality

The next social challenge is to achieve gender equality and empower all women and girls (DSDG, n.d.). Gender inequality is a problem in most countries of the world. It manifests itself, for example by gender division of labour, occupational segregation, or gender wage gap. Figure 4.3 presents the distribution of work time based on data from the report International Labour Organization (ILO, 2018). The main conclusion from the data is that women work longer than men per day, regardless of the country’s income group. Additionally, women mainly

Table 4.4 Literacy rate, adult total (% of people ages 15 and above)

<i>Income classification</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>
Low income	53%	54%	59%	61%
Lower middle income	67%	71%	74%	76%
Middle income	81%	84%	85%	87%
Upper middle income	92%	94%	95%	96%

Source: Based on data from the World Bank website.

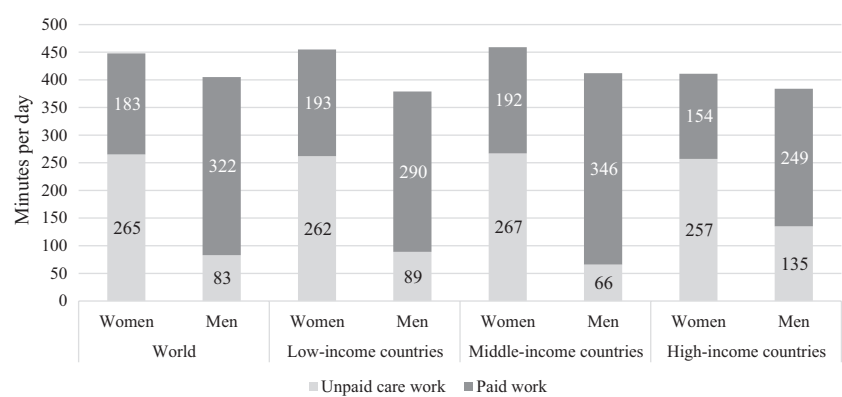


Figure 4.3 Gender division of labour

Source: based on data from ILO (2018).

do unpaid work. Even in high-income countries, the disparities are significant (women's unpaid work is 257 minutes a day, men's 135 minutes).

Affordable and clean energy

The next social issue is ensuring access to affordable, reliable, sustainable and modern energy (DSDG, n.d.). This problem can be divided into two aspects: ensuring access to energy and changes toward clean energy. Map 4.1 shows the percentage of the population with access to electricity – there are still many countries (especially in Africa) with limited access to electricity. The second aspect of the problem concerns the sources of energy. Clean energy is related to the ecological dimension of sustainable development and is one of the main challenges of highly developed countries.

Sustainable cities and communities

The next goal of the social dimension is to make cities inclusive, safe, resilient and sustainable (DSDG, n.d.). There is a link between sustainable urban development and human health. Table 4.5 lists the diseases that are the most common cause of death (top 10) and shows the impact of faulty urban design and planning policies. The World Health Organization has launched a new Urban Health Initiative. This new initiative is to create a model of a city that is more climate-friendly and supports a healthy lifestyle for residents. The results obtained by the WHO can be used by the city authorities to conduct urban policy more effectively (World Health Organization, 2019).



Map 4.1 Access to electricity (% of the population)

Source: Based on data from the website Our World in Data.

Table 4.5 Link between the top causes of death and faulty urban design and planning policies

<i>Top causes of death</i>	<i>Impact of faulty urban design and planning policies</i>
Heart attack (1), stroke (2), chronic respiratory disease (4), lung cancers (5)	More than a quarter to one-third of deaths are caused by air pollution – with urban traffic, waste, industry, cooking, heating and power production, as leading sources.
Pneumonia (3)	Air pollution causes more than one-half of deaths.
Diabetes (6)	The disease is linked to obesity and physical inactivity common in car-dependent cities lacking robust transit and walking/cycling networks, as well as urban fresh food markets.
Diarrhoeal diseases (8), Tuberculosis (9)	The diseases closely related to poor sanitation and waste management and unhealthy housing
Traffic injuries (10)	Pedestrians and cyclists, including children, older people, and the poor are exposed to traffic injury due to lack of safe, rapid transit, walking and cycling facilities.

Source: World Health Organization (2019).

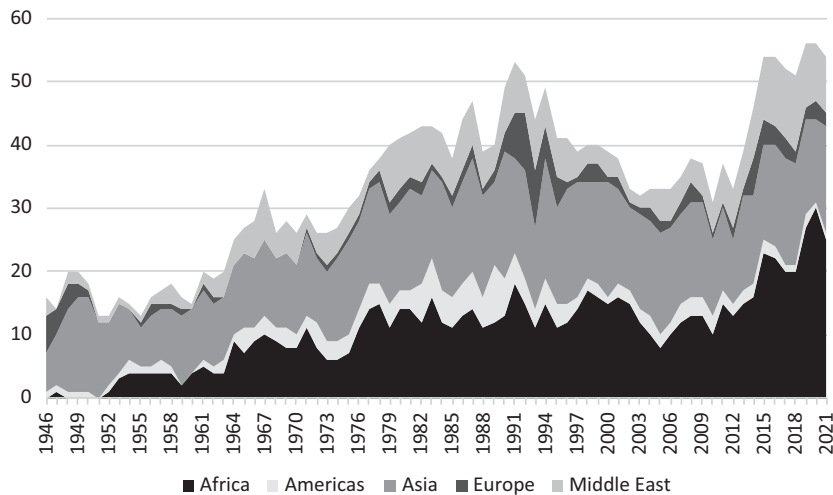


Figure 4.4 State-based Armed Conflict in the years 1946–2021

Source: Based on Gleditsch et al. (2002), Davies et al. (2022).

Peace, justice and strong institutions

The last social goal is to promote just, peaceful and inclusive societies. Referring to the issue of peace, Figure 4.4 presents the number of state-based armed conflicts all around the world in the years 1946–2021. A state-based armed conflict is defined as: “a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in a calendar year” (Pettersson, 2022). Two trends can be seen in Figure 4.4: most state-based armed conflicts take place in Africa and Asia and the number of conflicts has been rising since 2010. Safety is one of the basic needs of every human being.

Social foundations of Doughnut economics

The Sustainable Development Goals inspired Kate Raworth to create social foundations in the concept of Doughnut Economics. The Doughnut is an economic model that allows us to visualise the components of sustainable development. This model defines both social and planetary boundaries. Between social foundations and the ecological ceiling is the safe and just space for humanity and a regenerative and distributing economy (Raworth, 2017). The model takes into account the following social foundations: food security, health, education, income and work, peace and justice, political voice, social equity, gender equality, housing, networks, energy and water (see Table 4.6). The main challenge for humanity is meeting the above-mentioned social foundations without exceeding the ecological ceilings. An initiative has been launched at the University of Leeds to use the Doughnut concept to observe whether countries meet the basic needs of their inhabitants with sustainable use of global resources (University of Leeds, n.d.). The following social indicators are used in their research: life satisfaction, healthy life expectancy, nutrition, sanitation, income, access to energy and education (see Table 4.6). The Doughnut model confirms that the boundaries of Social foundations of sustainable development are usually exceeded by low-income countries, and the ecological ceiling is overshoot usually by highly developed countries (Fanning et al., 2022).

The social dimension in aggregated measures of sustainable development

The social dimension of sustainable development is a very complex category covering many aspects related to human well-being. Its inclusion in the overall, aggregated measurement of sustainable development is based on a subjective assessment of the importance of specific indicators (Fuchs et al., 2020). In this part of the chapter, selected aggregated measures of sustainable development will be presented. These measures take into account the social aspect of sustainable development. The section also presents maps with the current data for selected components describing social well-being.

Table 4.6 The Doughnut – social indicators

<i>Social indicator</i>	<i>Description</i>
Life satisfaction	The national average of responses to the Gallup World Poll’s Cantril life ladder question
Healthy life expectancy	Number of years that an individual is expected to live in good health (without major debilitating disease or infirmity)
Nutrition	Average calorific intake of food and drink per day
Sanitation	Percentage of the population with access to improved sanitation facilities
Income	Percentage of the population living on more than \$1.90 (2018 study) or \$5.50 (2021 study) a day
Access to energy	Percentage of the population with access to electricity
Education	Gross enrolment in secondary school (i.e. the ratio of total enrolment, regardless of age, to the population that is of secondary-school age)
Social support	The national average of responses to the question “If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?”
Democratic quality	Average of two Worldwide Governance Indicators: voice and accountability, and political stability
Equality	One minus the Gini coefficient of household disposable income (i.e. after taxes and transfers), multiplied by 100
Employment	Percentage of the labour force that is employed

Source: University of Leeds (n.d.).

Aggregated measures cover the dimensions of sustainability to varying degrees. There are measures, like the Living Planet Index, related just to one dimension (in this case ecological), and like the Happy Planet Index (HPI) that takes into account two dimensions (ecological and social). And there are also aggregated measures that cover all three dimensions of sustainability, for example, the Genuine Progress Indicator (GPI) and Sustainable Development Index (SDI) (Roman & Thiry, 2017). Table 4.7 presents selected aggregated measures of sustainable development, taking into account the social aspect, and indicates the components related to this dimension.

Happy Planet Index

The HPI was created by the New Economics Foundation in 2006. It incorporates three elements: well-being, life expectancy and ecological footprint. Well-being is based on data collected by the Gallup World Survey. In this survey respondents are asked to use the Cantril Ladder to rate their quality of life on a scale from 0 to 10 (0 being the worst possible life and 10 being the best possible life, Wellbeing Economy Alliance, n.d.). The map below shows the diversity of well-being in 2019.

Table 4.7 Indicators related to social dimension in selected, aggregated measures of sustainability

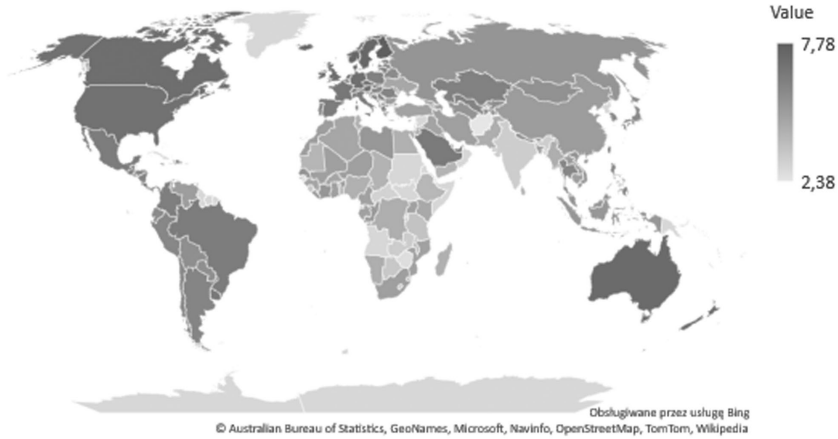
<i>Measure</i>	<i>Dimension of sustainability</i>	<i>Components related to the social dimension</i>
Happy Planet Index (HPI)	Ecological, social	Well-being, life expectancy
Sustainable Development Index (SDI)	Ecological, social, economic	Long and healthy life; knowledge
Sustainable Society Index (SSI)	Ecological, social, economic	Basic needs, personal development and health, a well-balanced society
Better Life Index (BLI)	Ecological, social, economic	Community, education, civic engagement, health, housing, jobs, life satisfaction, safety and work-life balance
Genuine Progress Indicator (GPI)	Ecological, social, economic	Value of housework and parenting, cost of family changes, cost of crime, cost of household pollution abatement, the value of volunteer work, loss of leisure time, the value of higher education, the value of highways and streets, cost of commuting, cost of motor-vehicle crashes

Source: Own study.

The following countries obtained the highest averaged results of the quality of life surveys in 2019: Finland (7.78), Switzerland (7.69), Denmark (7.69), Iceland (7.53), Norway (7.44), Netherlands (7.43), Luxembourg (7.40), Sweden (7.40), Israel (7.33), Ireland (7.25), Australia (7.23), New Zealand (7.21), Austria (7.20), United Kingdom (7.16) and Canada (7.11). On the other hand, the lowest values were recorded by the following countries: Ethiopia (4.10), Lebanon (4.02), Malawi (3.87), Burundi (3.78), Tanzania (3.64), Haiti (3.61), Lesotho (3.51), Botswana (3.47), Sierra Leone (3.45), Zambia (3.31), Rwanda (3.27), India (3.25), Central African Republic (3.08), Zimbabwe (2.69) and Afghanistan (2.38, see Map 4.2).

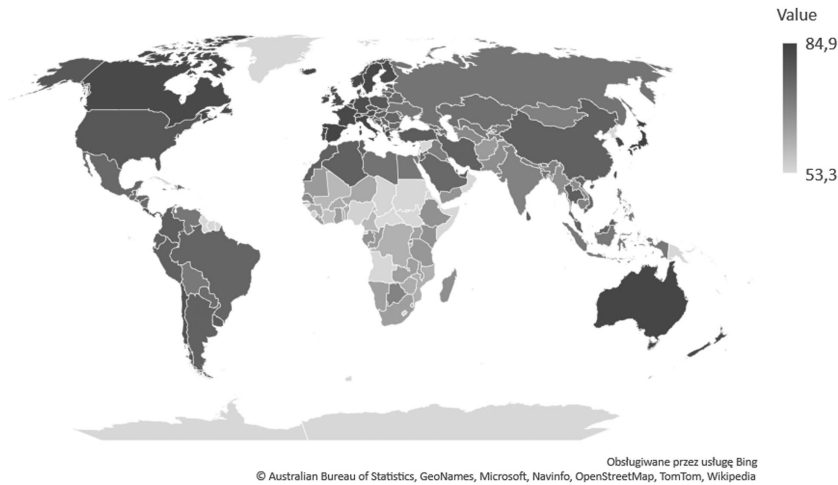
The second component describing the social dimension of sustainable development is the life expectancy of an average person. Data on the life expectancy of an average person in a given country are from the United Nations Development Program (Wellbeing Economy Alliance, n.d.).

The following countries achieved the longest life expectancy in 2019: Hong Kong (84.9 years), Japan (84.6), Switzerland (83.8), Spain (83.6), Singapore (83.6), Italy (83.5), Australia (83.4), Israel (83.0), Iceland (83.0), South Korea (83.0), Sweden (82.8), France (82.7), Malta (82.5), Norway (82.4) and Canada (82.4). The lowest values of the analysed feature were recorded in Guinea



Map 4.2 Ladder of life in 2019 (scale 0–10)

Source: Own study based on HPI data.



Map 4.3 Life expectancy 2019 (years)

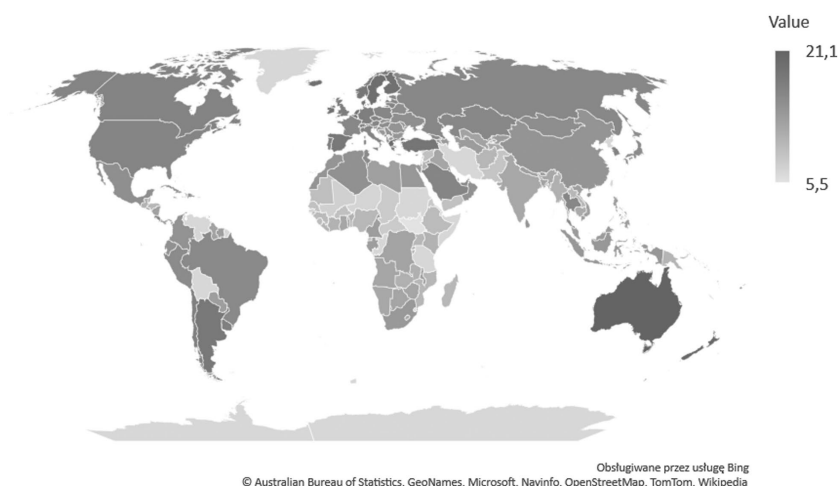
Source: Own study based on HPI data.

(61.6), Burundi (61.6), Zimbabwe (61.5), Togo (61.0), Mozambique (60.9), Congo (Kinshasa, 60.7), Eswatini (60.2), Cameroon (59.3), Mali (59.3), Cote d'Ivoire (57.8), Nigeria (54.7), Sierra Leone (54.7), Lesotho (54.3), Chad (54.2) and Central African Republic (53.3, see Map 4.3).

Sustainable Development Index

SDI is a measure based on Human Development Index (HDI). HDI is the most common composite index of well-being. It was launched in 1990 and is managed by United Nations Development Programme. The indicator consists of three elements: long and healthy life (assessed by life expectancy at birth), knowledge (measured by two indicators: mean of years of schooling for adults aged 25 years and more, expected years of schooling for children of school entering age) and the decent standard of living (assessed by gross national income *per capita*, UNDP Human Development Reports, n.d.b). HDI does not cover the ecological dimension of sustainability. There is a link between HDI and CO₂ emissions and material footprint *per capita*. Countries with high HDI typically have also high CO₂ emissions and material footprint *per capita*. This correlation triggered the creation of a new measure SDI. The numerator of SDI is based on the HDI components, and the denominator takes into account the ecological overshoot (Hickel, 2020). From the social perspective, the most important components of SDI and HDI are long and healthy life and knowledge. Map 4.4 shows the expected years of schooling in 2021.

At the top of the ranking for expected years of schooling in 2021 are the following countries: Australia (21.1 years), New Zealand (20.3), Greece (20.0), Belgium (19.6), Sweden (19.4), Iceland (19.2), Finland (19.1), Ireland (18.9), Denmark (18.7), Netherlands (18.7), Grenada (18.7), Turkey (18.3), Norway (18.2), Spain (17.9) and Argentina (17.9). The lowest positions in the ranking took: Mauritania (9.4), Tanzania (9.2), Syrian Arab Republic (9.2), Burkina Faso (9.1), Yemen (9.1), Senegal (9.0), Pakistan (8.7), Eritrea (8.1), Central African



Map 4.4 Expected years of schooling in 2021 (years)

Source: Own study based on UNDP Human Development Reports data.

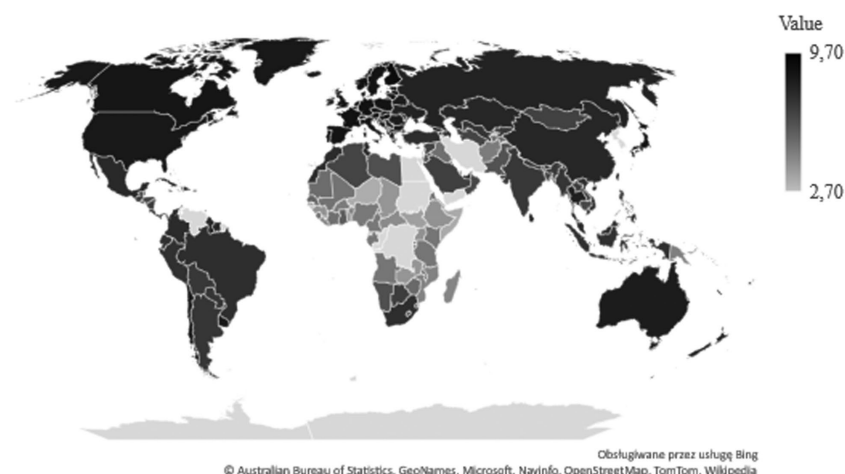
Republic (8.0), Chad (8.0), Sudan (7.9), Djibouti (7.4), Mali (7.4), Niger (7.0) and South Sudan (5.5, see Map 4.4).

Sustainable Society Index

The Sustainable Society Index (SSI) was developed by the Dutch Sustainable Society Foundation in 2006. Since 2019, the SSI has been managed by TH Köln. Now it is available for 213 countries/territories. The SSI is made up of three dimensions of well-being: human, environmental and economic. These dimensions are not aggregated in this measure (TH Köln, n.d.). Human well-being consists of three categories and nine indicators:

- 1 Basic needs (sufficient food, sufficient drinking water and safe sanitation);
- 2 Personal development and health (education, healthy life and gender equality);
- 3 Well-balanced society (income distribution, population growth and good governance).

Each indicator is rated on a scale from 1 to 10, where 1 denotes the weakest value and 10 denotes the strongest. The geometric mean is used to aggregate the individual dimensions (Van de Kerk, 2008). Map 4.5 shows the values of the human well-being dimension in 2018.



Map 4.5 SSI – human well-being dimension in 2018

Source: Own study based on TH Köln data.

The highest scores in the human well-being dimension of SSI in 2018 were achieved by the following territories: Bermuda (9.7), Virgin Islands (9.5), Andorra (9.4), Gibraltar (9.3), Faroe Islands (9.1), Finland (9.1), French Polynesia (9.1), Liechtenstein (9.1), New Caledonia (9.1), Hong Kong SAR, China (9.0), Puerto Rico (9.0), Barbados (8.9), Denmark (8.9), Portugal (8.9) and Slovenia (8.9). The lowest results were obtained by: Togo (4.4), Central African Republic (4.2), Yemen, Rep. (4.1), Congo, Rep. (4.0), Ethiopia (4.0), Guinea (4.0), Uganda (4.0), Chad (3.9), Zambia (3.9), Congo, Dem. Rep. (3.7), South Sudan (3.6), Guinea-Bissau (3.3), Somalia (3.3), Niger (3.2) and Equatorial Guinea (2.7).

Better Life Index

The Better Life Index (BLI) is an online, interactive tool, launched in 2011 and designed for the Organization for Economic Co-operation and Development (OECD) countries. The Better Life dashboard allows the user to set the level of importance for 11 components, including the following social ones: community, education, civic engagement, health, housing, jobs, life satisfaction, safety and work-life balance. The indicator combines all three dimensions of sustainability and it can be a good starting point in the discussion about what is essential from a welfare perspective (OECD, n.d.).

Genuine Progress Indicator

The GPI was developed in 1995 as a variant of the Index of Sustainable Economic Welfare. The GPI is a comprehensive sustainability indicator that incorporates all its three dimensions. This index consists of 26 components grouped into three categories. The social category is represented by the following elements: the value of housework and parenting, the cost of family changes, the cost of crime, the cost of household pollution abatement, the value of volunteer work, loss of leisure time, the value of higher education, the value of highways and streets, cost of commuting and cost of motor-vehicle crashes (Gross National Happiness USA, n.d.). The GPI is a monetary measure, which distinguishes this measure from those discussed above. The GPI is not yet ready for use in cross-country comparisons, mostly because of the evolving methodology, a large number of components and high data demands. So far, it has been estimated only for about 30 countries. However, the GPI is the indicator that measures overall well-being by adjusting for several negative externalities. What is important, as a monetary indicator, the GPI can be useful to evaluate the well-being impact of political actions (including social policy, Berik, 2020).

Conclusions

The complexity of the social dimension of sustainable development makes it difficult to define and consequently to measure. Overall, the social dimension covers problems related to human well-being such as poverty, hunger, health, education, gender equality, energy supply, sustainable cities, peace and justice. Each of those components can be measured by various indicators. Due to the multifaceted nature of this dimension, it is necessary to define, explicitly and precisely, what we want to measure and for what purpose.

Indicators describing the social dimension are elements of both disaggregated and aggregated measures of sustainable development. The eight SGD's are directly related to social problems, and the social foundations are a key part of the Doughnut model. Aggregated measures of sustainable development cover only selected social aspects that require a subjective assessment of the importance of the specific indicators.

Finally, a country's income level has a great impact on the goals and measurement of the social dimension, therefore, international comparisons should be approached with caution. It also has a very big influence on the selection of appropriate instruments of social policy to meet the most important challenges of this dimension.

References

- Berik, G. (2020). Measuring what matters and guiding policy: An evaluation of the Genuine Progress Indicator. *International Labour Review*, 159: 71–94. <https://doi.org/10.1111/ilr.12153>.
- Davies, S., Pettersson, T., & Öberg, M. (2022). Organized violence 1989–2021 and drone warfare. *Journal of Peace Research*, 59(4), 593–610. <https://doi.org/10.1177/00223433221108428>
- Division for Sustainable Development Goals (DSDG). (n.d.). *The 17 goals*. United Nations Department of Economic and Social Affairs (UNDESA). Retrieved October 19, 2022, from <https://sdgs.un.org/goals>.
- Fanning, A. L., O'Neill, D. W., Hickel, J., et al. (2022). The social shortfall and ecological overshoot of nations. *Nature Sustainability*, 5, 26–36. <https://doi.org/10.1038/s41893-021-00799-z>
- FAO. (n.d.). *Hunger and food insecurity*. Retrieved October 19, 2022, from <https://www.fao.org/hunger/en>
- FAO, IFAD, UNICEF, WFP and WHO. (2022). *The State of Food Security and Nutrition in the World 2022. Repurposing food and agricultural policies to make healthy diets more affordable*. Rome, FAO. <https://doi.org/10.4060/cc0639en>.
- Fuchs, D., Schlipphack, B., Treib, O., Nguyen Long, L. A., & Lederer, M. (2020). Which way forward in measuring the quality of life? A critical analysis of sustainability and well-being indicator sets. *Global Environmental Politics*, 20(2): 12–36. doi: https://doi.org/10.1162/glep_a_00554.
- Gleditsch, N. P., Wallensteen, P., Eriksson, M., Sollenberg, M., & Strand, H. (2002). Armed conflict 1946–2001: A new dataset. *Journal of Peace Research*, 39(5): 615–637.

- Global Burden of Disease Health Financing Collaborator Network. (2019). Past, present, and future of global health financing: a review of development assistance, government, out-of-pocket, and other private spending on health for 195 countries, 1995–2050. *Lancet*, 393(10187): 2233–2260. doi: 10.1016/S0140-6736(19)30841-4. Epub 2019 Apr 25.
- Gross National Happiness USA. (n.d.). Genuine progress indicator. Retrieved October 19, 2022, from <https://gnhusa.org/genuine-progress-indicator/>
- Hickel, J. (2020). The sustainable development index: Measuring the ecological efficiency of human development in the Anthropocene. *Ecological Economics*, 167: 106331, ISSN 0921–8009, <https://doi.org/10.1016/j.ecolecon.2019.05.011>.
- International Labour Office. (2018). *Care work and care jobs for the future of decent work*. Geneva. Retrieved October 19, 2022, from https://www.ilo.org/wcmsp5/groups/public/—dgreports/—dcomm/—publ/documents/publication/wcms_633135.pdf
- Jolliffe, D. M., Mahler, D. G., Lakner, C., Atamanov, A., & Tetteh Baah, S. K. (2022). *Assessing the impact of the 2017 PPPs on the international poverty line and global poverty*. Washington, DC: World Bank. Retrieved October 19, 2022, from <https://openknowledge.worldbank.org/handle/10986/37061>
- OECD. (n.d.). *Better Life Index*. Retrieved October 19, 2022, from <https://www.oecdbetterlifeindex.org/>
- Pettersson, T. (2022). UCDP/PRIO Armed Conflict Dataset Codebook v 22.1, Retrieved October 19, 2022, from <https://ucdp.uu.se/downloads/>
- Raworth, K. (2017). *Doughnut economics: Seven ways to think like a 21st century economist*. Vermont: White River Junction.
- Roman, P., & Thiry, G. (2017). *Sustainability indicators*. In C. L. Spash (Ed.), *Routledge handbook of ecological economics: Nature and society* (1st ed.). Routledge. <https://doi.org/10.4324/9781315679747>.
- Roser, M., & Ortiz-Ospina E. (2016). *Global education*. Published online at OurWorldInData.org. Retrieved October 19, 2022, from <https://ourworldindata.org/global-education>
- SDG Tracker. (n.d.). *Measuring progress towards the Sustainable Development Goals*. Our World in Data. Retrieved October 19, 2022, from <https://sdg-tracker.org/>
- Stockholm Resilience Centre. (2017, February 28). *Contributions to agenda 2030*. Retrieved October 19, 2022, from <https://www.stockholmresilience.org/research/research-news/2017-02-28-contributions-to-agenda-2030.html>
- TH K öln. (n.d.). *Sustainable Society Index (SSI)*. Retrieved October 19, 2022, from <https://ssi.wi.th-koeln.de/index.html>
- UNDP Human Development Reports. (n.d.a). *Human Development Index (HDI)*. Retrieved October 19, 2022, from <https://hdr.undp.org/data-center/human-development-index#/indicies/HDI>
- UNDP Human Development Reports. (n.d.b). *Human Development Index: Technical notes*. Retrieved October 19, 2022, from https://hdr.undp.org/sites/default/files/2021-22_HDR/hdr2021-22_technical_notes.pdf
- University of Leeds. (n.d.). *A good life for all within planetary boundaries*. Retrieved October 19, 2022, from <https://goodlife.leeds.ac.uk/about/>
- Van de Kerk, G., & Manuel, A. (2008). A comprehensive index for a sustainable society: The SSI – the Sustainable Society Index. *Ecological Economics*, 66(2–3): 228–242.
- Wellbeing Economy Alliance. (n.d.). *Happy Planet Index*. Retrieved October 19, 2022, from <https://happyplanetindex.org/>

- World Bank Data Help Desk. (n.d.). *How is the international poverty line derived? How is it different from national poverty lines?* World Bank. Retrieved October 19, 2022, from <https://datahelpdesk.worldbank.org/knowledgebase/articles/193310-how-is-the-international-poverty-line-derived-how>
- World Bank. (2022, September 14). *Fact sheet: An adjustment to global poverty lines*. Retrieved October 19, 2022, from <https://www.worldbank.org/en/news/factsheet/2022/05/02/fact-sheet-an-adjustment-to-global-poverty-lines>
- World Health Organization. (2019). *Sustainable cities: Health at the heart of urban development*. Retrieved October 19, 2022, from https://www.who.int/sustainable-development/cities/SDG_factsheet_sustainable_cities_EN_v3.pdf?ua=1

5 Environmental sustainability from the perspective of political economy

Challenges and hope

Zofia Łapniewska

Introduction

Hope has a utopian function, claims the German philosopher Ernst Bloch (1986).¹ It is neither a wish nor a fantasy, but an emotion that allows us to anticipate the future in the present. An emotion we experience when we read reports on climate change, endangered species, or plastic pollution of the environment. We hope that new technologies, the progress of science and the solidarity of people, in particular of developed countries, will stop the ongoing changes and the next generations will be able to continue to enjoy a high quality of life on this planet using its resources. This chapter focuses on the most important environmental challenges facing humanity. The latest figures I refer to paint the future in rather dark colours and experts agree that action should be taken now. Using the achievements of the political economy of sustainability, as well as feminist and ecological economics, I point to proposals for actions that prefiguratively shape the image of the economy of the future in the service of nature and society. This unique contribution allows for a holistic view of the concept of environmental sustainability, which is central to the other dimensions described in this book – social and economic.

Environmental sustainability

Environmental sustainability is the foundation of overall sustainability, the integrity of all systems, including human-made social and economic systems. René Passet (1979) illustrated this fact as three sets, wherein it is the biosphere that determines the existence and prosperity of the other two (Figure 5.1).

Environmental sustainability means that people conduct their activities on the planet (productive and reproductive) in such a way that it does not put pressure on the environment leading to a loss of biodiversity and irreversible changes in ecosystems. At the same time, the resources used are regenerated, well-maintained and cultivated, so that future generations have equal chances for a good life. Sustainability combines the concern for the natural environment and its condition with the social and economic expectations of humankind. As early

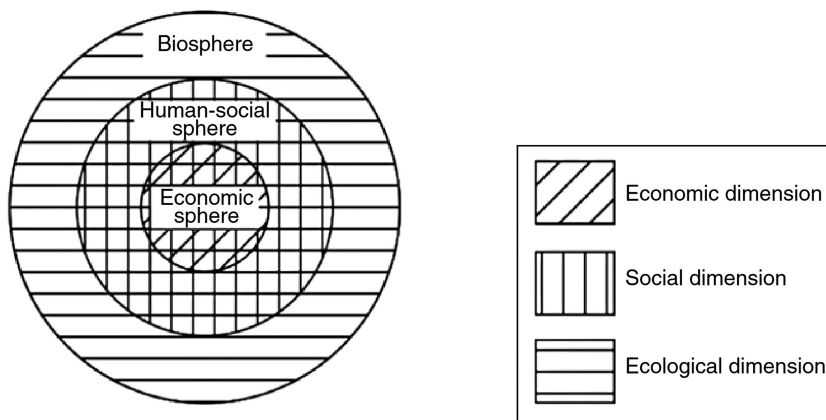


Figure 5.1 The economy embedded in the institutions of human society and in the biosphere

Source: Martinez-Alier & Muradian, 2015, p.2; after Passet, 1979, p.4.

as 1965, in his famous essay “Earth as a Space Ship”, Kenneth Boulding wrote about treating the planet as an entirety and humans as one of the species that inhabit it:

Man is finally going to have to face the fact that he is a biological system living in an ecological system, and that his survival power is going to depend on his developing symbiotic relationships of a closed-cycle character with all the other elements and populations of the world of ecological systems.

(Boulding, 1965)²

Although Boulding’s text clearly indicates the material boundaries of the planet, describing it as a closed system, he did not take into account the constant supply of (solar) energy to this system, which guarantees growth, support of life and processing of materials (e.g. recycling) and goods that eventually go back to the environment.

When the first definitions of environmental sustainability were created in the early 1990s, the focus was primarily on protecting the sources of raw materials and “ensuring that the sinks for human wastes are not exceeded, in order to prevent harm to humans” (Goodland, 1995), which means the topic of “limits to growth” (Meadows et al., 1972) in Anthropocene was continued. However, this definition was broadened – as if in response to the Brundtland Commission report (WCED, 1987) – by including bio-geophysical aspects in the publication of the World Bank (Holdren et al., 1995), where the term “biophysical sustainability” is defined as strengthening the integrity of systems supporting life on Earth. The author also pointed out that both biological diversity and the

bio-geochemical integrity of the biosphere (proper use and conservation of natural resources – land, water and air) are important. The topic of sustainability was widely discussed at the beginning of the 21st century and was taken up by many organisations (e.g. OECD, 2001). Reading these studies shows that the central role in them is played not by the economy (and further growth), but by the environment or harmony with it – as the Boulding essay indicates. Here, ecological economics provided support, pointing out that the interdependence of natural ecosystems and the economy should be considered, as well as the dimensions of time and space (Xepapadeas, 2008, pp. 3258–3271). This is especially important when we think about intergenerational justice and the ability of the environment to regenerate, including irreversible changes, for example the prospective loss of almost a million species that are currently endangered (IPBES, 2019, p. XVI); and on spatial justice, on the strength of which some species-rich areas or reservoirs should be particularly well-protected (and extended) and others, sensitive to climate change – where the life and health of people and other species inhabiting them are endangered, for example by hurricanes and floods in the countries of the Global South – should be strengthened and prepared for weather shocks. Justice in this sense means that the countries that have contributed most to climate change should be accountable for the effects of their actions and first minimise their environmental impact (ideally to zero) and help other countries to cope with these effects as well as to help them transform their economies into zero- or low-carbon economies. Environmental economists (Parrique et al., 2019) agree that it is impossible to separate economic growth from greenhouse gas emissions (a phenomenon known as “decoupling”). Therefore, highly developed countries should move to the degrowth phase in order to leave less-developed countries some space for development without exhausting the planet’s resources and not leading to irreversible damage to the environment. As part of the concept of environmental sustainability, scientists from the Stockholm Resilience Centre (SRC) indicate nine major planetary boundaries (Figure 5.2), the crossing of which “increases the risk of generating large-scale abrupt or irreversible environmental changes” (SRC, 2022).

The areas of the “ecological ceiling” (Figure 5.2) were defined in 2009 by 28 scientists, invited to quantify the biophysical limits within which humanity will continue to develop and prosper for generations to come (Rockström et al., 2009). The nine systems are climate change (measured by atmospheric CO₂ concentration and change in radiative forcing), biodiversity loss (measured by extinction rate), biogeochemical flows (measured by the amount of nitrogen (N₂) removed from the atmosphere and phosphorus flowing into the oceans), change in land use (global land converted to cropland), novel entities (including plastic pollution), freshwater change (division into green water from rainfall and blue water consumed by people), ocean acidification, stratospheric ozone depletion and atmospheric aerosol loading (not quantified yet). The first six limits mentioned above have already been exceeded (Steffen et al., 2015; Persson

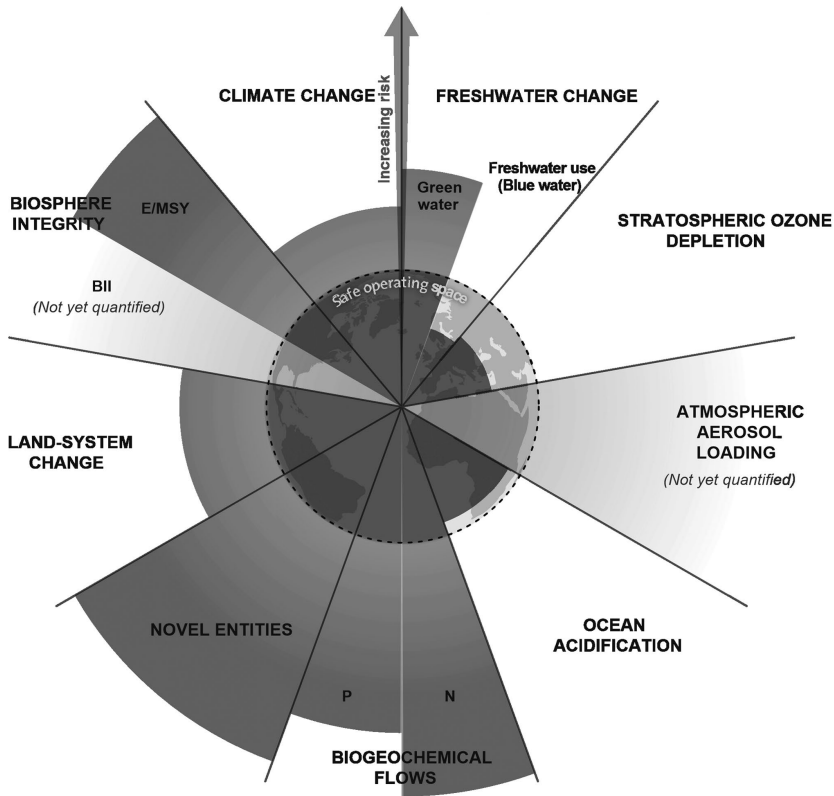


Figure 5.2 The planetary boundaries framework

Source: J. Azote for Stockholm Resilience Centre, based on analysis in Persson et al., 2022; Wang-Erlandsson et al., 2022 and Steffen et al., 2015.

et al., 2022; Wang-Erlandsson et al., 2022). As indicated in the last report of the Intergovernmental Panel on Climate Change (IPCC), this is the last warning, and we are already on the path of no return (IPCC, 2022). Complementary to the illustration of boundaries above (Figure 5.2), is the concept of “the doughnut” by Kate Raworth (2017). On the one hand, the author takes into account the boundaries of biophysical systems determined by the SRC, and on the other, she adds the necessary socio-economic minimum that defines the conditions that must be met for humans to live in harmony and flourish (side by side with other species). Since this concept was presented in detail in the previous chapter, I will not be discussing it here. Rather, my intention is to emphasise the interpenetration of all three areas (Figure 5.1) and their close interdependence, which we must consider when designing economic or social changes, guided by the precautionary principle (Article 191 of the Treaty on the Functioning of the European Union).

Main challenges for environmental sustainability

Although it would seem that the critical reflection on the influence of humankind on climate change appeared in the public discourse relatively recently, the first observations of the influence of excessive concentration of CO₂ in the atmosphere on its heating by sunlight were made by Eunice Newton Foote in 1856 (Sorenson, 2011). She concludes her discovery with the words:

An atmosphere of that gas would give to our earth a high temperature; and if as some suppose, at one period of its history the air had mixed with it a larger proportion than at present, an increased temperature from its own action as well as from increased weight must have necessarily resulted.

(Newton Foote 1856, p. 383)

It can be said that her warning from the period of the first industrial revolution was understood by us only, the witnesses of the fourth, over 150 years later. What is the condition of the planet's environment today? What is the diagnosis by the most important research institutions?

The latest comprehensive IPCC publication “Sixth Assessment Report: Impacts, Adaptations and Vulnerability”, is the best source of data we currently have about the changing climate. The report was based on the analysis of 18,000 scientific studies by 278 authors from 65 countries (IPCC, 2022). They inform that even if we manage to stop the temperature rise at 1.5 degrees Celsius compared to the pre-industrial period, sea levels will rise, the ice cover will largely melt, and some ecosystems will be irretrievably lost. The authors calculate that in the “carbon budget” we only have 510 gigatonnes of CO₂ equivalent left, while in the decade 2010–2019 we emitted an average of 56 gigatonnes into the atmosphere annually (IPCC AR6 WG III, 2022, p.4). They also note that 34–45% of global emissions are produced by the richest 10% of households (IPCC AR6 WG III, 2022, p. 8). To stem the current rise in temperature, which is heading towards 3 degrees Celsius in 2100, it is necessary to reduce CO₂ emissions by 48% and emissions of methane (mainly from livestock) by one-third by 2030, and in the following years, consistently reduce coal consumption by 95%, oil by 60% and gas by 45% by 2050. The report was prepared before Russia's aggression against Ukraine, so on the one hand, huge amounts of CO₂ are emitted as a result of destruction and weapon production, and on the other, restrictions on fossil fuels trade with Russia may contribute to a faster energy transformation (at least in European countries). The scientists preparing the report developed over 1,000 scenarios based on the Paris Agreement (see Chapter 1 in this book), of which only a little over 100 predict that the temperature rise will be kept below 2 degrees Celsius (IPCC, 2022). They all assume that apart from a radical reduction in emissions, new negative emission technologies will have to be used to recover CO₂ previously emitted. For now, however, humankind does

not have such technologies (Kolbert, 2021). Those tested leave more questions unanswered than they answer, and caution is advised, bearing in mind that many of the modernisation projects to date have had unpredictable disastrous effects (such as the drying up of the largest inland lake – the Aral Sea).

Considering the different scenarios of events, one should also bear in mind the climate tipping points. Such critical points are reached when even minor amounts of additional climate forcing (e.g. greenhouse gas forcing) trigger an abrupt, qualitative and irreversible change in part of the climate system. Timothy M. Lenton (2021) identifies three types of climate subsystems in which such critical points can be recognised: the cryosphere (melting of glaciers), circulation of the atmosphere/ocean (increased risk of heat waves and floods) and the biosphere (collapsing permafrost). With the current knowledge about them, it is necessary to include the risk to these systems in the accounts of the social and economic costs of climate change, which may jump – if they are exceeded – even by an order of magnitude (Cai et al., 2016).

The second important team working in parallel to the IPCC is Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), which published “The Global Assessment Report on Biodiversity and Ecosystem Services” (IPBES, 2019). Both bodies – IPCC and IPBES scientists – met for the first time in 2020 and issued a joint report indicating possible actions to preserve biodiversity and at the same time reduce emissions (cautioning against selective climate action which can contribute to the collapse of biodiversity). In its publication, prepared by 150 experts from 50 countries, IPBES emphasises that marine and terrestrial ecosystems are so far the only sinks of anthropogenic CO₂ emissions, with a gross sequestration capacity of 5.6 gigatonnes of carbon (the equivalent of sinking 60% of global emissions). These systems, however, shrunk by an average of 47% from their estimated natural baselines (p. XX-VIII). The loss of marine ecosystems, including coral reefs and coastal habitats, puts people and other organisms living in these zones at risk from floods and hurricanes (approximately 100–300 million people). Not only are the oceans experiencing the cumulative effects of climate change, but also the land, 75% of which has changed significantly, including soil degradation that has reduced the productivity of 23% of the world’s land area. Additionally, it is estimated that up to USD 577 billion of annual global crop production is threatened by pollinator loss. 85% of wetlands are lost, and 32 million hectares of primary forests were burned or cleared in 2010–2015 alone (IPBES, 2019, pp. XXVI–XXXI). Wild mammal biomass has decreased by 82.5% (since prehistory) and about one million species are threatened with extinction (IPBES, 2019, p.242). World Wide Fund for Nature concludes: “Data from the United Nations Environment Programme shows that, per person, our global stock of natural capital has declined by nearly 40% since the early 1990s, while produced capital has doubled and human capital has increased by 13%” (WWF, 2020, p.7). This balance reflects the seriousness of the current situation and points to the critical need for immediate

protective measures. Such actions were already undertaken over a decade ago, when Parties to the Convention on Biological Diversity adopted the “Strategic Plan for Biodiversity 2011–2020 and the Aichi Targets: Living in Harmony with Nature” (CBD, 2012). 20 targets were set within five strategic goals:

address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society; reduce the direct pressures on biodiversity and promote sustainable use; improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity; enhance the benefits to all from biodiversity and ecosystem services; enhance implementation through participatory planning, knowledge management and capacity building.

(CBD, 2012)

As demonstrated in the “Global Biodiversity Outlook 5” none of them has been fully achieved and only six targets have been partially accomplished (SCBD, 2020, p.10). Experts, including scientists, know this data well, but they do not inform the public as they do not want to take responsibility for causing panic (Dupuy, 2009). Despite this fact, the reports cited here received wider media coverage and in 2018 a massive global movement, Extinction Rebellion, was formed (XR, 2022). It has become clear to everyone that by maintaining our lifestyle in its present form, we ourselves will make humans an endangered species.

Another important challenge for environmental sustainability which we failed to realise for a long time is the acidification of the oceans. This is one of the most important changes in the properties and chemical composition of the planet in 30 million years. 30% of the CO₂ from the atmosphere is absorbed by the ocean. A chemical reaction takes place that releases H⁺ protons which lower the pH of the oceans (Barker & Ridgwell, 2012). Over the past 200 years, the pH of the surface ocean waters has fallen by 0.1 pH units. It does not seem like much until we realise that the pH scale is logarithmic, so this change corresponds to a 25% increase in acidification, which is predicted to drop even further (from the current 8.1 to even 7.8 (Orr et al., 2005) – which can be compared to a meteor hitting the planet). In conditions of higher acidity of the oceans, the mineral calcium carbonate (CaCO₃), which is the building block of many marine organisms such as algae and corals, dissolves, so, for example, floating sea snails will have problems with building their shells, as will molluscs living on the bottom in the polar regions, and if these crustaceans are unable to locate suitable habitat, the entire food web will be at risk. Of course, the ocean can handle itself by neutralising acidity, but natural processes such as the dissolution of carbonate deposits at the bottom of the ocean or the weathering of rocks on land take many hundreds of thousands of years to occur (Ridgwell & Schmidt, 2010) and by then we might not be here anymore.

The last challenge presented here is plastic (polymeric material) contamination. Humans produce 400 million tonnes of plastic waste per year and less than 10% of seven billion tonnes of existing plastic waste has been recycled so far (UNEP, 2022). Up to 200 million tonnes of plastic is estimated to have found its way into the oceans (and still a truckload of plastic is dumped every minute). According to WWF, there will be more plastic than fish in the world's oceans by 2050 (WEF, 2016). Non-biodegradable, single-use plastic products and packaging materials (50% of the total production) are often mistaken for food by animals, clog drainage systems and litter landscapes (Moore, 2022). Large amounts of plastic floating in the oceans are also microplastics (fragments of any type of plastic less than 5 mm in length), the presence of which is estimated at 24.4 trillion pieces in the upper oceans, with a combined weight of 82,000–578,000 tonnes—or the equivalent of ca. 30 billion 500-ml plastic water bottles (Kyushu University, 2021). We eat them, we inhale them and we drink them every day. Most plastic ends up in the ocean via Asian rivers (around 80%) and a huge part of plastic waste is exported (in 2021 it was 4.45 million t) (Ritchie, 2022). To deal with the problem of plastic pollution in the oceans (and beyond), Hannah Ritchie (2022) points out two things: “scale waste management systems in rich countries; the fact that they are exporting waste overseas suggests they have under-invested in practices at home; and, importantly, improve waste management infrastructure and practices in low-to-middle-income countries, as this is where most plastic pollution originates”.

In conclusion, the challenges presented here do not exhaust the topic of anthropogenic impact on the environment, but I believe that a good diagnosis, based on proven scientific sources, is necessary to be able to place a credible picture of the catastrophe that awaits us in the future, in order to prevent it (Dupuy, 2009). If the data provided in this chapter is convincing and we consider that the IPCC scenarios are credible and we are facing a global climate crisis, is there – apart from a few solutions suggested (known as “end-of-pipe technologies”³) – a systemic approach to the transformation towards a new environmentally sustainable system? Can political economy respond to the challenges above?

Proposals for actions and hope

Contemporary political economy shows the direction of the necessary economic changes, emphasising the need to move away from the paradigm of economic growth (Hausknost, 2017) and the need for operationalisation of “sustainable degrowth” as a transition to a new socio-metabolic regime (Haberl et al., 2011, p.11). The term “social metabolism” means the full flow of materials and energy necessary to sustain all human activities on the planet. Industrial society today uses four to six times more energy per capita than members of the agrarian society and five times more materials (Haberl et al., 2011, p. 2) and there are seven times more of us in the world than at the edge of the industrial revolution. Hence,

the proposal of a “post-growth” economy and a fair transition to “prosperity beyond growth”, which should be operationalised as environmentally sustainable, guarantee a high quality of life and social inclusion (Koch, 2017, p. 441). In a sustainable economy, the exchange between society and natural systems would be such that it only benefits from flows and could go on indefinitely if stocks/resources were left unchanged (save natural changes) (Georgescu-Roegen, 1971, ch.9; Dafermos et al., 2017). With a stable population and stock of physical wealth while keeping the lowest feasible rates of energy and matter throughput in production, distribution and consumption, a “steady-state economy” may be achieved, the goal of which will not be growth, but providing social, individual and ecological prosperity in non-growing economies (Koch, 2017, p.441). Reaching this state requires radical changes in systems of provisioning, production systems (incl. changes in supply chains) as well as ways of obtaining resources. New global and local institutions would be needed to coordinate these processes and (re)distribute wealth and income, which would consider the production capacity and conditions of different regions in the world as well as the social needs of their inhabitants. Max Koch proposes creating institutions similar to those that were established in Bretton Woods – “powerful enough to limit and steer capital valorisation in accordance with ecological laws” (Koch, 2017, p. 440). These institutions would define greenhouse gas emission limits for companies, countries and individuals, as well as energy standards for buildings, efficiency and carbon use for vehicles, land use, urban development etc. Other economists also write about carbon taxes on material intensity and about legal regulations for limiting the acquisition and consumption of materials in a transition towards a low-carbon economy (Spash, 2011; ECA, 2022). Although in this chapter the most important is environmental sustainability, including the emphasis on ecological scarcity and limited resources intended for competing ends, political economy also points to competing people and power relations in societies which – as more or less formal institutions – decide who will receive resources (social groups or classes) and who will not (Boyce, 2002, p. 7). The transition to a socially and environmentally sustainable economy requires a deeper political reflection on possible actions based on power relations and on the inequalities that exist and may emerge both in the pursuit of the post-growth economy and the final vision of a stable-state economy.

Putting theory into practice – can this be measured? Apart from the global reports discussed in the previous section, are there indicators that diagnose, at least at the national level, how countries are doing in their efforts to achieve greater ecological sustainability? One of the main modern synthetic indicators is Environmental Performance Index (EPI) developed by scientists from the Yale Center for Environmental Law & Policy and the Center for International Earth Science Information Network at Columbia University (Wolf et al., 2022). EPI applies a proximity-to-target approach, where the chosen set of policy targets is, when possible, based on international treaties and agreements (Emerson et al.,

2010, p.13). EPI is an important policy driver that can stimulate debate on measures to be taken by governments to achieve a desirable state of environmental sustainability in the country. The second important indicator that makes a diagnosis of how much our consumption is abusing the planet's capacity to provide resources and absorb waste – is Ecological Footprint – prepared by World Wide Fund For Nature (WWF, 2016). WWF uses a unit called “global hectare” (gha) which represents “a biologically productive hectare with world-average productivity”. The latest calculations show that in 2020 the earth's total biocapacity was 1.6 gha per person, while humanity's Ecological Footprint was 2.5 gha per person, that is, to cover our consumption needs, we would need an additional 75% of a planet like Earth to balance it (WWF, 2020, p. 57). There are many other indicators – the above two were only intended as an illustration, in addition to the previously presented reports and theories.

So, is there any hope for “bending the curve of terrestrial biodiversity” (after Leclère et al., 2020) and avoiding a climate catastrophe? Scientists say yes. For this, however, a pre-figurative, solidary and coherent policy for the entire planet is needed. Prefiguration assumes that the goals we set for ourselves are achieved with the means that we use every day. So, choosing the right means at this point will shape the nature, society and economy of the future they already embody (Leach, 2013). With better information, we could make better-informed choices, bearing in mind that all real economic processes are irreversible, so we can use the available, limited natural resources and energy only once, while also being aware that they will eventually end up in the environment (physical goods and waste heat). In this regard, social movements conclude that hidden costs (externalities) should also be included in economic accounts (e.g. in the prices of sold items). Extinction Rebellion demands full environmental reporting from governments and adequate preparation for weather shocks, natural disasters and the risks that lie ahead in the decades to come (XR, 2022). I would add, using the achievements of feminist economists, that social change would also require care (preferably in the post-humanistic sense) and the solidarity (preferably planetary) that we are capable of, as demonstrated during the Sars-CoV-2 outbreak (Łapniewska, 2022b). A pre-figurative policy that allows for the actions taken by social movements, if shaped in a democratic way, would create a community imagined by Bloch – a community capable of collective action through hope, a shared emotion that allows us to anticipate (imagined, stable and environmentally sustainable) the future in the present.

Conclusions

In this chapter, I have introduced the concept of environmental sustainability, referring, on the one hand, to the historical context and etymological roots of its changing meaning, and on the other to the latest state of research showing this sustainability in relation to the biophysical boundaries of the planet. The diagnosis, based on the latest IPCC and IPBES reports, although shocking, is to be used to visualise the catastrophe, and thus to formulate specific steps to move towards

a new socio-metabolic regime of sustainable degrowth in order to prevent said catastrophe. The holistic view of environmental sustainability presented herein, being the foundation for our social and economic sustainability, is political in the sense of reflecting on our individual impact on the natural environment (e.g. by using the presented indicators) and creating a community imagining the future, the elements of which are implemented by us now (prefiguration), and pressurising governments to take the transformation seriously. Finally, I would like to add that my chapter is not about sustainable development, which is a different discussion (often pointing to economic growth as a precondition for development), but it is written in *buen vivir* (the good living) spirit, which the Argentine philosopher Walter Mignolo describes as follows:

The good living’ – or ‘to live in harmony’ – is an alternative to ‘development’. While development puts life at the service of growth and accumulation, *buen vivir* places life first, with institutions at the service of life. That is what ‘living in harmony’ (and not in competition) means.

(Mignolo 2009, p. 31)

Wouldn’t such an approach be close to Bloch? Hope, according to him, has an emancipatory function, and utopian dreams can come true, which is why it is so important to look today at this desired “furthest and brightest horizon” (Bloch, 1986, p.75).

Notes

- 1 In this chapter, I use fragments of my text “Objects, prefiguration and embodied experiences: economy for society” (Łapniewska, 2022a).
- 2 The text was written when concepts such as gender, race and class (the so-called holy trinity Dhamoon, 2011, p. 5) were not yet discussed in the mainstream.
- 3 End-of-pipe technology is an approach that focuses on the elimination of harmful substances from the generated waste, e.g., by filtering them or cleaning them chemically or mechanically, before discharging them into the environment, criticised for the lack of reflection on waste generation in general in the production/distribution/consumption processes, e.g., through responsible and sustainable design (EEA, 2022).

References

- Barker, S., & Ridgwell, A. (2012). Ocean acidification. *Nature Education Knowledge*, 3(10), 21.
- Bloch, E. (1986). *The Principle of Hope*, Vol. 1, 2, 3, transl. N. Plaice, S. Plaice and P. Knight. MIT Press.
- Boyce, J. K. (2002). *The Political Economy of the Environment*. Edward Elgar.
- Boulding K. E. (1965, May 10). *Earth as a Space Ship*. Washington State University Committee on Space Sciences. Kenneth E. Boulding Papers, Archives (Box # 38). University of Colorado at Boulder Libraries.

- Cai, Y., Lenton, T. M., & Lontzek, T. S. (2016). Risk of multiple interacting tipping points should encourage rapid CO₂ emission reduction. *Nature Climate Change*, 6(5), 520–525. <https://doi.org/10.1038/NCLIMATE2964>
- CBD (2012). *Strategic Plan for Biodiversity 2011–2020 and the Aichi Targets “Living in Harmony with Nature”*. Secretariat of the Convention on Biological Diversity.
- Dafermos, Y., Nikolaidi, M., & Galanis, G. (2017). A stock-flow-fund ecological macroeconomic model. *Ecological Economics*, 131, 191–207. <https://doi.org/10.1016/j.ecolecon.2016.08.013>
- Dhamoon, R. (2011). Considerations on mainstreaming intersectionality. *Political Research Quarterly*, 64(1), 230–243. <https://doi.org/10.1177/1065912910379227>
- Dupuy, J. P. (2009, October 15). The precautionary principle and enlightened doomsaying: Rational choice before the apocalypse. *Occasion: Interdisciplinary Studies in the Humanities*, 1(1), 1–13.
- ECA (2022). *Energy Taxation, Carbon Pricing and Energy Subsidies. Review 01*. European Court of Auditors. https://www.eca.europa.eu/Lists/ECADocuments/RW22_01/RW_Energy_taxation_EN.pdf
- EEA (2022). *End-of-Pipe Technology*. European Environment Agency. Retrieved November 8, 2022, from <https://www.eea.europa.eu/help/glossary/gemet-environmental-thesaurus/end-of-pipe-technology>
- Emerson, J., Esty, D. C., Levy, M. A., Kim, C. H., Mara, V., de Sherbinin, A., & Srebotnjak, T. (2010). *2010 Environmental Performance Index*. Yale Center for Environmental Law and Policy.
- Georgescu-Roegen, N. (1971). *The entropy law and the economic process*. Harvard University Press.
- Goodland, R. (1995). The concept of environmental sustainability. *Annual Review of Ecology and Systematics*, 26, 1–24.
- Haberl, H., Fischer-Kowalski, M., Krausmann, F., Martinez-Alier, J., & Winiwarter, V. (2011). A socio-metabolic transition towards sustainability? Challenges for another great transformation. *Sustainable Development*, 19, 1–14. <https://doi.org/10.1002/sd.410>
- Hausknost, D. (2017). Degrowth and democracy. In C. L. Spash (Ed.), *Routledge Handbook of Ecological Economics, Nature and Society* (pp. 457–466). Routledge.
- Holdren, J. P., Daily, G. C., & Ehrlich, P. R. (1995). The meaning of sustainability: biogeophysical aspects. In: Munasingha, M., Shearer, W. (Eds.), *Defining and Measuring Sustainability* (pp. 3–17). Washington: The World Bank.
- IPBES (2019). *Global assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*, Brondízio, E. S., Settele, J., Díaz, S., Ngo, H. T. (Eds). IPBES secretariat.
- IPCC (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (Eds.). Cambridge University Press. <https://doi.org/10.1017/9781009325844>
- IPCC AR6 WG III (2022). *Climate Change 2022: Mitigation of Climate Change, Summary for Policymakers*. Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. WMO, UNEP.
- Koch, M. (2017). Human Induced Climate Change from a Political Economy Perspective. In C. L. Spash (Ed.), *Routledge Handbook of Ecological Economics* (pp. 436–444). Routledge.

- Kolbert, E. (2021). *Under a White Sky: The Nature of the Future*. Crown.
- Kyushu University (2021). *Twenty-Four Trillion Pieces of Microplastics in the Ocean and Counting*, Kyushu University. https://www.kyushu-u.ac.jp/f/45716/21_10_27_en.pdf
- Łapniewska, Z. (2022a). Przedmioty, prefiguracja i ucieleśnione doświadczenia: gospodarka dla społeczeństwa. In M. Dziedzic, J. Krokosz & M. Mach (Eds.), *PSO KMP WFP ASP* (pp. 54–61). Academy of Fine Arts in Kraków.
- Łapniewska, Z. (2022b). Solidarity and mutual aid: Women organizing the “visible hand” urban commons. *Gender, Work & Organization*, 29(5), 1405–1427. <https://doi.org/10.1111/gwao.12833>
- Leach, D.K. (2013). Prefigurative politics. In D. A. Snow, D. della Porta, B. Klandermans, & D. McAdam (Eds.), *The Wiley-Blackwell Encyclopedia of Social and Political Movements* (pp. 1–2). Blackwell Publishing.
- Leclère, D., Obersteiner, M., Barrett, M., et al. (2020). Bending the curve of terrestrial biodiversity needs an integrated strategy. *Nature*, 585, 551–556. <https://doi.org/10.1038/s41586-020-2705-y>
- Lenton, T. M. (2021). Tipping points in the climate system. *Weather*, 76(10), 325–326. <https://doi.org/10.1002/wea.4058>
- Martinez-Alier, J., & Muradian, R. (Eds.) (2015). *Handbook of Ecological Economics*. Edward Elgar Publishing.
- Meadows, D. H., Meadows, D. L., Randers, J., & Behrens, III. (1972). *The Limits to Growth*. Potomac Associates – Universe Books.
- Mignolo, W. D. (2009). The communal and the decolonial. *Turbulence*, 5, 29–31.
- Moore, Ch. (2022, August 26). Plastic pollution. *Encyclopedia Britannica*. Retrieved October 26, 2022, from <https://www.britannica.com/science/plastic-pollution>
- Newton Foote, E. (1856). Circumstances affecting the Heat of the Sun’s Rays. *The American Journal of Science and Arts*, 22 (66), 382–383.
- OECD (2001). *OECD Environmental Strategy for the First Decade of the 21st Century*. Organisation for Economic Co-operation and Development.
- Orr, J., Fabry, V., Aumont, O., et al. (2005). Anthropogenic ocean acidification over the twenty-first century and its impact on calcifying organisms. *Nature*, 437, 681–686. <https://doi.org/10.1038/nature04095>
- Parrique, T., Barth, J., Briens, F., C. Kerschner, Kraus-Polk, A., Kuokkanen, A., & Spangenberg, J. H. (2019). *Decoupling debunked: Evidence and arguments against green growth as a sole strategy for sustainability*. European Environmental Bureau.
- Passet, R. (1979). *L’Économie et le vivant*. Payot.
- Persson, L., Carney Almroth, B., Collings, C. D., Cornell, S., de Wit, C. A., et al. (2022). Outside the safe operating space of the planetary boundary for novel entities. *Environmental Science & Technology*, 56(3), 1510–1521. <https://doi.org/10.1021/acs.est.1c04158>
- Raven, J. et al. (2005). *Ocean Acidification due to Increasing Atmospheric Carbon Dioxide*. The Royal Society.
- Raworth, K. (2017). *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist*. Random House.
- Ridgwell, A., & Schmidt, D. N. (2010). Past constraints on the vulnerability of marine calcifiers to massive carbon dioxide release. *Nature Geoscience*, 3, 196–200. <https://doi.org/10.1038/ngeo755>
- Ritchie, H. (2022, October 11). Ocean plastics: How much do rich countries contribute by shipping their waste overseas? *Our World in Data*. Retrieved October 21, 2022, from <https://ourworldindata.org/plastic-waste-trade>

- Rockström, J., Steffen, W., Noone, K., et al. (2009). A safe operating space for humanity. *Nature*, 461, 472–475. <https://doi.org/10.1038/461472a>
- SCBD (2020). *Global Biodiversity Outlook 5*. Secretariat of the Convention on Biological Diversity.
- Sorenson, R. P. (2011). Eunice Foote’s pioneering research on CO₂ and climate warming. *Search and Discovery*, 70092. https://www.searchanddiscovery.com/pdfz/documents/2011/70092sorenson/ndx_sorenson.pdf.html
- Spash, C. (2011). Carbon trading: A critique. In J. Dryzek, R. Norgaard, & D. Schlosberg (Eds.), *Oxford Handbook on Climate Change and Society* (pp. 550–560). Oxford University Press.
- SRC (2022). *Planetary boundaries*. Stockholm Resilience Centre. Retrieved October 18, 2022, from <https://www.stockholmresilience.org/research/planetary-boundaries.html>
- Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., Biggs, R., Carpenter, S. R., de Vries, W., de Wit, C. A., Folke, C., Gerten, D., Heinke, J., Mace, G. M., Persson, L. M., Ramanathan, V., Reyers, B., & Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, 347(6223), 736. <https://doi.org/10.1126/science.1259855>
- UNEP (2022). *Our planet is choking on plastic*. United Nations Environment Programme. Retrieved October 21, 2022, from <https://www.unep.org/interactives/beat-plastic-pollution/>
- Wang-Erlandsson, L., Tobian, A., van der Ent, R. J., et al. (2022). A planetary boundary for green water. *Nature Reviews Earth & Environment*, 3, 380–392. <https://doi.org/10.1038/s43017-022-00287-8>
- WCED (1987). *Our common future*. Oxford University Press.
- Wolf, M. J., Emerson, J. W., Esty, D. C., de Sherbinin, A., Wendling, Z. A., et al. (2022). *2022 Environmental Performance Index*. Yale Center for Environmental Law & Policy.
- WWF (2016). *Living Planet Report 2016: Risk and Resilience in a New Era*. WWF International.
- WWF (2020). *Living Planet Report 2020: Bending the Curve of Biodiversity Loss*. Almond, R. E. A., Grooten M. & Petersen, T. (Eds). WWF. https://www.wwf.fr/sites/default/files/doc-2020-09/20200910_Rapport_Living-Planet-Report-2020_ENGLISH_WWF-min.pdf
- Xepapadeas, A. (2008). Ecological economics. In S. N. Durlauf & L. E. Blume (Eds.) *The New Palgrave Dictionary of Economics* (2nd ed.) (pp. 3258–3271). Palgrave Macmillan.
- XR (2022). *Global Support 2021 Annual Report*. Extinction Rebellion.

6 Multiple perspectives on sustainable development

Agnieszka Żak

Introduction

Since the 1990s, sustainability has become a global issue that is receiving increasing attention (Ruggerio, 2021). It is a multidimensional endeavour to achieve a higher quality of life for all people (United Nations & Annan, 1997) in accordance with the anthropocentric concept of inter- and intra-generational equity (Spangenberg, 2004). Sustainability has many different implications and definitions. Some of these definitions and interpretations overlap, while others openly compete and contradict each other (Mazi, 2015). The most commonly cited one was developed by the UN Brundtland Commission (World Commission on Environment and Development, 1987) and centres around the concept of intergenerational justice. Due to its complexity, the concept of sustainability is being studied by many different scientific disciplines. In addition, the issue can be considered on both a macroeconomic and microeconomic scale. Thus, sustainability is widely presented in many books, research papers, agreements and treaties (D'Alisa, 2007).

Economic development, social development and environmental protection are interdependent and mutually reinforcing elements of sustainability (United Nations & Annan, 1997). In the literature, this concept is known as “3Ps” – people, profit, planet (UN General Assembly, 2015) and “triple bottom line–TBL” (Elkington, 1998). As Purvis writes, the concept of “sustainable development” uses three interrelated “pillars” (Black, 2007), “dimensions” (Lemke & Bastini, 2020; Redclift, 1991), “components” (Du Pisani, 2006), “stool legs” (Dawe & Ryan, 2003), “aspects” (Lozano, 2008) or “perspectives” (Brown et al., 1987). The coherence of these three key elements is essential for achieving sustainable development (UN General Assembly, 2015).

Classical sustainability, as traditionally conceived, presents a fragile, vulnerable, incomprehensible and rigid concept rather than a holistic and dynamic one (Raed Najjar, 2019). However, if we treat sustainable development as an evolutionary (Nonaka & Toyama, 2005) and dynamic (Bertinelli et al., 2008) concept we find that “sustainability” remains an open concept with myriad interpretations and understandings depending on the context (Purvis et al., 2019).

The purpose of this chapter is to review the concept of the various dimensions of sustainable development. The three basic dimensions have been thoroughly discussed in the previous sections. In contrast, publications on a broader view of the dimensions of sustainable development are analysed below, of which between four and seven, are listed. The author's intention was to objectively present the multidimensional concepts present in the literature, without comparing or evaluating them.

Multiplicity in the perception of sustainable development

In the process of creating the literature knowledge base, the international scientific electronic database Scopus was used. The subject of the analysis was the titles, subjects and abstracts of English-language, open-access articles containing the term “dimensions of sustainable development.” Initially, 128 articles were received. Most of them, however, dealt with three dimensions. The resulting collection of publications was supplemented with peer-reviewed articles from the Google Scholar online database and bibliographic items obtained using the “snowball” technique (Greenhalgh & Peacock, 2005). In the end, nearly 30 articles corresponding to the scope of the chapter were extracted for analysis. The main part of the text was divided into 4 subsections, devoted successively to four, five, six and seven dimensions of sustainability (see Table 6.1).

Table 6.1 lists publications with the number of dimensions, their names and authors. There is a wide variety of concepts, names and characteristics of dimensions in the literature. Thus, for example, in publications devoted to the four dimensions, one can find at least five different statements on several industries (Cheng et al., 2009; Gallopín et al., 2014; Ke et al., 2021; Koff et al., 2022; Li et al., 2021; R. Najjar, 2022).

Four dimensions

In publications that list four dimensions of sustainable development, the most common are as follows: environmental, social, economic and institutional dimensions (Ávila et al., 2017; Hersen et al., 2019; Laxe et al., 2017; Lizama-Pérez et al., 2018; Londoño-Pineda et al., 2021; Spangenberg, 2004; Toumi et al., 2017; UN-CSD, 2007; Valentin & Spangenberg, 2000).

The United Nations Commission on Sustainable Development (UN-CSD) considers the *institutional* dimension, along with the other three (economic, social and environmental), to be at the core of sustainable development (UN-CSD, 2007). Following this, these four dimensions are mentioned by authors such as (Londoño-Pineda et al., 2021; Toumi et al., 2017). Very broadly defined, institutions for sustainable development should be understood as the rules by which decision-making for sustainability and its implementation are

Table 6.1 Results of the literature review on the dimensions of sustainable development

<i>Number of dimensions</i>	<i>Name of dimensions</i>	<i>Authors</i>
4	Economic, social, environmental/ ecological, institutional	(Ávila et al., 2017; Hersen et al., 2019; Laxe et al., 2017; Lizama-Pérez et al., 2018; Londoño-Pineda et al., 2021; Spangenberg, 2004; Toumi et al., 2017; UN-CSD, 2007; Valentin & Spangenberg, 2000)
	Economy, society, environment, coordination	(Li et al., 2021)
	Economic, social, environmental, security	(Koff et al., 2022)
	Environmental, economic, social, transportation efficiency	(Ke et al., 2021)
	Economic, ecological, environmental, multi – dimensions	(Cheng et al., 2009)
	Economic, social, ecological, political – institutional	(Gallopín et al., 2014)
	Social, economic, environmental, cultural-historical	(R. Najjar, 2022)
5	Economic, social, ecological, the built environment, political	(Allen, 2009)
	Economic, social/ethical, environmental, technical and institutional	(Bhattacharyya, 2012; Ebrahimi & Rahmani, 2019; Iddrisu & Bhattacharyya, 2015; Ilskog, 2008)
	New five-dimensional sustainability triangle: Place, Permanence, Persons	(Iribarnegaray & Seghezze, 2012; Seghezze, 2009)
	Ecological, social, economic, cultural, safety	(Tomaškinová et al., 2019, 2021)
6	Moral , ecological, social, economic, legal, technical, political	(Pawłowski, 2008)
7	Ecological, political, ethical , socio-economic, democratic, cultural, theological	Vogt and Weber (2019)
	Economic, social, environmental, legal, political, ethical and cultural	(González et al., 2021)

Source: Own elaboration.

organised (Spangenberg, 2004). Most human activities, individually or collectively, involve all four dimensions, or at least the social and institutional

dimensions (Spangenberg, 2004). Every use of natural resources relates to the environmental dimension, and every exchange of goods and services is economic. Since they are ubiquitous in human life, sustainable development can be understood as a normatively defined group of specific configurations in all four dimensions, characterised by the fact that their synergistic interaction produces multiple feasible paths leading to the stable development of the entire system. On the other hand, Gallopín in their publication conducted a discussion of sustainability and sustainable development in conceptual and visual terms (Gallopín et al., 2014). The authors consider these two perspectives to be complementary. The visual discussion compares integrated visualisations of sustainability and sustainable development, including not only the three basic dimensions but also the political–institutional dimension. In addition, the publication lists several other dimensions (ethical, cultural and global), without, however, providing their characteristics.

An interesting, holistic view of the four dimensions is proposed by Najjar in the model *four dimensional spatial sustainability* (Raed Najjar, 2019). This model makes it possible to study the past, present and future of spatial sustainability on local and global scales. Sustainability in its classical definition exhibits significant temporal limitations in terms of spatial-linear analysis, since it includes only two categories: present and future. The lack of the past tense generates risks, threats and even problems, because it also ignores other very important aspects – *cultural and historical dimensions* (Raed Najjar, 2019). Najjar believes that while culture characterises a community's identity, history is its mirror through which its deep-rooted stories, traditions and symbols can be read. Both culture and history reflect and establish temporal bridges between people and places. The primary goal of this dimension is to better understand and sustain the community's culture and history to preserve it as much as possible but also to maintain community development.

Cheng et al., in the analysis of sustainability, use a four-dimensional model: economic, ecological, environmental and *multi-dimensions* (Cheng et al., 2009). Within the framework of the “multi-dimensions” concept, the authors undertake considerations for the analysis of pairs of aspects: temporal versus spatial scale, capital versus assets, process versus capability, or means versus objectives. Another dimension is unsustainability, which in many cases, may become a more useful concept. People who have different opinions on the definition of sustainability may find out that they do have the same opinion about unsustainability, and they can work together to find the factors of unsustainability, their cause and the countermeasure to overcome them. In turn, Macnaghten and Jacobs, pointed out that it should pay more attention to cultural factors that control and support public participation in sustainability activities (Macnaghten & Jacobs, 1997).

In Li et al., in the context of research on risk in Mega Infrastructure Projects (MIPs), implemented in sectors that significantly affect the economy, national security, environmental protection and society (Flyvbjerg, 2014), here is, in turn,

a dimension of *coordination* (Li et al., 2021). Their implementation involves various project risks (Kardes et al., 2013). The authors emphasise that consideration of the coordination dimension is necessary to explore potential risks that may lead to imbalances in the three key pillars.

Koff et al. define sustainable development through the approach promoted by Agenda 2030, which includes *economic* aspects, *social* justice, *environmental* protection and *human security* (Koff et al., 2022; UN General Assembly, 2015). Although security is not traditionally considered a dimension in the SDGs, the authors included it because, on the one hand, the “securitisation” of sustainability (Raco, 2007) is increasingly occurring at the supranational and national levels, and on the other, it has a local context (and security can be a priority political issue).

The review of publications on the four dimensions closes with an article on the SDGs, which has a term in the abstract identical to the title of this chapter (multiple perspectives on sustainable development). The authors (Hajer et al., 2015) propose four combined perspectives that can reinforce the universal relevance of the Sustainable Development Goals (SDGs). However, they caution against a situation in which the SDGs and targets may carry the risk of not meeting expectations due to “cockpit-ism.” This term implies the illusion that top-down leadership by governments and intergovernmental organisations can solve global problems on their own. To counter this, new agents of change such as businesses, cities and civil society need to be further mobilised. A variety of perspectives on sustainability are needed for this: “planetary boundaries” (to reinforce the urgency of solving environmental problems), “the safe and just operating space” (to highlight the interconnectedness of social and environmental problems and their distributional consequences for industrialised countries and emerging economies), “the energetic society” (to develop responses to environmental change) and “green competition” (to stimulate innovation and new business practices). These four ideas can strengthen the link between the aforementioned entities, and thus support the universal relevance of the SDGs.

Five dimensions

In 2015, all UN member states adopted the 2030 World Development Strategy. The 2030 Agenda takes into consideration different realities, opportunities and levels of development, taking into account the policies and priorities adopted in each country (UN General Assembly, 2015). As mentioned earlier, the 17 SDGs contained therein can be divided into 5 areas, referred to as the “5Ps”: people, planet, prosperity, peace and partnership. By adding two key components: partnership and peace, the traditional idea of sustainability has taken on a new and richer meaning. True sustainable development lies at the heart of these five dimensions – it cannot be realised in the absence of peace and security, and peace and security will be compromised without sustainability (UN General Assembly, 2015).

The need to redefine the concept of sustainability is also pointed out by Seghezze, in his proposed concept of sustainability (Seghezze, 2009). According to him, a new conceptual framework is needed to address sustainability issues, incorporating territorial, temporal and personal aspects of development (Seghezze, 2009). He believes that space, time and human aspects are not independent of each other and interact in complex ways. Therefore, he proposes an alternative triangle of sustainability formed by the “new 3Ps”: “Place”, “Permanence” and “Persons”. *Place*, is the three-dimensional, physical, geographic, as well as culturally constructed space in which we live and interact, *Permanence* is the fourth dimension of time, and the category of *Persons* is symbolic of people as individuals, not as undifferentiated members of society.

Place and Persons, the base of the triangle, represent “real”, objective and concrete things that exist in the present. Sustainability is a more “ideal,” abstract and subjective projection of events from other corners into the future. The five-dimensional framework of sustainability is, according to this author, probably more accessible and useful for outlining concrete policies for sustainable development.

Place is an important component of social cohesion that helps build a sense of belonging to a culture. Geographic and cultural “place” is where intra-generational equity can be pursued (Iribarnegaray & Seghezze, 2012). *Permanence* is the fourth dimension of time (t). It is essential for describing medium and long-term intergenerational equity issues and dealing with the future environmental consequences of current actions and inactions. The concept of place is not complete until a temporal component is included, for a sense of belonging to a place is often associated with things that took place at different, sometimes distant times. The concepts of justice and equality, while necessary to build a more sustainable world, are probably not sufficient to include a number of more personal aspects. These are the reasons why Seghezze believes that the concept of sustainability should include a fifth and human dimension – *Persons* (i), necessary to deal with issues of identity, human rights, sense of belonging and personal happiness. The author cites numerous studies (Marks et al., 2006; O'Neill, 2008), that suggest that happiness and well-being are related to autonomy, freedom, achievement and the development of deep interpersonal relationships. Personal involvement may play a special role in the pursuit of better intergenerational justice (Iribarnegaray & Seghezze, 2012).

Other authors have also written about the need to address the five dimensions of sustainability, in different contexts and industries (Allen, 2009; Bhattacharyya, 2012; De Carvalho et al., 2015; Ebrahimi & Rahmani, 2019; Iddrisu & Bhattacharyya, 2015; Ilskog, 2008; Tomaškinová et al., 2021).

For example, in the energy industry, research by (Bhattacharyya, 2012; Ebrahimi & Rahmani, 2019; Iddrisu & Bhattacharyya, 2015; Ilskog, 2008) showed the need for a modified model. Iddrisu and Bhattacharyya (Iddrisu & Bhattacharyya,

2015), following (Bhattacharyya, 2012; Iliskog, 2008) concluded that assessing the sustainability of a country's energy system is a five-dimensional issue, including social, institutional, economic, environmental and technical dimensions.

Another author, who analyses the five-dimensional model of sustainability is Allen (Allen, 2009). Referring to the urban context, he mentions the dimensions of economic sustainability, social sustainability, environmental sustainability, the sustainability of the built environment and political sustainability. By analysing the essence of each of these aspects, it is possible to conclude that effective use of sustainability resources brings long-term benefits, ensures a certain standard of living, respects cultural heritage and cultural diversity, takes into account the interaction between the state and the use of environmental resources, buildings and infrastructure does not destroy and erode the environment. Political sustainability, which governs the other four dimensions involved in the relationship, is the unifying component of this model (Allen, 2009).

On the other hand, in the context of protected area management strategies (Tomaškinová et al., 2021), it was emphasised that the development of protected areas towards sustainability requires new features, improved concepts and tools for new ways of planning. The authors highlight that protected area management strategies must take into account five dimensions of sustainable development, which cover a broad portfolio of scientific disciplines: ecological, social, cultural, economic and security (Tomaškinová et al., 2019). The authors believe that the benefits of sustainably integrating each dimension are so universal that they can apply to many sectors (Tomaškinová et al., 2021).

Six dimensions

An original approach to the issue of dimensions of sustainability is presented by A. Pawłowski, who, in the spirit of philosophical and moral considerations, proposes a six-dimensional construct (Pawłowski, 2008). The author sees sustainable development as a programme that integrates various spheres of human activity, often seen as separate from the past. Underlying this approach is the moral conviction, familiar from WCED's (1987) definition, of humanity's responsibility for nature, now and in the future. Integration means achieving order in each of the dimensions proposed by the author, which include: the moral dimension; the ecological dimension, the social dimension, the economic dimension, the legal dimension, the technical dimension and the political dimension. Pawłowski sees a hierarchical relationship in sustainable development: the highest dimension is moral issues, the next level is the ecological, social and economic dimensions, and finally the legal, technological and political dimensions. Full integration of these three levels is needed, but extremely difficult to achieve.

Below is a brief description of each dimension:

The Moral Dimension – according to Pawłowski, the principle of sustainable development is something of an ethical imperative. He refers to earlier philosophical concepts, particularly Hans Jonas' ethics of responsibility (Jonas, 1985). Jonas' imperative of responsibility, which concurs with the concept of sustainability formulated later, has two dimensions. The first relates to the existence of a future for humanity, in general, and the second relates to the conditions of the future. Jonas' considerations were based on the philosophy of technology, paying attention to moral issues arising from the enormous technological power at the disposal of humans. Human technological power can be destructive not only to humans but also to nature. Protection of the latter is linked to the ecological dimension of sustainability.

The Ecological Dimension – is related not only to the protection of nature and landscape but also indirectly to the formation of spatial order, that is, the proper creation and maintenance of areas inhabited by humans. It relates to all other dimensions, especially social relations between people.

The Social Dimension – the social environment consists of many factors, including culture, spirituality, human relations and living conditions. Human relations with nature also have a social dimension, as they depend on the socio-cultural models of society. The social environment can experience degradation in the same way as the natural environment. The importance of these phenomena and countering them should be emphasised in sustainable development strategies. One of the most serious problems of the modern world, affecting the economic dimension of sustainability, seems to be polarisation in communities and societies.

The Economic and Legal Dimension – All dimensions of sustainability are linked to various legal regulations, but there is a particularly strong connection between legal and economic situations. The value of the environment is difficult to measure, and the available methods do not always seem satisfactory. Economic instruments, apart from technical instruments, determine the contemporary dimension of environmental protection policy to a large extent in advance. Legal regulations are equally important, both at the post-national level (e.g., EU law) and at the national level.

The Technical Dimension – on the one hand, the development of new technologies and related industries contributes to environmental degradation. On the other – fundamental environmental protection strategies are implemented precisely at the technical level. An important challenge in this area is the negative changes that accompany the use of the environment and the extraction of natural resources. The task for the technical sciences, and especially for the rapidly developing environmental engineering, is to minimise the damage caused to the environment and to look for a variety of substitutes. When

formulating a strategy for sustainable technical development, it is necessary to take into account not only the above-mentioned aspects but also whether there is political will to make the necessary changes.

The Political Dimension – one of the main challenges concerning this dimension is the discrepancy between the requirements enshrined in documents and strategies and the possibilities of their implementation. The feasibility or unfeasibility of such a strategy often depends on the authors and their knowledge and the political leverage they are able to exert. Another problem, for example, is the construction of sustainability strategies at the global, regional and local levels. The local perspective is particularly important, since the consequences of such actions are visible almost immediately. Much also depends on the existing legal system in a given place.

Seven dimensions

Seven different dimensions of sustainable development have been identified and studied (González et al., 2021; Vogt & Weber, 2019), with traditional disagreement among authors on the naming and relevance of these dimensions.

Vogt and Weber focused on current challenges to the concept of sustainable development (Vogt & Weber, 2019). They analyse the dimensions that are essential to understanding the normative view of sustainability: ecological, political, ethical, socio-economic, democratic, cultural and theological. The authors point out errors in the perception of these seven dimensions. A few reflections are worth noting, in the previously less frequently mentioned dimensions.

For example, within the framework of *ethical dimension* considerations, the authors point out that due to great differences in the geographical, cultural and historical conditions in which people live, demands for absolute equality are highly problematic. The authors postulate that instead of the idea of equal distribution of resources between generations, the aspiration should be to leave to posterity a world that offers enough free space and sufficient opportunities. This will enable future generations to make their own decisions and develop their own capabilities. In turn, *the democratic dimension* in the concept of Vogt and Weber points to the role of openness to sustainable development, which is possible through the participatory shaping of public life in civil societies. The active shaping of living space should occur as a result of grassroots activities, and not solely as a result of government decisions.

An original dimension that had not appeared before is the *theological* one. Many ecologists emphasise the inherent value of nature viewed as natural beauty, in a symbolic sense. Such a view requires an aesthetic and spiritual sensibility that sees things as a whole and in their relationships. In this way, ecological and religious views can reinforce and complement each other. Sustainability is the

missing link between faith in creation and contemporary ecological discourses, raising fundamental questions about the world's long-term future and global responsibility.

The review closes with a publication by South American researchers (González et al., 2021), who, using a sample of 100 sustainability constructs with their concepts, evaluated their impact and determined the dimensions to which they belong.

The authors divided the aspects most frequently found in definitions of sustainability into seven dimensions – economic, social, environmental, legal, political, ethical and cultural – and, using Google Scholar, calculated how often each definition was cited by other authors. They also distinguished triads of dimensions that tended to appear together in definitions. From the data they obtained, they concluded that sustainability is currently framed most often in terms of economic, social and ethical dimensions.

Conclusions

Over the past decades, several concepts have emerged that reflect the multidimensional nature of the concept of sustainable development, for example (Idrissu & Bhattacharyya, 2015; Ilskog, 2008; R. Najjar, 2022; Pawłowski, 2008; Seghezze, 2009; Vogt & Weber, 2019). These concepts also bring together discourses from different fields, as illustrated by the broad view taken in the SDGs (Ramos et al., 2020; UN General Assembly, 2015). Although definitions of sustainable development vary, often causing conceptual confusion that makes it difficult to put the concept into practice (Sheehy & Farneti, 2021), the SDGs are widely recognised as a normative compass for sustainable development policy-making (Fukuda-Parr, 2016; Koff et al., 2022).

The sustainable development strategy is interdisciplinary and refers to all dimensions of sustainability. To implement it, it is necessary to convince people of the value of the idea of sustainability (Pawłowski, 2008). Changes in people's attitudes are referred to as the internal dimension of sustainability or change from within (Horlings, 2015). A matter of great importance is environmental education, which must integrate into topics other than just nature. Adopting this more complex perspective should encourage and enable management educators to take into account conflicting yet interrelated issues and open the door to more creative teaching, research and theory-building, as well as ethical dilemmas in decision-making (Moratis & Melissen, 2022).

With the climate crisis worsening, following a pandemic that is delaying the realisation of the SDGs (*The Sustainable Development Goals Report 2021*, 2021), during the Russian aggression in Ukraine, it is difficult to predict the actual long-term effects of human activity. Global problems have reached a scale and level of complexity that makes it difficult, if not impossible, to solve them

within the assumed timeframe. Hence the need to take a broader view of sustainability and consider its many dimensions.

References

- Allen, A. (2009). Sustainable cities or sustainable urbanisation? *Palette UCL's Journal of Sustainable Cities*, 1.
- Ávila, C., Cedano, K., & Martínez, M. (2017). Sustainability analysis of waste to energy strategies for municipal solid waste treatment. *International Journal of Environmental Sustainability*, 13(2). <https://doi.org/10.18848/2325-1077/CGP/v13i02/1-14>
- Bertinelli, L., Strobl, E., & Zou, B. (2008). Economic development and environmental quality: A reassessment in light of nature's self-regeneration capacity. *Ecological Economics*, 66(2–3). <https://doi.org/10.1016/j.ecolecon.2007.09.013>
- Bhattacharyya, S. C. (2012). Energy access programmes and sustainable development: A critical review and analysis. *Energy for Sustainable Development*, 16(3). <https://doi.org/10.1016/j.esd.2012.05.002>
- Black, A. (2007). Pillars, bottom lines, capitals and sustainability. *The International Journal of Environmental, Cultural, Economic, and Social Sustainability: Annual Review*, 2(5). <https://doi.org/10.18848/1832-2077/cgp/v02i05/54267>
- Brown, B. J., Hanson, M. E., Liverman, D. M., & Merideth, R. W. (1987). Global sustainability: Toward definition. *Environmental Management*, 11(6). <https://doi.org/10.1007/BF01867238>
- Cheng, S. K., Min, Q. W., & Li, L. F. (2009). Research and theories in sustainable development in China. *Area Studies-China: Regional Sustainable Development Review*, III.
- D'Alisa, G. (2007). *Dimensions of sustainable development: A proposal of systematization of sustainable approaches*. Quaderni DSEMS.
- Dawe, N. K., & Ryan, K. L. (2003). The faulty three-legged-stool model of sustainable development. *Conservation Biology*, 17(5). <https://doi.org/10.1046/j.1523-1739.2003.02471.x>
- De Carvalho, B. L., Salgueiro, M. D. F., & Rita, P. (2015). Consumer sustainability consciousness: A five dimensional construct. *Ecological Indicators*, 58. <https://doi.org/10.1016/j.ecolind.2015.05.053>
- Du Pisani, J. A. (2006). Sustainable development – historical roots of the concept. *Environmental Sciences*, 3(2). <https://doi.org/10.1080/15693430600688831>
- Ebrahimi, M., & Rahmani, D. (2019). A five-dimensional approach to sustainability for prioritizing energy production systems using a revised GRA method: A case study. *Renewable Energy*, 135. <https://doi.org/10.1016/j.renene.2018.12.008>
- Elkington, J. (1998). Partnerships from cannibals with forks: The triple bottom line of 21st-century business. *Environmental Quality Management*, 8(1). <https://doi.org/10.1002/tqem.3310080106>
- Flyvbjerg, B. (2014). What you should know about megaprojects and why: An overview. *Project Management Journal*, 45(2). <https://doi.org/10.1002/pmj.21409>
- Fukuda-Parr, S. (2016). From the millennium development goals to the sustainable development goals: Shifts in purpose, concept, and politics of global goal setting for development. *Gender and Development*, 24(1). <https://doi.org/10.1080/13552074.2016.1145895>

- Gallopin, G., Herrero, L. M. J., & Rocuts, A. (2014). Conceptual frameworks and visual interpretations of sustainability. *International Journal of Sustainable Development*, 17(3). <https://doi.org/10.1504/IJSD.2014.064183>
- González, A. L., Martín, J. Á. C., Vaca-Tapia, A. C., & Rivas, F. (2021). How sustainability is defined: An analysis of 100 theoretical approximations. *Mathematics*, 9(11). <https://doi.org/10.3390/math9111308>
- Greenhalgh, T., & Peacock, R. (2005). Effectiveness and efficiency of search methods in systematic reviews of complex evidence: Audit of primary sources. *British Medical Journal*, 331(7524). <https://doi.org/10.1136/bmj.38636.593461.68>
- Hajer, M., Nilsson, M., Raworth, K., Bakker, P., Berkhout, F., de Boer, Y., Rockström, J., Ludwig, K., & Kok, M. (2015). Beyond cockpit-ism: Four insights to enhance the transformative potential of the sustainable development goals. *Sustainability (Switzerland)*, 7(2). <https://doi.org/10.3390/su7021651>
- Hersen, A., Timofeiczky Junior, R., da Silva, D. A., Da Silva, J. C. G. L. D., & de Lima, J. F. (2019). Sustainable development in Brazil: A conglomerated analysis for federative units. *Revista Arvore*, 43(6). <https://doi.org/10.1590/1806-90882019000600004>
- Horlings, L. G. (2015). The inner dimension of sustainability: Personal and cultural values. *Current Opinion in Environmental Sustainability*, 14. <https://doi.org/10.1016/j.cosust.2015.06.006>
- Iddrisu, I., & Bhattacharyya, S. C. (2015). Sustainable Energy Development Index: A multi-dimensional indicator for measuring sustainable energy development. *Renewable and Sustainable Energy Reviews*, 50. <https://doi.org/10.1016/j.rser.2015.05.032>
- Iliskog, E. (2008). Indicators for assessment of rural electrification-An approach for the comparison of apples and pears. *Energy Policy*, 36(7). <https://doi.org/10.1016/j.enpol.2008.03.023>
- Iribarnegaray, M. A., & Seghezzo, L. (2012). Governance, sustainability and decision making in water and: Sanitation management systems. *Sustainability*, 4(11). <https://doi.org/10.3390/su4112922>
- Jonas, H. (1985). *The imperative of responsibility: In search of an ethics for the technological age*. University of Chicago press.
- Kardes, I., Ozturk, A., Cavusgil, S. T., & Cavusgil, E. (2013). Managing global megaprojects: Complexity and risk management. *International Business Review*, 22(6). <https://doi.org/10.1016/j.ibusrev.2013.01.003>
- Ke, L., Furuya, K., & Luo, S. (2021). Case comparison of typical transit-oriented-development stations in Tokyo district in the context of sustainability: Spatial visualization analysis based on FAHP and GIS. *Sustainable Cities and Society*, 68. <https://doi.org/10.1016/j.scs.2021.102788>
- Koff, H., Challenger, A., Ros Cuellar, J., Aguilar Orea, R., & Lara López, M. D. S. (2022). How green are our laws? Presenting a normative coherence for sustainable development methodology. *Environmental Policy and Governance*, 33(1), 90–109.
- Laxe, F. G., Bermúdez, F. M., Palmero, F. M., & Novo-Corti, I. (2017). Assessment of port sustainability through synthetic indexes. Application to the Spanish case. *Marine Pollution Bulletin*, 119(1). <https://doi.org/10.1016/j.marpolbul.2017.03.064>
- Lemke, C., & Bastini, K. (2020). Embracing multiple perspectives of sustainable development in a composite measure: The multilevel sustainable development index. *Journal of Cleaner Production*, 246. <https://doi.org/10.1016/j.jclepro.2019.118884>

- Li, Y., Xiang, P., You, K., Guo, J., Liu, Z., & Ren, H. (2021). Identifying the key risk factors of mega infrastructure projects from an extended sustainable development perspective. *International Journal of Environmental Research and Public Health*, 18(14). <https://doi.org/10.3390/ijerph18147515>
- Lizama-Pérez, F., Piñar-álvarez, M. de los ángeles, Ortega-Argueta, A., Mesa-Jurado, M. A., Sandoval-Caraveo, M. del C., & Carrera-Hernández, A. P. (2018). Implementation and performance of Agenda 21 for local governments in Mexico. *Regions and Cohesion*, 8(3). <https://doi.org/10.3167/reco.2018.080303>
- Londoño-Pineda, A., Cano, J. A., & Gómez-Montoya, R. (2021). Application of ahp for the weighting of sustainable development indicators at the subnational level. *Economies*, 9(4). <https://doi.org/10.3390/economies9040169>
- Lozano, R. (2008). Envisioning sustainability three-dimensionally. *Journal of Cleaner Production*, 16(17). <https://doi.org/10.1016/j.jclepro.2008.02.008>
- Macnaghten, P., & Jacobs, M. (1997). Public identification with sustainable development: Investigating cultural barriers to participation. *Global Environmental Change*, 7(1). [https://doi.org/10.1016/S0959-3780\(96\)00023-4](https://doi.org/10.1016/S0959-3780(96)00023-4)
- Marks, N., Abdallah, S., Simms, A., & Thompson, S. (2006). THE (un)HAPPY PLANET INDEX: An index of human well-being and environmental impact. *Agenda, January 2017*.
- Mazi, F. (2015). Understanding sustainable development: Ambiguity and conflict. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, 23. <https://dergipark.org.tr/en/pub/dpusbe/65504%0Afiles/3213/Mazi-2015-UNDERSTANDING-SUSTAINABLE-DEVELOPMENT-AMBIGUITY-A.pdf%0Afiles/3214/65504.html>
- Moratis, L., & Melissen, F. (2022). Bolstering responsible management education through the sustainable development goals: Three perspectives. *Management Learning*, 53(2). <https://doi.org/10.1177/1350507621990993>
- Najjar, R. (2022). Four dimensional spatial sustainability (4DSS): A revolutionary approach toward utopian sustainability. *Discover Sustainability*, 3(1), 1–13.
- Najjar, Raed. (2019). Planning, power, and politics (3P): Critical review of the hidden role of spatial planning in conflict areas. In *Land Use – Assessing the Past, Envisioning the Future*. <https://doi.org/10.5772/intechopen.78779>
- Nonaka, I., & Toyama, R. (2005). The theory of the knowledge-creating firm: Subjectivity, objectivity and synthesis. *Industrial and Corporate Change*, 14(3). <https://doi.org/10.1093/icc/dth058>
- O'Neill, J. (2008). Happiness and the good life. *Environmental Values*, 17(2). <https://doi.org/10.3197/096327108X303819>
- Pawlowski, A. (2008). How many dimensions does sustainable development have? *Sustainable Development*, 16(2). <https://doi.org/10.1002/sd.339>
- Purvis, B., Mao, Y., & Robinson, D. (2019). Three pillars of sustainability: in search of conceptual origins. *Sustainability Science*, 14(3). <https://doi.org/10.1007/s11625-018-0627-5>
- Raco, M. (2007). Securing sustainable communities: Citizenship, safety and sustainability in the new urban planning. *European Urban and Regional Studies*, 14(4). <https://doi.org/10.1177/0969776407081164>
- Ramos, T. B., Caeiro, S., Disterheft, A., Mascarenhas, A., Deutz, P., Spangenberg, J. H., Montaña, M., Olayide, O., & Sohal, A. (2020). Rethinking sustainability: Questioning old perspectives and developing new ones. *Journal of Cleaner Production*, 258. <https://doi.org/10.1016/j.jclepro.2020.120769>

- Redclift, M. (1991). The multiple dimensions of sustainable development. *Geography*, 76(1), 36–42.
- Ruggerio, C. A. (2021). Sustainability and sustainable development: A review of principles and definitions. *Science of the Total Environment*, 786. <https://doi.org/10.1016/j.scitotenv.2021.147481>
- Seghezze, L. (2009). The five dimensions of sustainability. *Environmental Politics*, 18(4). <https://doi.org/10.1080/09644010903063669>
- Sheehy, B., & Farneti, F. (2021). Corporate social responsibility, sustainability, sustainable development and corporate sustainability: What is the difference, and does it matter? *Sustainability (Switzerland)*, 13(11). <https://doi.org/10.3390/su13115965>
- Spangenberg, J. (2004). Sustainability beyond environmentalism. The missing dimensions. *GoSD Working Paper*, 2.
- The Sustainable Development Goals Report 2021*. (2021).
- Tomaškinová, J., Tomaskin, J., Stastna, M., & Theuma, H. (2019). Environmental management challenges in the 21st century: Assessment of protected areas management effectiveness in Slovakia. *Journal of Environmental Protection and Ecology*, 20(4), 2012–2019.
- Tomaškinová, J., Tomaškin, J., Theuma, H., Alcántara Valero, A. F., & Attard, V. (2021). Addressing present challenges in the life-cycle of wetlands management to successfully integrate sustainability and good governance. *Journal of Environmental Engineering and Landscape Management*, 29(1). <https://doi.org/10.3846/jeelm.2021.14142>
- Toumi, O., Le Gallo, J., & Ben Rejeb, J. (2017). Assessment of Latin American sustainability. *Renewable and Sustainable Energy Reviews*, 78. <https://doi.org/10.1016/j.rser.2017.05.013>
- UN-CSD. (2007). Indicators of sustainable development: guidelines and methodologies. *New York, October*.
- UN General Assembly. (2015). *Transforming our world: The 2030 agenda for sustainable development United Nations. United Nations*.
- United Nations, & Annan, K. A. (1997). *Agenda for development*. United Nations Department of Public Information.
- Valentin, A., & Spangenberg, J. H. (2000). A guide to community sustainability indicators. *Environmental Impact Assessment Review*, 20(3). [https://doi.org/10.1016/S0195-9255\(00\)00049-4](https://doi.org/10.1016/S0195-9255(00)00049-4)
- Vogt, M., & Weber, C. (2019). Current challenges to the concept of sustainability. *Global Sustainability*, 2. <https://doi.org/10.1017/sus.2019.1>
- World Commission on Environment and Development. (1987). *Our common future*. Oxford University Press.

7 Sustainable development and corporate social responsibility

Ewa Mazur-Wierzbicka and Olgierd Swiatkiewicz

Introduction

Today's world is facing many challenges and the main ones include environmental pollution, climate change, limited resources, rising social inequalities or demographic changes. To tackle these challenges, since the 1950s, ideas started emerging and concepts were created. One of them, considered the most popular, was the concept of sustainable development (SD) created in the 1960s, which includes economic, environmental and social issues and takes into account a long-term perspective that places emphasis on raising responsibility for future generations. In the face of these challenges, it is important that we take actions not only on a global scale but also (or perhaps most of all) at the level of individual economic operators because only their pro-social and pro-environmental actions will allow the implementation of the assumptions of the SD concept. Such a possibility is allowed by companies' implementing the concept of corporate social responsibility (CSR), which may be recognised as a tool for the implementation of SD principles, at the level of an enterprise.

Given the above, this chapter intends to show the dependencies and interrelations between the concept of SD (adopting the Brundtland definition as a basis), the triple-bottom-line model and the concept of CSR.

Therefore, in the context of the aim presented above, the following questions gain importance: are economic, environmental and social challenges reflected in the CSR concept?; if yes, to what extent?; how does a CSR concept implemented by a company contribute to the implementation of SD goals? It is possible to answer these and other questions thanks to a discussion on the SD concept and CSR from the perspective of a broadly understood business as well as an individual economic operator – an enterprise.

The implementation of the main objective dictates the layout of this chapter. The content is based on a critical review of the literature.

Outline of the concept of SD – basis/theoretical introduction

The SD concept has had a great impact on how we think about relationships between the economy, society and the natural environment.

The beginnings of the later-formulated SD concept may be found in classical economics (D. Ricardo, T. Malthus, J. S. Mill). Representatives of neo-classical economics, Marxism, institutionalism and Keynesian economics also expressed their interest in this subject matter. In the 1950s and 1960s, we realised that excessive exploitation of natural resources, dynamics of growth of the global population, the development of industry and also increased consumption and agricultural production are a threat to the natural environment, and thus for humans as part of it. This contributed to the emergence of the term *ecodevelopment*, used for the first time at the United Nations conference in Stockholm in 1972; the protection of the natural environment and natural resources comes to the fore in the *ecodevelopment* concept. The SD concept founded on the notion of *ecodevelopment* was ultimately accepted and introduced for use by the World Commission on Environment and Development (WCED) and included in the 1987 “Our common future” report (Brundtland Report). SD was defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” The Brundtland definition points to two fundamental aspects, that is, the sustained satisfaction of needs across generations and a generational perception of the problem of meeting needs. This means that the essence of SD is to meet the needs of the modern generation in a sustainable manner, thanks to which future generations will be able to use resources in such quantities and of such quality that they will ensure that their social well-being will be no less than that available to the current generation.

Since the Brundtland definition was promulgated, many other approaches and angles to the concept of SD have been proposed (Piontek, 2002; Esquer-Peralta et al., 2008), and the majority of them are an expansion or a specification. However, there is a belief that the definition of SD has to include economic, social and environmental dimensions (Byrch et al., 2007; Valezquez et al., 2011) and that it must be an ethical concept. And this is the approach to SD presented by the WCED (1987) (Byrch et al., 2007; Valezquez et al., 2011). Wilkinson et al. (2001) extend this approach claiming that the SD concept should also “include the ethical dimension of the fairness of the trade-off between current economic pressures and future environmental needs”.

The multiplicity and diversity of SD definitions make it possible to point out some of its common elements. Therefore, SD is

- a type of a socio-economic development that rejects the concept of “zero growth”,
- an intergenerational concept,

- a concept in which distributive justice and intergenerational justice play a significant role,
- a process that integrates all activities undertaken by humankind,
- a development that strives to balance the three areas (dimensions): economic, social and environmental,
- a concept that points to intangibles – in particular, quality of life.

It is essential to focus on the three dimensions of SD which are interdependent and require simultaneous work on all of them (Figure 7.1).

All three levels of SD should contribute to achieving a sustainable improvement in the life of humanity (current and future generations) while preserving environmental (natural) and man-made capital. This is possible by taking specific actions and achieving partial goals (Figure 7.2).

Depending on which SD goals are undertaken, they are pursued through the declared and conscious action of causative factors or by means of legal or economic instruments applied within the framework of certain policies or development strategies. There might also be situations where the achievement of SD goals, in addition to the assumed positive effects, will bring adverse side effects, which may translate into unsustainable development of certain parts of the specific system under study.

Given the three-dimensional nature of SD, the basic difficulty is finding balance and achieving excellence in all dimensions. While economic performance is measurable, the fundamental difficulty is the measurability of social and environmental impacts, especially as they are long-term. How quickly SD is achieved

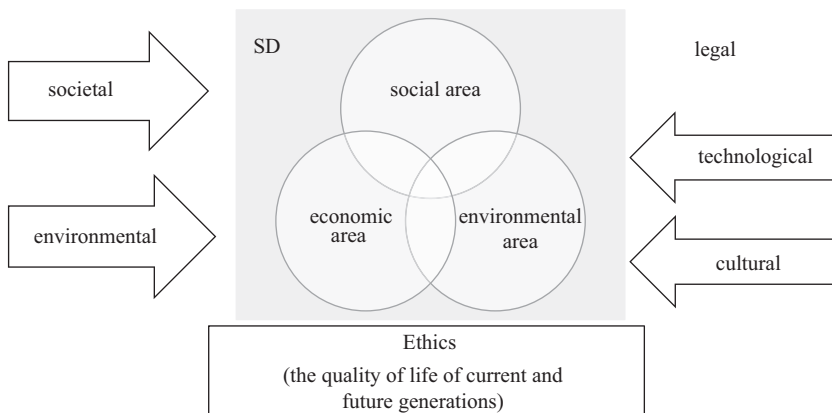


Figure 7.1 Sustainable development

Source: author's own compilation.

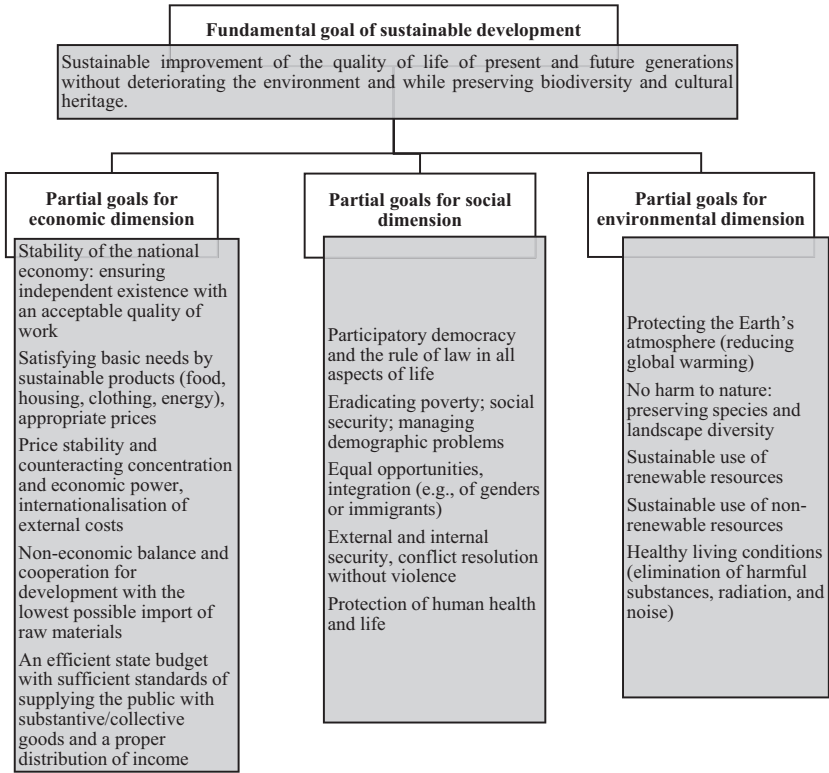


Figure 7.2 Selected goals and actions of individual SD dimensions

Source: adopted (Rogall, 2010).

depends on actions taken by individual entities to incorporate SD guidelines and SD targets (including the 17 that are currently defined) in their activities.

The concept of SD in an organisation

The concept of SD transferred to an enterprise, assumes the equality of its functioning in interdependent areas: economic, environmental and social. A company should, therefore, strive for simultaneous development in these three dimensions. It is possible when economic development supports social progress and respects the right to nature and cares for environmental protection. On the other hand, corporate social policy should enhance economic performance, while environmental protection policy should focus on economic efficiency.

Many companies define the maximisation of profit as their main goal. Of course, we must agree that without achieving a profit, a company will not be able to function or grow. Nevertheless, Friedman's famous saying that the business of business is business becomes incomplete in the coming ecological or social era. Therefore, the operation of a company should be looked at holistically, that is through a prism of not only economic profit – as the realisation of the primary objective of the company (according to the principles of a neoclassical theory of companies), but also relate to the objectives of the natural environment and its protection (environmental objectives) and social objectives (e.g. ensuring adequate quality of life).

Company managers are thus forced to examine many entirely new issues that traditional businesses have not had to deal with at all up until now.

Company survival forces taking pro-environmental actions. This may be either due to an obligation (e.g. legal requirements, requirements of contractors or society) or due to expected benefits that will enable the company to achieve other objectives. The environmental objectives adopted should be considered from a long-term perspective; however, short-term profit and liquidity are required to achieve them.

There is harmony between economic and environmental goals, because implementation of the one side of the coin is often dependent on the other. By introducing rational management of raw and regular materials a company becomes more profitable. However, it is often the case that economic and environmental goals compete with one another in a short-term operation of the company. Costs of environmental protection may be seen as a great burden. In such a situation, to maximise profit, companies postpone outlays on pro-environmental activity. Such behaviour is not ultimately beneficial, because in the long run, a lack of environmental projects may effectively cripple the implementation of any goals at all. Looking to the future, we must consider not only the 'now' and financial outlays, but also the benefits related to environmental protection. Implementation of economic and environmental goals allows for the achievement of social objectives where people's well-being and quality of life present themselves as two of the most important ones. Caring for the quality of life requires that adequate health, landscape, aesthetic and environmental conditions are ensured (clean air, water and soil, biodiversity), yet this is not possible without material guarantees (e.g., labour market or infrastructure) (Adamczyk & Nitkiewicz, 2007).

Therefore, transferring the SD concept onto the level of organisations involves a search for such solutions which are socially responsible, environmentally friendly and at the same time economically sound (economically valuable).

CRS as an SD tool at the level of a company – principles of the concept

The approach to the role of business in society has changed visibly in the age of globalisation, threats and social changes. It is no longer solely a provider

of products or services but it is required to take up various activities directed towards the protection of the natural environment or other pro-social activities (Każmierczak, 2017). As a result of this, the term CSR has gained pronounced significance in recent years (see: Lulewicz-Sas, 2014; Yang & Guo, 2014; Zarembo, 2014).

A focus solely on financial aspects is no longer sufficient. Social determinants and those associated with environmental protection are also gaining importance. According to B. Rok (2004), three elements influenced the emergence of the CSR idea:

- SD,
- civic pressure, and
- business self-regulation.

Increasingly, managers are beginning to notice that only a socially responsible business will be able to strive to enhance the company's value and to increase its competitiveness. A socially responsible business is one which is based on ethical behaviour and takes into account what is important for the company's stakeholders – their needs and values.

Stakeholders are attributed fundamental importance in the CSR concept. The Stakeholder Theory, created by R.E. Freeman (1984), is one of its pillars. It is mainly on the basis of the stakeholder criterion that the majority of enterprises choose to undertake socially responsible actions (Vos, 2003). Specific choices of organisations show the ranking of individual groups of stakeholders and their sensitivity to specific categories of social problems (Table 7.1).

Table 7.1 Most frequently undertaken actions towards selected stakeholder groups

<i>Stakeholders</i>	<i>Actions</i>
Employees	Equal treatment, protection of health and safety of work or protection of employee rights
Customers	Full information about the product, service or technological process, data protection and promotion policy
Investors	Corporate governance and codes of conduct, assessment of company's condition, assessment of remuneration for shareholders
Suppliers	Building lasting relations, transparent contractual terms
Financial partners	Building relations
Authorities	Codes of conduct, compliance with the law
Communities	Charity work, social activities, environmental protection, building virtual communities
Natural environment	Minimising negative impact on the natural environment, reduction of pollution, rational use of resources and the introduction of pro-environment solutions to production processes and services offered

Source: author's own compilation.

The very concept of CSR is difficult to define unambiguously due to the complexity of the subject matter or different perceptions – by those defining it – of the focus, significance or importance of the key issues covered by the concept (Mazur-Wierzbicka, 2012; El Akremi et al., 2018), but also due to its continuous development and a differently perceived scope of corporate responsibility (see more in Dahlsrud, 2008; Freeman & Hasnaoui, 2011; Rok, 2013). In the most general terms, it is assumed that it is the company that is responsible for its impact on society (EC Communication, 2012).

It is true that some authors adopt a certain CSR perspective in which they focus strongly on one of the areas, that is the social area, and take the stakeholder theory as a reference point.

However, a broader look at CSR, which also takes into account the evolution of the concept and its relations with the concepts mentioned in previous sections of this chapter, allows us to distinguish the most frequently addressed issues. They include

- basing activity on legal provisions and ethical norms,
- a commitment by the actors to conduct their activities in a transparent and ethical manner,
- the long-term nature of the activities undertaken,
- taking into account (striking a balance between) economic, social and environmental aspects in the activity,
- the voluntary nature of implementation (though this element may currently be under discussion),
- directing activities towards a wide group of stakeholders (shaping positive relations with them).

Regardless of the differences in defining CSR, the activities that fall within it should be closely linked to the company's core business to become part of the strategy being pursued.

Based on the approach to CSR contained in ISO 26000 and with the purpose of this article in mind, it is assumed that: social responsibility is the responsibility of an organisation for the impacts of its decisions and activities on society and the environment through transparent and ethical behaviour that: contributes to SD, including the health and welfare of society, takes into account the expectations of stakeholders, is in compliance with applicable law and consistent with international norms of behaviour, and is integrated throughout the organisation and practised in its relationships.” (2010).

Analysing the definitions of CSR, one can notice the multidimensionality of this concept and the possibility of looking at it from different perspectives. We can, as is the case of the ISO 26000 standard, identify 7 CSR areas or perhaps just two – focusing on the organisation's external and internal environment (thus we are dealing with external and internal areas), but we can also approach CSR in a somewhat classical way by pointing to three aspects, that is economic,

Table 7.2 CSR areas – examples of activities

<i>Economic</i>	<i>Environmental</i>	<i>Social</i>
Maximising profit (maximising income on sale and minimising costs: administrative costs, production costs, marketing costs and distribution costs), responsible and safe products and services fair price policy, ethical advertising activity, timely settlement of obligations towards suppliers and business partners, reporting and auditing, socially responsible investment, smart strategic decisions, strong competitive position, sustainability of development,	Designing environmentally friendly products and production processes, effective and rational use of resources, improvement of eco-efficiency, reduced production of waste and pollution (discharged to water, air and soil), waste management, recycling, protection of biodiversity, calculation and consideration of environmental risk in the company's activities, applying the "environmental assessment" of suppliers in the context of their environmental standards, informing business partners, consumers and the public about environmental protection issues	Internal stakeholders: improvement of working conditions (in line with occupational safety and health (OSH)) and boosting job satisfaction, work/life balance, equal opportunities and diversity (at each level of human resources management), professional training and development of employees (including career planning), communicating/informing employees and including them in the company's decision-making process, responsible and fair remuneration or financial support for employees, actions based on ethics, values and principles, calculation and consideration of environmental risks in the company's activities, responsible leadership External stakeholders: programmes supporting society (e.g., education or arts), community involvement, voluntary work, charitable work, improving "quality of life", Social dialogue, cooperation with local partners building long-term partnerships Measuring one's own involvement

Source: author's own compilation.

environmental and social. These three components: the economic, environmental and social areas, are also directly related to both the SD concept and the TBL – triple bottom line – concept referred to in the previous section of this chapter (Table 7.2).

In implementing the concept of social responsibility, it is important that businesses take care of their economic interest (strive to maximise profit), which is in line with the assumptions adopted by A. B. Carroll (1991, 1999). He believed economic responsibility to be the foundation of his pyramid (Figure 7.3). A company generating (long-term) losses has no real possibility of surviving in the market and being competitive. Without generating profit, a company is unable to (in a long-term perspective) ensure employment stability, create socially responsible working conditions for employees, undertake activities for the benefit of the local community or invest in environmental actions.

Subsequent types of responsibilities, that is, legal, ethical and philanthropic responsibilities, only come after the economic responsibilities.

Legal responsibilities mean that a company must comply with the applicable law at all stages and in all areas of its business. It is above economic responsibilities because each company, striving to maximise their profit, must act within the limits of the law. In this case, the law is a point of reference for managers' activity. **Ethical responsibilities** are the next stage. They require that businesses act ethically and with integrity in areas that are not regulated by law. This type of responsibility demonstrates a high degree of awareness and sensitivity on the part of entrepreneurs. **Philanthropic responsibilities** sit at the top of the pyramid. Through them, companies become civic institutions by contributing resources for the benefit of the community and by supporting it in specific situations that require help (Gołaszewska-Kaczan, 2011).



Figure 7.3 Carroll's pyramid of levels of corporate social responsibility

Source: adopted (Carroll, 1991).

Implementation of individual types of responsibility may vary depending on the size of the organisation, management philosophy, corporate strategy and specificity of the industry.

Given the above, socially responsible activity has to become an integral element of the organisation's functioning if we assume that the expectations and needs of stakeholders are taken into account, thus contributing to SD. Therefore, we may assume that CSR is a tool to implement SD guidelines at the organisational level.

CSR should be taken into account by companies at the strategy-building stage (Kapferer, 2012), using modern management concepts and methods (McNeil et al., 2015). It should be introduced in a planned and purposeful manner. According to the idea of CSR, social initiatives should be carefully selected and fit in with the mission and vision of the company's development. Companies should align the objectives of social activities with their own business goals in a given period and then align them with the company's core competencies.

An organisation's implementation of the CSR concept demonstrates forward thinking, the ability to adapt to the surrounding reality, creativity, openness to change and, above all, taking into account the expectations and needs of stakeholders, both internal and external.

More and more socially responsible companies are committing to the Sustainable Development Goals (SDGs) in pursuit of their goals. This is done through their adoption of sustainable practices based on SDGs (Cosma et al., 2020; Yu et al., 2020). Consequently, this leads to an improved dialogue with stakeholders and gives credibility to the companies' stated responsibility towards the natural environment and society (Tsalis et al., 2020). The implementation of the SDGs by companies defines their short and long-term goals to contribute to the achievement of SD (Yu et al., 2020).

In conclusion, it is fair to assume that the concept of SD has had a significant impact on the idea of CSR. Just like the SD concept, CSR can also be based on three pillars, that is, the economic, environmental and social pillars. Both concepts take ethical actions as their starting point (foundation). In the case of CSR, stakeholders play a central role.

Summary

At the moment the concept of SD is becoming increasingly popular thus providing a framework for a long-term vision of stability – despite the fact that it was initiated in the 1960s. Despite the passage of time, it has not lost its significance; quite the opposite, it is present in many strategic documents of international organisations, individual states or regimes. It assumes a lasting, harmonious development that takes place within three basic areas – economic, environmental (its protection) and social, a development that can meet the current needs of societies, at the same time does not limit coming generations from meeting their

needs in the future. Most of all, it occupies an important place not only in the theory of economics` but also in the theory of management stepping into various areas of activity undertaken by economic operators. At the company level (micro-scale) it seems more appropriate to state that the concept of CSR is a tool for implementing the concept of SD (macro scale).

In the view of many researchers (though there are other opinions), the SD concept has become the basis of CSR and of managing the environment in a company (Korhonen, 2003; Gauthier, 2005). Some researchers describe CSR as a stakeholder-oriented, social pillar of SD. According to some commentators, CSR is a key SD strategy in the majority of organisations around the world (Kolk & Van Tulder, 2010; Moon, 2007). What is crucial is the fact that the CSR concept, as well as the SD concept, may be examined by identifying three main areas within it: economic, environmental and social (Bansal, 2005; Montiel, 2008).

2015 was an important event for SD (Sustainable Development) when 17 SD goals were adopted and which may be considered a globally acceptable standard for companies around the world (Diaz-Sarachaga, 2021). Taking action within certain SDGs has an impact on the commitment of such companies to the implementation of SDGs (Küçükgül et al., 2022). Companies, including socially responsible ones, voluntarily undertake sustainable practices based on the SDGs (Cosma et al., 2020; Yu et al., 2020) to increase dialogue with stakeholders and

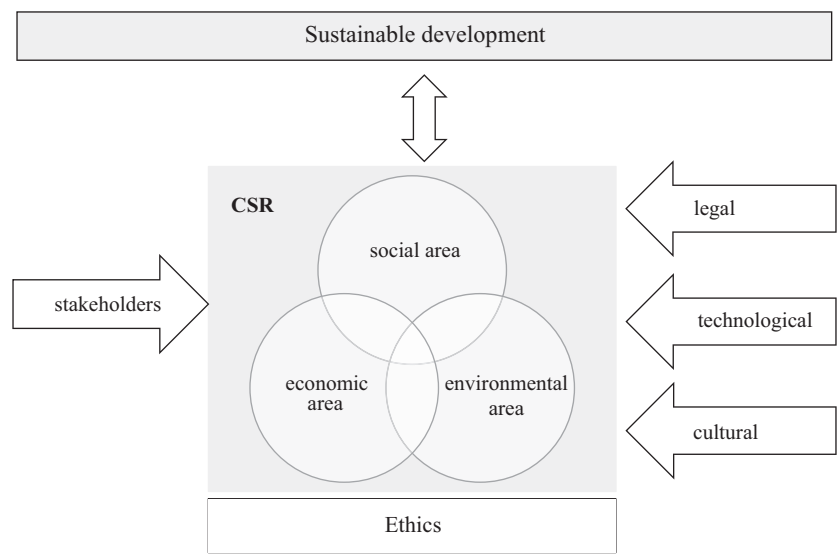


Figure 7.4 Relationship between sustainable development and corporate social responsibility

Source: author's own compilation.

legitimise their activities (Tsalis et al., 2020). It can therefore be assumed that the implementation of the SDGs by companies sets their short- and long-term goals to contribute to achieving SD (Yu et al., 2020).

An analysis of the literature proves that there is a close relationship between SD and CSR (Figure 7.4), which has positive implications at both the micro- and macro-levels. Actions that are ethical by design (foundation of the SD and CSR concept) and serve to improve the quality of life, social well-being (society as a whole and individuals) and the protection of the natural environment are most welcome and sought after.

The activities undertaken as part of CSR are in line with the maxim “Think globally, act locally”.

References

- Adamczyk, J. & Nitkiewicz, T. (2007). *Programowanie zrównoważonego rozwoju przedsiębiorstw*, Polskie Wydawnictwo Ekonomiczne S.A., Warszawa.
- Bansal, P. (2002). The corporate challenges of sustainable development. *Academy of Management Executive*, 16(2), 122–131. <http://doi.org/10.5465/AME.2002.7173572>
- Byrch, C., Kearins, K., Milne, M., & Morgan, R. (2007). Sustainable what? A cognitive approach to understanding sustainable development. *Qualitative Research in Accounting & Management*, 4(1), 26–52. <https://doi.org/10.1108/11766090710732497>
- Carroll, A. B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business Horizons*, 34(4), 39–48. [https://doi.org/10.1016/0007-6813\(91\)90005-G](https://doi.org/10.1016/0007-6813(91)90005-G)
- Carroll, A. B. (1999). Corporate social responsibility – evolution of a definitional construct. *Business and Society*, 38(3), 268–295. <https://doi.org/10.1177/000765039903800303>
- Cosma, S., Venturelli, A., Schwizer, P., & Boscia, V. (2020). Sustainable development and European banks: A non-financial disclosure analysis. *Sustainability*, 12(15), 6146. doi: <https://doi.org/10.3390/su12156146>
- Dahlsrud, A. (2008). How corporate social responsibility is defined: An analysis of 37 definitions. *Corporate Social Responsibility and Environmental Management*, 15, 1–13. <http://doi.org/10.1002/csr.132>
- Diaz-Sarachaga, J. M. (2021). Monetizing impacts of Spanish companies toward the sustainable development goals. *Corporate Social Responsibility and Environmental Management*, 28(4), 1313–1323. <https://doi.org/10.1002/csr.2149>
- EC (2012) Communication: A renewed EU strategy 2011–2014 for corporate social responsibility, 2–3. www.eurocoop.coop (accessed on 11 September 2022).
- El Akremi, A., Gond, J.-P., Swaen, V., De Roeck, K., & Igalens, J. (2018). How do employees perceive corporate responsibility? Development and validation of a multidimensional corporate stakeholder responsibility scale. *Journal of Management*, 44(2), 619–657. <https://doi.org/10.1177/0149206315569311>
- Esquer-Peralta, J., Velazquez, L., & Munguia, N. (2008). Perceptions of core elements for sustainability management systems (SMS). *Management Decision*, 46(7), 1027–1038. <https://doi.org/10.1108/00251740810890195>
- Freeman, E. R. (1984). *Strategic management: A stakeholder approach*. Pitman.

- Freeman, I., & Hasnaoui, A. (2011). The meaning of corporate social responsibility: The vision of four nations. *Journal of Business Ethics*, 100(3), 419–443. <https://doi.org/10.1007/s10551-010-0688-6>
- Gauthier, C. (2005). Measuring corporate social and environmental performance: The extended life-cycle assessment. *Journal of Business Ethics*, 59, 199–206. <https://doi.org/10.1007/s10551-005-3416-x>
- Gołaszewska-Kaczan, U. (2011). Społeczna gospodarka rynkowa – gospodarka społeczna – społeczna odpowiedzialność. *Optimum. Studia Ekonomiczne*, 4(52), 148–160.
- ISO 26000. (2010). *Guidance on social responsibility*. International Organization for Standardization, Switzerland.
- Kapferer, J. N. (2012). *The new strategic brand management advanced insights and strategic thinking*. Kogan Page.
- Każmierczak, M. (2017). *Determinanty zarządzania społecznie odpowiedzialnego, w sektorze małych i średnich przedsiębiorstw*. Wydawnictwo UE w Poznaniu.
- Kolk, A., & Van Tulder, R. (2010). International business, corporate social responsibility and sustainable development. *International Business Review*, 19(2), 119–125. <https://doi.org/10.1016/j.ibusrev.2009.12.003>
- Korhonen, J. (2003). On the ethics of corporate social responsibility – considering the paradigm of industrial metabolism. *Journal of Business Ethics*, 48, 301–315. <https://doi.org/10.1023/B:BUSI.0000005798.88294.31>
- Küçükgül, E., Cerin, P., & Liu, Y. (2022). Enhancing the value of corporate sustainability: An approach for aligning multiple SDGs guides on reporting. *Journal of Cleaner Production*, 333, 130005. <https://doi.org/10.1016/j.jclepro.2021.130005>.
- Lulewicz-Sas, A. (2014). Społecznie odpowiedzialne inwestowanie narzędziem koncepcji społecznie odpowiedzialnego biznesu. *Economics and Management*, 6(1), 142–157. <https://doi.org/10.12846/j.em.2014.01.08>
- Mazur-Wierzbicka, E. (2012). *CSR w dydaktyce, czyli jak uczyć studentów społecznej odpowiedzialności*. Wydawnictwo Stowarzyszenie Kreatywni dla Szczecina.
- McNeil, A. J., Frey, R., & Embrechts P. (2015). *Quantitative risk management, concepts, techniques and tools*. Princeton University Press.
- Montiel, I. (2008). Corporate social responsibility and corporate sustainability: Separate pasts, common futures. *Organization & Environment*, 21(3), 245–269. <https://doi.org/10.1177/1086026608321329>
- Moon, J. (2007). The contribution of corporate social responsibility to sustainable development. *Sustainable Development*, 15(5), 296–306. <https://doi.org/10.1002/sd.346>
- Piontek, B. (2002). *Koncepcja rozwoju trwałego i zrównoważonego* Polski. PWN.
- Rogall, H. (2010). *Ekonomia zrównoważonego rozwoju. Teoria i praktyka*. Wydawnictwo Zysk i S-ka.
- Rok, B. (2004). *Odpowiedzialny biznes w nieodpowiedzialnym świecie*. Akademia Rozwoju Filantropii w Polsce. Forum Odpowiedzialnego Biznesu.
- Rok, B. (2013). *Podstawy odpowiedzialności społecznej w zarządzaniu*. Poltext.
- Tsalis, T. A., Malamateniou, K. E., Koulouriotis, D., & Nikolaou, I. E. (2020). New challenges for corporate sustainability reporting: United Nations’ 2030 agenda for sustainable development and the sustainable development goals. *Corporate Social Responsibility and Environmental Management*, 27(4), 1617–1629. <https://doi.org/10.1002/csr.1910>.

- Vos, J. (2003). Corporate social responsibility and the identification of stakeholders. *Corporate Social Responsibility and Environmental Management*, 10, 141–152. <https://doi.org/10.1002/csr.39>
- Wilkinson, A., Hill, M., & Gollan, P. (2001). The sustainability debate. *International Journal of Operations & Production Management*, 21(12), 1492–1502. <https://doi.org/10.1108/01443570110410865>
- World Commission on Environment and Development (Brundtland Report). Available from: http://www.ace.mmu.ac.uk/eae/Sustainability/Older/Brundtland_Report.html; 1987.
- Yang, L., & Guo, Z. (2014). Evolution of CSR concept in the West and China. *International Review of Management and Business Research*, 3, 819.
- Yu, S., Sial, M. S., Tran, D. K., Badulescu, A., Thu, P. A., & Sehleanu, M. (2020). Adoption and implementation of sustainable development goals (SDGs) in China – Agenda 2030. *Sustainability*, 12(15), 6288. <https://doi.org/10.3390/su12156288>.
- Zaremba, M. (2014). Społeczna odpowiedzialność biznesu w krajach rozwijających się na przykładzie Indii. *Economic and Management*, 6(2), 279–290. <https://doi.org/10.12846/j.em.2014.02.20>

Part 2

Sustainable development organizational function



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8 Sustainable business management

Izabela Stańczyk

Introduction

Sustainability is perceived as the appropriate ties between production-technological and economic development, along with social development, protection of the natural environment, as well as care of future generations (Herman, Oleksyn, Stańczyk, 2016). However, sustainable enterprises may be organisations that respect the principles of sustainable development in their business activities. In accordance with these principles, the functions of planning, organising, motivating, or controlling are significant elements of the organisation, thus the implementation of sustainable management is essential (Pabian, 2011). In this chapter, the contents relating to the definitions of sustainable development shall be presented, while touching on elements of sustainable management. Furthermore, descriptions of business models will be provided, which are based on the sustainable management of organisations in the context of their development and will thus lead to the creation of perspectives for the future (Duraj, 2018) while taking into account such areas as sustainable production, sustainable supply chains, sustainable marketing, sustainable servitisation, sustainable research and development, and sustainable HRM. This chapter will focus attention on a general clarification of sustainable business management.

In commencing deliberations with regard to sustainable business management, it is worth drawing attention to the word “sustainability” itself and clarifying it. It is perceived as “leading to a state of equilibrium or ensuring equilibrium between the particular elements” (<https://sjp.pwn.pl>, 2022). By referring to the sphere of management, we may discuss such activities that ensure a particular organisation has the appropriate balance in terms of financial performance. The achievement of this will depend on a multitude of factors that shape the environs of the organisation. This refers to both the external environs (e.g. legal solutions of business activities of an organisation in a particular area, in a particular country; the global economic situation), as well as the internal environs (e.g. competences of the managerial staff; the philosophy of their activities and the competences of the employed staff). Hence, when viewing sustainable

management, it is necessary to take all these elements into account. Sustainability is perceived as the appropriate ties between production-technological and economic development, along with social development, protection of the natural environment, as well as care of future generations (Herman, Oleksyn, Stańczyk, 2016).

Definition of sustainable development

In this context, we have started a discussion about sustainable development, which is defined as “a process aimed at satisfying the aspirations of development of the current generation in a manner that facilitates the fulfilment of the same pursuits by the future generations” (Report, 1987). Bearing in mind the long-term ecological strategies, this refers to the implementation of the philosophy of constant development which would integrate the economic and ecological goals with the social goals in the context of a fair chance of sharing the resources for current and future generations (Kuźniarska, 2018). Sustainable development indicates the process of transformation that ensures the fulfilment of needs by the current generation without lowering the opportunities for development of future generations, thanks to, among other things, integrated activities in the sphere of economic growth, social development, and also environmental issues. Such a perception of the issues of sustainable development became widespread thanks to the report by the World Commission of G.H. Brundtland for Environment and Development entitled “Our Common Future”. Sustainable development is also the process of social, economic and environmental change, which would facilitate a balance between the profits and costs of development from the perspective of future generations, namely, “it is the reflection of the policies and strategies of constant economic and social development without damaging the environment and the natural resources, in which the quality depends on continuing human activity and further development” (Johnson, Kwasza, 2022). The genesis of sustainable development can be found in the works of Ł. Kozar, who analyses documents of a worldwide sphere and who indicates the embodiment of the concept of the green economy and sustainable development as a “specific way of management that is appropriate in the context of intensifying environmental problems” (Kozar, 2019). Views of the definition of sustainable development itself have been presented by the following chosen authors (Table 8.1).

In the presented definitions of sustainable development, it is possible to indicate the duration of activities in an organisation that encompasses all the solutions that ensure a better quality of life, both in the economic and ecological spheres, as well as in the social sphere. Sustainability is a notion that is relatively new and not entirely analysed in the world of business, and not very well-documented in Poland. W.M. Grudzewski, I.K. Hejduk, A. Sankowska, M.

Wańtuchowicz define sustainability as the ability of enterprises to do the following on a permanent basis:

- 1 self-learning,
- 2 adaptation and development,
- 3 revitalisation,
- 4 reconstruction,
- 5 reorientation.

Table 8.1 Definitions of sustainable development

<i>Author</i>	<i>Definition of sustainable development</i>
M. Duraj (2018)	Sustainable development, which is usually defined as the creation of perspectives for the future.
Zuzek, D. K. (2012)	Sustainable development is the use and conservation of natural resources, as well as the orientation of technologies and institutions in such a way as to achieve and maintain the fulfilment of current human needs, as well as the needs of future generations.
Government of the UK (Renukappa, Egbu, 2012)	Likewise, sustainable development was defined by the UK government as “ensuring a better quality of life for everyone right now and for future generations”.
Krzysztofek (2013)	Sustainable development is a concept that combines economic, ecological and social values. In times of growing competition along with changing customer requirements, in contemporary enterprises, profits are not the only important aspect when it comes to manufacturing or service activities. Managing aspects of sustainable development in business activities are becoming the basis of responsibility in modern business.
W. M. Grudzewski, I. K. Hejduk, A. Sankowska, M. Wańtuchowicz (2010)	The notion of sustainability is perceived in direct translation as durability. The notion of sustainability is literally understood as permanence.
T. Oleksyn (2017)	“Activity and development in accordance with the good of all the stakeholders, natural environment and future generations”
E. Bombiak (2020)	“Sustainable development is a concept that confronts global problems associated with human activities both in developed as well as developing countries”.
Brundtland Report: Our Common Future (Matusiak, Matejun, Różańska-Bińczyk, 2020)	“Sustainable development is development that satisfies the current needs without threatening the possibilities of satisfying the needs of future generations”.

Source: Own analysis based on literature review.

For maintaining a sustainable and distinctive position in the market by offering added value to buyers today and in the future (according to the paradigm of innovative growth), thanks to the limited variability of business models, resulting from the creation of new opportunities and goals, as well as answers to these questions, and comparing the interests of different groups (Grudzewski, Hejduk, Sankowska, Wańtuchowicz, 2010).

Within the framework of sustainable development, the concept of the triple bottom line (TBL), which encompasses three dimensions was defined by J. Elkington as follows (2020):

- ecological – preserving the environment and its natural resources,
- economic – economic development that is not restricted, but stimulated by technological progress and the growth of effectiveness in terms of the use of raw materials, other materials and human labour.
- social – enhancement of the standards of living and safety of all people.

The principal benefits of the TBL include, among others (Górska-Mytyk, 2022):

A healthier working environment that is focused on both the employees, as well as on the position of the organisation in the surrounding social environment (e.g. greater diversity, inclusiveness to reduce employee erosion, action to counter mobbing practices while supporting local communities);

- Strategies and actions aimed at achieving a more sustainable future that takes into account both social and environmental sustainability, including moving away from analysing company performance only on a monthly/quarterly basis (e.g., reduced energy consumption, smaller carbon footprint, circular economy);
- New possibilities of generating profit, such as attracting clients who also want to reduce their impact on the environment (e.g. better perception of the brand, greater transparency and possibility of assessing operations, potentially attracting new investors).

The sustainable development of a company signifies the voluntary “taking account of social and environmental issues in business activities, as well as in interactions with stakeholders” (Simões, Sebastiani, 2017). “When talking about sustainable development, it is important to keep in mind not only the dynamics of economic growth but also to balance the needs and opportunities to meet them, while balancing the welfare of all stakeholders, business interests/economy, the environment, as well as present and future generations” (Oleksyn, 2020). According to A. Longoni, M. Pagella, A. Shevchenko, R. Klassen, sustainable development is becoming a significant element in the operating strategy (Longoni, Pagella, Shevchenko, Klassen, 2019). Thus, it has a significant impact on the construction of business models and decision-making at each level

of management. The concept of sustainability is now more widespread both in science and in everyday life and is used by various institutions, as well as being incorporated into numerous programmes and associated with human activities in various places and situations. It is not only the best known and most frequently cited concept linking the environment to development but also the most documented in publications such as, among others, the World Conservation Strategy (IUCN 1980), the Brundtland Report "Our Common Future" (1987), as well as in the outcome documents in Rio de Janeiro in 1992, and at the Earth Summit in Johannesburg in 2002 (Rokicka, Woźniak, 2016). The concept of sustainable development was officially formulated and accepted for implementation in Rio de Janeiro in 1992 (Agenda 21, 2021). However, in 2015, the UN prepared a detailed agenda – the 2030 Agenda for Sustainable Development, which identifies 17 general goals and 169 tasks detailing sustainable development (Przekształcamy nasz świat, 2022). These general aims include the following: no poverty; zero hunger; good health and well-being; quality education; gender equality; clean water and sanitation, affordable and energy; decent work and economic growth; industry, innovation and infrastructure; reduced inequalities; sustainable cities and communities; responsible consumption and production; climate action; life below water; life on land; peace, justice and strong institutions; and partnership for the goals (Ciobotaru, Angheluta, 2014). To achieve the aims of sustainable development in all aforementioned areas, it is essential to have the appropriate human capital and define its development trends from the perspective of medium and long-term trends (Ciobotaru, Angheluta, 2014). This is not an easy task and requires both time and financial outlays. Its creation should be based on the following support systems: a workforce planning system, a recruitment and selection system, a staff training and improvement system, incentive programmes, and effective communication (Kuzniarska, 2018).

Sustainable management

In the context of the sustainability solutions presented, it is worth defining sustainable organisations/businesses. These are organisations that respect the principles of sustainable development in their business activities, with the proviso that the realisation of the established goals of sustainable development is possible mainly thanks to employees, since most of the issues related to the use of resources, as well as environmental and social issues are resolved at their level. With regard to sustainable development, the functions of planning, organising, motivating or controlling are significant elements of an organisation, hence the necessity to implement sustainable management (Pabian, 2011). A sustainable organisation is one that "achieves goals that ensure its stability and development according to the adopted strategies. At the same time, the methods and tools for achieving strategic goals are accepted by key external and internal stakeholders from the point of view of social justice and environmental safety" (Czaińska, 2020). The philosophy of the so-called Sustainable Business is now playing a

greater role in responsible market competition, which is based on the following 10 key principles that companies should meet (Burchell, 2008):

- 1 Positive impact of enterprises on the environment;
- 2 Ensuring a positive perception of trademark and reputation;
- 3 Implementation of environmental processes that are in compliance with the planned environmental effect;
- 4 Achievement of appropriate financial performance while taking into account elements of sustainable development;
- 5 Execution of multi-dimensional programs relating to economic, environmental and social areas;
- 6 Implementation of efficient and effective strategies of competing based on sustainable business;
- 7 Responding with clarity to the following question: Can a responsible enterprise operate to function better, or can a well-functioning enterprise be more responsible?
- 8 Preparing and testing effective business scenarios;
- 9 Conducting an appropriate division of labour that would ensure growth in the economic sphere, while also raising the ecological awareness of those employed, which may translate to appropriate pro-social behaviour;
- 10 Searching for and eliminating gaps in the area of the sustainable development of the enterprise on the basis of ratio analysis.

In these times of sustainable management, it is worth considering a holistic view of sustainability (that is, the simultaneous consideration of the environmental, social and economic dimensions of sustainability). The elements of the environmental, social and economic dimensions of sustainability have an interdependent nature among themselves. Excessive emphasis on one dimension can have a negative impact on the other two dimensions. Therefore, managers should find intelligent compromises, which is essential if they want to achieve sustainable development. Likewise, it is important to see how these dimensions affect each other (Renukappa, Egbu, 2012). Today's challenge for decision-makers is to achieve a certain level of comfort in terms of respecting social responsibility, economic viability and environmental sustainability, while protecting the legacy for future generations. Research relating to sustainability can be broadly divided into research related to financial performance or enterprise value and research related to revenue management (Lee, 2011). On this basis, H. Y. Ma and J. Y. Yoo conducted an analysis of research in these areas and indicated the following (Ma, Yoo, 2022):

- Financial performance studies show that sustainability positively affects the financial performance and value of companies in various ways;
- Companies that conduct business in line with CSR (Corporate Social Responsibility) achieve better sales and financial performance because consumers

interested in social issues prefer the products and services of companies that pay social contributions;

- Companies with good ESG (environmental, social, and corporate governance) performance enhance their rating with accounting and market metrics;
- Sustainable management reports were additional and supplementary revelations, which had a positive relation with the share prices as they resolved the asymmetry of information and helped investors to take effective decisions.

Implementing sustainability in organisations is quite a challenge and involves, among other things (Sartori, Latrónico da Silva, De Souza Campos, 2014):

- Implementing environmental protection standards,
- Development of the individual,
- Promotion of education,
- Efficiency in resource allocation,
- Publicly available methodologies and indicators for sustainable development,
- Use of complementary indicators for evaluation,
- Indicators to measure resource use,
- Balance between sustainability support systems,
- Dynamic indicators of sustainability.

The pursuit of sustainability is also a never-ending process of change management, as it is necessary to continuously change the habits, values, awareness and behaviour of employees, consumers, business owners, policy-makers and managers. It is particularly important to change awareness of environmental issues (Matusiak, Matejun, Różanska-Binczyk, 2020).

The drivers for an organisation to undertake social and environmental action have been identified and include (Bombiak, 2020)

- Changes in stakeholder expectations associated with increasing levels of stakeholder awareness,
- Changes in the technological environment that create opportunities to implement innovations in the way organisations operate with regard to the products and services they offer,
- Institutional and legislative conditions that define the desired directions and framework for the economy and individual entities,
- The search for new sources of competitive advantage.

Sustainable management practices help organisations avoid risks and identify opportunities by indicating a sustainability profile (Blackburn, 2022). Research conducted by the Kironi team (Kironi et al., 2022) found that 90% of managers identified sustainability as a key factor in their business operations. However, only 60% of companies have implemented an integrated sustainability system in their organisations. Given these findings, there is a need to

prepare more detailed guidelines to enable companies to take strategic and effective measures for sustainable development (Baumgartner, Rauter2017). Sustainability can also be understood as the appropriate interrelationships between production-technological development and economic development on one side, and social development on another, environmental protection on the third, and concern for future generations on the fourth, whereby such a perception does not arouse objections (Herman, Oleksyn, Stańczyk, 2016). Sustainable management may refer to the values that are preferred in the organisations. It frequently constitutes one of the composite elements of the catalogue of values in enterprises as composite economic-managerial values. Thus, it is one of the principal elements of management in an organisation, building the organisation of work on the basis of economic, ecological and social determinants. With such a catalogue of values, research was conducted within the framework of a project in cooperation between two Polish universities, namely the Warsaw Business School and the Jagiellonian University. In the research conducted, the target group consisted of representatives of private and public sector entities, in particular, senior, middle and lower management managers, as well as specialists from various organisations. Respondents were asked about adherence to sustainability as a value and received the following responses. Sustainability is

- a treasured value, which we take more seriously and is already under implementation (30.2%),
- a treasured value; however, it is currently under implementation only to a limited extent (62.9%),
- a controversial value; I don't think the concept of sustainability is right for our organisation (4.5%),
- other indicators related to individual statements (2.4%).

The statements of the respondents are optimistic; they show that the concept of sustainable development (and at the same time this value) enjoys strong support, although twice as many people say that it is being implemented to a limited extent than those expressing the opinion that it is already being implemented fully (Herman, Oleksyn, Stańczyk, 2016).

Sustainable management places emphasis on the transparency of management, as well as on ethical management, apart from the traditional management value of creating profit through product quality or marketing strategies. In addition, sustainable management considers contributions to the public interest in social development and environmental protection. Sustainable management means that companies can only survive and grow if they seek cooperation and coexistence with different companies and people (Yu, Jung, 2016). Sustainable management is recognised as a necessary management method for a company to survive as a going concern (Kim, Kim, 2018).

Models of sustainable business management

Sustainable development, due to its nature of the impact of human activity on the surrounding environment, has been an inspiration for many strategists for years. Therefore, management in line with the concept of sustainable development involves the development of appropriate business models and also the alignment of competencies of managers at different levels in the organisation as well as in different dimensions, such as project management. Building such a model requires companies to integrate the key strategic factors constituting the business model towards sustainability in the economic, ecological and social areas (Abidin, Pasquire, 2007):

- Economic sustainability – requires enhancing the profitability of the enterprise through efficient use of the resources (human resources, raw materials, finance), efficient projects and undertakings, good management, planning and control,
- Ecological sustainability – requires blocking any harmful or irreversible consequences for the environment through efficient use of natural resources, promoting renewable resources, protecting soil and water, and skilful waste management,
- Social sustainability – requires reacting to the needs of society, including all other stakeholders.

An exemplary model in the field of project management is that of sustainable project management (SPM) and the focus on the role of project managers as a key element. A team from the University of Aveiro presented the following model: Project Management Triple Sustainability Cube (Madureira et al., 2022), which aims to comprehensively and systematically guide project managers in their journey towards sustainability in project management. The model of Triple Sustainability Cube is a conceptual model which illustrates the transversality of the three interrelated dimensions of project sustainability throughout the project life cycle. It identifies 3×9 specific areas of sustainability procedures that can be adopted by project managers in any project development. Having reached a group of 27 practices, each project head may objectively define the adoption of each group of the best practices along each axis and at each stage of the project implementation. By emphasising each of the 27 areas of sustainability where action has been taken on a given project, project managers can improve and forecast areas of improvement for current and future projects. The Triple Sustainability Cube Model for project management provides guidance on adopting comprehensive practices for the elements of sustainability (environmental, social, economic) relating to people, processes and innovation during project development.

Another example of a model of sustainable business management is that which takes into account the expectations of stakeholders developed by B. Wit. Each

management system should have identified stakeholders, have mechanisms to identify their needs, anticipate their impact on the system and the environment, respect their interests, and shape their expectations. Stakeholders are all parties that have opinions, viewpoints or requirements, and can or have an impact, directly or indirectly, on the whole system, part of the system or on specific activities in the system, and a given system can influence in the form of feedback on a stakeholder (Wit, 2016). Stakeholders are primarily interested in the development, creation of value and growth in the value of the system. They are characterised by variability in terms of numbers, power of influence, and often conflicting requirements. Significant characteristics of stakeholders include (Wit, 2016)

- emotional or formal ties with the system (they influence or are influenced by the system),
- relations between stakeholders of the system with the stakeholders of the environment,
- responsibility for the system and its impact on the environment, e.g. according to economic, social and environmental criteria of society's needs,
- interest in the functioning and performance of the system (creating value and using value exchange), in which there are requirements, opinions and views on the subject of the system and its environs,
- shape the business model in its life cycle and in the system life cycle.
- The stakeholder model presented contains the related key elements (objects) of the system with the corresponding characteristics: System (organisation), Stakeholder, Business Model, Responsibility and Risk. It is so universal that it may represent any organisation that functions in accordance with the concept of sustainable development in three areas of responsibility: economic, social and environmental for the system and the environment, and includes a risk analysis of the goals achieved (Wit, 2016).

Conclusions

Sustainable development is becoming part of the strategic management system in organisations. Coordinating the economic, ecological and social dimensions presents a challenge for managers as well as creates a demand for specialists in organisations who can integrate these individual goals. A variety of business models are emerging (identified as two examples in this paper, dealing with different management areas). These models are designed to assist managers at different levels of management in making appropriate decisions that integrate sustainability objectives. What is significant in sustainability-based management is the inclusion of employees in the actions taken at different scales in organisations. Therefore, an industry-wide awareness-raising program on the concept of sustainable development should be developed and implemented. Existing

educational and training programmes require some reorientation. Thus, the challenge for business schools and sustainability consultants is to fill an enormous gap in the market. Continuing professional development and management training programmes are valuable ways to raise awareness of sustainability (Renukappa, Egbu, 2012).

References

- Abidin, N. Z., Pasquire, Ch. L. (2007). Revolutionize value management: A mode towards sustainability. *International Journal of Project Management*, 25, 277.
- Agenda 21. <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf> (25.09.2021).
- Baumgartner, R. J., Rauter, R. (2017). Strategic perspectives of corporate sustainability management to develop a sustainable organization. *Journal of Cleaner Production*, 140, 81–92 (In Madureira, R. C., Silva, C.S., Amorim, M., Ferreira Dias, M., Lins, B., Mello, G. (2022). Think Twice to Achieve a Sustainable Project Management: From Ecological Sustainability towards the Sustainable Project Management Cube Model. *Sustainability*, 14, 3436. <https://doi.org/10.3390/su14063436>)
- Blackburn, W. R. (2007). *The sustainability handbook. The complete management guide to achieving social, economic and environmental responsibility*. London and New York: Earthscan. (In Madureira, R.C., Silva, C.S., Amorim, M., Ferreira Dias, M., Lins, B., Mello, G. (2022). Think Twice to Achieve a Sustainable Project Management: From Ecological Sustainability towards the Sustainable Project Management Cube Model. *Sustainability*, 14, 3436. <https://doi.org/10.3390/su14063436>.)
- Bombiak, E. (2020). *Nowe trendy w obszarze funkcji personalnej*. Uniwersytet Przyrodniczo-Humanistyczny w Siedlcach, Siedlce.
- Brundtland Report: Our Common Future, World Commission on Environment and Development (WCED) (1987) (In Matusiak, B. E., Matejun, M., Różańska-Bińczyk, I., *Koncepcja zrównoważonego rozwoju jako środowisko implementacji praktyk green HR we współczesnych przedsiębiorstwach*. In Urbaniak M., Tomaszewski A., (2020). *Wyzwania społeczne i technologiczne a nowe trendy w zarządzaniu współczesnymi organizacjami*, Oficyna Wydawnicza SGH, Warszawa).
- Burchell, J. (2008). *The corporate social responsibility reader*. Routledge, Taylor & Francis Group, London and New York, 111–118 (In Jabłoński, A. *Zrównowazony rozwój a zrównowazony biznes w budowie wartości przedsiębiorstw odpowiedzialnych społecznie* https://www.humanitas.edu.pl/resources/upload/dokumenty/Wydawnictwo/Zarzadzanie_zeszyt/Zarz%202_2010%20podzielone/Jablonki%20A.pdf (15.09.2022))
- Ciobotaru A. V., Angheluta P. S. (2014), Human capital in context of sustainable development, “Acces la Success”. *Bucharest*, 15(1), s.417–s.421.
- Czaińska, K. (2020). *Od strategii zróżnicowanego rozwoju do zrównoważonego zarządzania zasobami ludzkimi – diagnoza rozbieżności*. In *Zarządzanie kapitałem ludzkim w organizacjach zróżnicowanych kulturowo* (ed.) Haromszeki, Ł. Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu, Wrocław, 11–19.
- DEFRA (2005). *Securing the future: Delivering UK sustainable development strategy*. London: Department for Environment, Food and Rural Affairs (In Renukappa, S.,

- Egbu, Ch. (2012). A critical reflection on sustainability within the UK industrial sectors Construction Innovation *Sustainability*, Vol. 12 No. 3, 317–334. Emerald Group Publishing Limited, 1471–4175. <https://doi.org/10.1108/14714171211244578>).
- Duraj, M. (2018). *Zrównoważony rozwój w zarządzaniu miejskim biznesem*. In *Zrównoważony rozwój – Sustainable development– Debiut naukowy 2017* (ed.) Berezowski, J., Kretek, H. A. Racibórz, 13–22.
- Elkington, J. *Enter the triple bottom line*. <https://www.johnelkington.com/archive/TBL-elkington-chapter.pdf> (3.08.2022).
- Górska-Mytyk, E. *Czym jest Triple Bottom Line (TBL)?* <https://pl.linkedin.com/pulse/czym-jest-triple-bottom-line-tbl-emilia-g%C3%B3rska-mytyk-1e> (3.08.2022).
- Grudzewski, W. M., Hejduk, I. K., Sankowska, A., Wańtuchowicz, M. (2010). *Sustainability w biznesie czyli przedsiębiorstwo przyszłości, zmiany paradygmatów i koncepcji zarządzania*, Wydawnictwo Poltext, Warszawa.
- Herman, A., Oleksyn, T., Stańczyk, I. (2016). *Zarządzanie respektujące wartości. Raport z badań*, Difin, Warszawa. <http://www.un.org.pl/> (3.08.2022).
- <https://sjp.pwn.pl/slowniki/zr%C3%B3wnowa%C5%BCenie.html> (28.09.2022).
- Johnson, A., Kwasza, K. (2022). *Zrównoważony rozwój i odpowiedzialny biznes – kluczowe założenia, normy, standardy oraz zarządzanie ryzykami*, Centrum Edukacji Kadr, https://www.pibr.org.pl/static/items/publishing/Prezentacja_modul_XV_Anna_Johnson_Katarzyna_Kwasza.pdf (15.09.2022).
- Kiron, D., Unruh, G., Kruschwitz, N., Reeves, M., Rubel, H., Meyer Zum Felde, A. (2017). Corporate sustainability at a crossroads, progress toward our common future in uncertain times, in collaboration with the Boston Consulting Group. *MIT Sloan Management Review*, 18, 4 (In Madureira, R. C., Silva, C. S., Amorim, M., Ferreira Dias, M., Lins, B., Mello, G. (2022). Think Twice to Achieve a Sustainable Project Management: From Ecological Sustainability towards the Sustainable Project Management Cube Model. *Sustainability*, 14, 3436. <https://doi.org/10.3390/su14063436>).
- Kozar, Ł. (2019). *Zielone miejsca pracy*, Uwarunkowania-identyfikacja-oddziaływanie na lokalny rynek pracy, Wydawnictwo Uniwersytetu Łódzkiego, Łódź.
- Krzysztofek, A. (2013) Społeczna odpowiedzialność biznesu jako idea zrównoważonego rozwoju, *Ekonomika i Organizacja Przedsiębiorstwa*, Vol. 4, 11–21.
- Kuźniarska, A. (2018). Pillars of Creating Sustainable Personnel in an Organization, *Entrepreneurship and Management*, University of Social Sciences Publishing House, Vol. XIX (6), 159–172.
- Lee, Y. S. (2011). The relationship between sustainability report and earnings management. *Accounting Information Research*, 29(4), 111–132.
- Longoni, A., Pagell, M., Shevchenko, A., Klassen R. (2019). Human capital routines and sustainability trade-offs: The influence of conflicting schemas for operations and safety managers. *International Journal of Operations & Production Management*, 39(5), 690–713. <https://doi.org/10.1108/IJOPM-05-2018-0247>.
- Ma, H. Y., Yoo, J. Y. (2022). A study on the impact of sustainable management on earnings persistence and market pricing: Evidence from Korea. *Journal of Business Economics and Management*, 23(4), 818–836. <https://doi.org/10.3846/jbem.2022.16436>.
- Madureira, R. C., Silva, C. S., Amorim, M., Ferreira Dias, M., Lins, B., Mello, G. (2022). Think twice to achieve a sustainable project management: From ecological sustainability towards the sustainable project management cube model. *Sustainability*, 14, 3436. <https://doi.org/10.3390/su14063436>.

- Matusiak, B. E., Matejun, M., Różańska-Bińczyk, I. (2020). *Koncepcja zrównoważonego rozwoju jako środowisko implementacji praktyk green HR we współczesnych przedsiębiorstwach* (In Urbaniak M., Tomaszewski A., (2020). *Wyzwania społeczne i technologiczne a nowe trendy w zarządzaniu współczesnymi organizacjami*, Oficyna Wydawnicza SGH, Warszawa).
- Oleksyn, T. (2017). *Zarządzanie zasobami ludzkimi w organizacji*. Warszawa: Wolters Kluwer.
- Oleksyn, T. (2020). *Zarządzanie. Wybrane kwestie*. Warszawa: Difin.
- Pabian, A. (2011). Sustainable personnel - pracownicy przedsiębiorstwa przyszłości. *Zarządzanie Zasobami Ludzkimi*, 5, 9–27.
- Przekształcamy nasz świat: *Agenda na rzecz zrównoważonego rozwoju 2030*, www.un.org.org.pl/files/164/Agenda%202030_pl_2016_ostateczna.pdf (25.09.2021).
- Renukappa, S., Egbu, Ch. (2012). A critical reflection on sustainability within the UK industrial sectors construction innovation. *Sustainability*, 12(3), 317–334. <https://doi.org/10.1108/14714171211244578>.
- Report of the World Commission on Environment and Development (1987). *Our common future*. Oxford and New York. <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>
- Rokicka, E., Woźniak, W. (2016). *W kierunku zrównoważonego rozwoju. Koncepcje, interpretacje, Konteksty*, Łódź 2016, s. 37. <https://docplayer.pl/27848711-W-kierunku-zrownowazonego-rozwoju-koncepcje-interpretacje-konteksty.html> (15.09.2022).
- Sartori, S., Latrónico da Silva, F., De Souza Campos, L. M. (2014). Sustainability and sustainable development: A taxonomy in the field of literature. *Ambient Society*, 17 (In Kucharcíková, A., Miciak, M. (2018). Human Capital Management in Transport Enterprises with the Acceptance of Sustainable Development in the Slovak Republic, *Sustainability*, 10, 2530–2548. <https://doi.org/10.3390/su10072530>)
- Simões, C., Sebastiani, R. (2017). The nature of the relationship between corporate identity and corporate sustainability: Evidence from the retail industry, *Business Ethics Quarterly*. Chicago Tom 27, Nr/wydanie 3, (Jul 2017), 423–453.
- Wit, B. (2016) Model biznesu z perspektywy interesariuszy. *Przedsiębiorstwo we współczesnej gospodarce–teoria i praktyka*, 19(4), 87–99. <https://doi.org/10.19253/rem.2016.04.007>.
- Zuzek, D. K. (2012). Społeczna odpowiedzialność biznesu a zrównoważony rozwój przedsiębiorstw. *Zeszyty Naukowe Małopolskiej Wyższej Szkoły Ekonomicznej w Tarnowie*, 21(2), 197–207. <https://doi.org/10.25944/znmwse.2012.02.197207>.

9 Sustainable production

Patrycja Zwiech

Introduction

The industry has been maximising production for the last two centuries to meet the demand of the rising global population, improved standards of living and growing urbanisation. The increasing maximisation of industrial production has brought problems with a negative impact on human health and on the planet's well-being caused by air, soil and water pollution, the use of the planet's resources and the exacerbating climate change. Industrial production processes involve major material and energy flows, thus there is an intense interaction between businesses and their surrounding natural and social environment. The economic system was (and sometimes still is) based on the linear model, which meant a focus on creating, using and then disposing of all that was produced because it was no longer useful.

A linear economy-based approach demonstrated as an extract-process-consume-dispose economy, hit the natural and social environment hard. We had to find systems that would minimise the burning environmental issue. Environmental protection thus began to focus in particular on the production process with regard to the protection of water, air or soil. As more and more raw materials and energy were used, the focus shifted more towards the aspect of human input, to consider the resources used in the production process, towards how they are fed in and used effectively. At this point, environmental protection got integrated with production. However, despite achievements in limiting pollution, the actions taken did not lead to the elimination of environmental problems, it merely "treated the symptoms". Individual environmental areas were largely discussed as detached from one another while environmental protection measures led to a change in environmental problems. The very focus on production turned out to be too narrow a proposal to solve problems (Viles, et al., 2022).

It was then that more and more discussions started to be held on introducing sustainable production. The aim of this chapter is to present the essence of sustainable production and the actions and measures exercised within it, which lead to sustainable production.

Sustainable production in the context of circular economy, Industry 4.0 and lean production

The subject matter of sustainable production (and also sustainable consumption) emerged in the international policy arena during the 1992 United Nations Conference on Environment and Development in Rio de Janeiro. Today's political framework of actions on sustainable production is based on the Johannesburg Declaration adopted at the World Summit on Sustainable Development in Johannesburg in 2002. The EU sustainable development strategy, revised in 2006, 2015, 2019 and 2020, recognised sustainable production (and also sustainable consumption) as one of the major challenges to tackle.

As early as in the 1970s, we started to search for solutions that would introduce more sustainable products and processes. Initially, the focus was mainly to limit the use of natural resources and to reuse and recycle used materials or resources. Therefore, in the 1970s, policy-makers relied on the 3Rs Sustainable Production strategies (reducing, reusing, recycling) (Viles, et al., 2022).

Another three Rs were added with time (recover, redesign, remanufacture), which extended the scope of operation from 3Rs to 6Rs to achieve a more sustainable production (Joshi, et al., 2006). Different authors or groups assign different attributes and meanings which implies divergent conceptualisations of this concept.

Today we hear more and more about having to apply a 9R-strategy or even a 10R-hierarchy (refuse, rethink, reduce, resell/reuse, repair, refurbish, remanufacture, repurpose, recycle (material), recover (energy)) (Khaw-ngern, et al., 2021) as a way to achieve even more sustainable production. This concept is presented in the context of a circular economy (Potting, et al., 2017). Therefore, when discussing environmental and social aspects, commentators took into consideration the entire product life cycle, from product development, to its production and consumption, or possible repair, to recycling or disposal, and then to waste management and reuse of secondary raw materials.

Circular economy was first introduced in the 1970s as an alternative economic model for replacing the traditional linear industrial economy (Khaw-ngern, et al., 2021). The objective of the Circular Economy is *“to maintain the values and manage stocks of assets from natural, cultural, human, manufactured to financial stocks”* (Stahel & MacArthur, 2019). Circular economy has been proposed as a very promising concept to guide the achievement of sustainability (Betancourt Morales & Zartha Sossa, 2020; Viles, et al., 2022), especially for manufacturers (Acerbi & Taisch, 2020; Viles, et al., 2022). In December 2015, the European Commission launched the Circular Economy Action Plan, focusing in particular, on circular economy as its new mainstream sustainable development framework. Fifty-four actions under this plan have been delivered or are being implemented (European Commission, 2019). In addition, in December 2019, the European Commission adopted the “Green New Deal” challenge, through an investment plan, which aims at an ecological transition model, where

this transition is to be ecologically and socially fair. In March 2020, the sustainable development concept and the circular economy concept became the basis for further documents adopted by the European Union: Environmental Technologies Action Plan [Eco-innovation Action Plan] (European Commission, 2020a), and A New Circular Economy Action Plan for a Cleaner and More Competitive Europe (European Commission, 2020b).

A significant paradigm change of the 1990s made us address and analyse the entire product life cycle. Circular economy's fundamental contribution to sustainable production is its innovative approach to a product life cycle which brings about an increase in material circulation, that is, the relationship between secondary raw materials derived from waste and used materials.

The 1990s marked a departure away from the linear model, towards a circular economy in developed countries. This is why environmental protection attained a global dimension and became an important economic factor. The environmental protection perspective extended greatly. Besides, environmental protection began to be perceived not only as an expense that strikes at companies' competitiveness, but more as an investment. Sustainable production and competitiveness stopped being perceived as contrary, opposing goals.

Industry 4.0 too introduced a new look at sustainable production. The central idea of Industry 4.0 is to use emerging technologies so that all industrial processes are integrated, thus making production flexible, efficient and intelligent with high quality and low cost (Machado, et al., 2019). De Sousa et al. (2018) suggest that Industry 4.0 technologies will help the decision-making process concerning sustainable operations management and the development of new business models. Madhado et al. (2019) in turn, claim that the decision-making for sustainable development is aided by methods used for modelling and simulating the activities that occur throughout the product value chain. To sum up, some technologies of Industry 4.0 may help achieve more sustainable production through improvement of the circularity of a product or processes or through trying to reduce resource consumption. Industry 4.0 could be considered as a synergic environment essential to achieve holistic, integrated sustainability in production systems (Ciliberto, et al., 2021).

Lean production, however, is an effective method of managing processes and operations, which can also be used in the pursuit of sustainable production. For example, lean tools may be used in the production environment (i.e., 5S, value stream mapping, just-in-time) to make production more sustainable. This is why 5S focuses primarily on labelling and organising material storage and inventory management; it is able to quickly identify spills and dangerous leaks and reduce air pollution (Bae & Kim, 2008; Francis & Thomas, 2020), VSM lean tool is used to understand waste and value in production. Internal effects of lean production that also contribute to the circular economy include brand and reputation enhancement that maintain loyalty to new areas of the market (Geldermann, et al., 2007).

Circular economy, Industry 4.0, lean production and sustainable production show a certain degree of complementarity towards one another.

The industry, at the moment, is facing a new paradigm which opts out of a one-sided ecological perspective for the benefit of a much stronger focus on the social dimension, which in consequence leads to more sustainable production. The turn of the 20th and 21st centuries was fundamentally modelled by the concept of sustainable development.

One of the first definitions of sustainable production, which pointed to aspects that need a particular emphasis, was offered by the Lowell Center (1998). It was defined as “*the fabrication of goods and services by applying processes and systems that are non-polluting, save energy and natural resources, are economically viable, safe and healthy for employees and consumers, and socially and creatively beneficial for all working people*”. Sustainable production is similarly defined by O’Brien (1999), Veleva & Ellenbecker (2001), Krajnc & Glavic (2003), Hauschild, et al. (2005), Lebel & Lorek (2008) or Wiles & Watts (2014). For example, Veleva and Ellenbecker (2001) claim that

sustainable production is defined as the development of products and services by processes and procedures that are pollution free, energy and natural resource efficient, economically viable, secure and safe for workers, communities and consumers, and socially and creatively beneficial to all the stakeholders.

The principles of sustainable production encompass the ties between the environmental, social, and economic frameworks within which the development and consumption take place (Machado, et al., 2019). When we look at this definition we see that it accommodates three equal areas: ecology, economy and society. Elkington had already presented such an approach (1994, 1998a, 1998b), where he encouraged companies to reconsider their value creation activities in a multi-dimensional perspective, that integrates economic aspects with the environmental and social dimensions in an integrated framework called “triple bottom line”.

The concept of sustainable production is still evolving, changing the context as new paradigms appear. However, despite universal recognition of having to transition to more sustainable production and to take various relevant initiatives, the global extraction of resources and increasing degradation of social and environmental resources are still growing. Besides, we should bear in mind the choices we make today on building or upgrading production facilities will affect the state of the environment for the next 20–40 years, triggering solutions relating to more or less sustainable production. The investment cycles of objectives last usually between 20 and 40 years, which means that the companies are just one or at least two investment cycles away from half a century (Wyns, et al., 2018). Investment taken up today may either subject humanity or future generations to an unsustainable lifestyle with constantly growing use of natural

resources or encourage the course towards sustainable production from the environmental, economic and social angles.

Economic, environmental and social pillars of sustainable production

Sustainable production covers three pillars of sustainability: economy, society and environment. Politicians and economists seek a balance between costs and economic, social and environmental benefits using tools such as innovation, regulations and legal incentives (Porter & van der Linde, 1995a, 1995b), partnership under civil law, dissemination of knowledge or creating infrastructure that encourages sustainable production.

The economic and environmental pillars were described in the 2003 Kiev Declaration as the need to “delink economic growth from environmental degradation so as to promote both economic growth and environmental protection”.

From the environmental point of view, sustainable production refers to a sustainable use of resources (raw materials, land, water, air, soil, landscape and biodiversity) and sources of energy, promotion of climate-neutral economy (reduction of greenhouse gas emissions) and waste reduction.

The main aspect of sustainable production is the sustainable use of resources and energy sources. Satisfaction of today’s material needs should not lead to excessive extraction and degradation of these resources. A sustainable use of resources in the long run requires that we take into account their availability, ensuring supply chain security and protection of ecosystems. At the same time, it is important to maintain the environment’s ability to absorb emissions and pollution.

Waste reduction is equally important. Waste has a negative impact on the environment by, for example, polluting air, soil or surface and ground waters. Landfills take up large areas, thus changing the landscape, while wrong waste management poses a threat to societies, especially public health. Moreover, the waste generated also means a loss of stocks of raw materials. Waste reduction at the company level forces situations where they will be using more recycled materials and will develop and implement new production processes. Such an activity focuses on a more sustainable acquisition of raw materials, on processing one’s own waste and on correct product design and manufacturing. Companies must also reduce the quantity of waste, reduce the content of dangerous substances in waste and of their permeating the environment and also improve the efficiency of using waste as secondary raw materials.

Climate change is another major challenge that pushes us towards sustainable development. Upon adoption and execution of the Kyoto Protocol, extensive efforts were made to reduce the emission of greenhouse gases that are harmful to the environment. Apart from having to introduce a circular process and resource efficiency, we need to decarbonise production. Decarbonisation of heavy

industry is a great challenge because decarbonisation of some material and chemical processes, until this day, is an inseparable challenge. Decarbonisation may be implemented in a number of ways, for example, by improving energy efficiency, increasing the use of low-emission electricity, using more recycled materials, modifying existing processes to use, capture, utilise and store carbon dioxide, identifying alternative heat sources for existing processes or through a complete change of fuels (e.g. by direct or indirect electrification, biological raw materials or hydrogen) (Bataille, et al., 2018; Davis, et al., 2018).

Therefore, from the environmental point of view a transition to a circular economy, net-zero resource-efficient economy and achievement of net-zero-greenhouse gas emissions are fundamental. To do so, it is vital to retain products, components and materials in the economy for as long as possible and at the same time eliminate waste on the one hand and, on the other hand, the need to use primary resources (McCarthy, et al., 2018).

We must be aware that these priorities cause the emergence of other, new priorities – on the one hand, there is a growing use of the planet's resources, that is, soil, water and raw materials and energy due to growing demand, and, on the other hand, a valid need to reduce them. This results in a growing competition for these resources between the industry (heavy industry in particular), agriculture and the energy sector (OECD, 2017).

From an economic point of view, sustainable production refers to the introduction and use of sustainable business practices, smart solutions and artificial intelligence.

A greater emphasis on resource efficiency often leads to great savings and thus to better financial results. Actions intended to promote ecological product life cycle through effective resource use, resource-efficient production technologies, innovations and increased consumer awareness as well as the demand for environmentally friendly products turn out to improve competitiveness on the one hand and to improve companies' financial situation on the other hand. An ecological product life cycle requires sustainable initiatives at all stages of the product life cycle, such as eco-design, eco-labelling, ecomanagement and audit scheme (EMAS) or eco-innovations, which require that producers get involved.

Furthermore, an emphasis on sustainable production allows for new business models to be created. For example, today we can see a greater number of companies that offer energy services, which help other companies and public institutions to become more energy efficient. Focussing on sustainable production may turn out not to be a burden, but rather a new business opportunity.

Moreover, despite the fact that the literature on the economic returns of sustainable production is already very rich, it still does not lead to any conclusive evidence pertaining to its economic consequences (Antonioli, et al., 2022). It is difficult to deny that circular economy transition for companies will always require costly changes, not only in physical capital (investments) but also in intangibles (R&D activities) and in organisational changes (Antonioli, et al., 2022).

Environmental economics has made great progress in integrating the economic and environmental spheres. At the moment environmental issues are not discussed in the context of costs that limit competitiveness. Economic and environmental goals are not seen as contrary or mutually-exclusive. On the other hand, with regard to sustainable production, advancing sustainability directs fuller attention to the social dimension. When it comes to manufacturing companies, reports on the sustainability of their operations rarely include the social dimension. Many companies produce corporate reports which identify environmental practices and emphasise governance aspects but tend to overlook the role of the employees or workforce (Schneider, 2008). Such an approach is reflected in the literature because studies show that investment in human and social capital may deliver important benefits such as increased productivity, reduced costs, more innovation, higher growth and competitiveness (Schneider, 2008).

This lack of proportionality between the pillars (economic and environmental on the one hand and social on the other hand) results not only from a lower interest on the part of the companies themselves but also from difficulties in quantification. In the sustainable production dimension, social aspects include elements that are difficult to measure, such as safeguarding generational and intergenerational justice, supporting the protection of human rights within the company's sphere of influence and promoting honesty, integrity and fairness in all aspects of doing business, safeguarding gender equality, ensuring decent workplaces, promoting positive employee treatment and contributing to employee health, safety, dignity and satisfaction, a better quality of life, respect for collective bargaining and interaction with local communities.

What is more, the social dimension is the most difficult to integrate. A combination of the economic and environmental pillars from the point of view of companies was much easier than incorporating social goals to the sustainability process. However, only an extension of the economy and the environment as components of the analysis of eco-innovation to include social aspects will allow for a full understanding and the introduction of sustainable production.

We must realise that sustainable production brings both improvement and problems in social questions. For example, the introduction of an energy transformation will mainly affect less economically-developed areas, which is addressed in the 2015 International Labour Organization (ILO) guidelines on just transition (ILO, 2015). Low-income areas and scarcely populated rural areas will be most vulnerable to job losses as a result of automation and transition to low-emission economy (Oxford Economics, 2019). Therefore, we will need to provide support to those made redundant in the poorest countries to prevent poverty, aggravated social inequality or problems associated with economic migration.

Despite the problems that accompany attempts to make production sustainable, the angle adopted is indispensable, necessary and right. Lauritzen (2008) identifies a few reasons why humanity must head in this direction, as we have no other solutions at hand. The first of them is the global population growth, which

will entail growth of consumption. The next is the growth of income per capita around the world. Growing incomes (which is naturally a good thing) will entail further growth of consumption, use of energy or other resources and greater use of the natural environment. A growing demand will also lead to higher prices and will thus boost attractiveness of the development of energy-efficient and resource-efficient ways to produce goods and services. Thirdly, growing consumer awareness presents new challenges for companies regarding not only the quality and price but also, increasingly, sustainable products.

Principles of sustainable production

In the light of the aspects and problems described above, we may find the principles of sustainable production useful, which pave the way for companies or help establish how they must adjust their production systems to be in line with principles of sustainable production and how to identify strategies helpful in a transition to sustainable production. Veleva and Ellenbecker presented such Principles of Sustainable Production at the beginning of the 21st century. They point out that:

- Products and packaging are designed to be safe and ecologically sound throughout their life cycles; services are designed to be safe and ecologically sound.
- Wastes and ecologically incompatible by-products are continuously reduced, eliminated or recycled.
- Energy and materials are conserved, and the forms of energy and materials used are most appropriate for the desired ends.
- Chemical substances, physical agents, technologies, and work practices that present hazards to human health or the environment are continuously reduced or eliminated.
- Workplaces are designed to minimise or eliminate physical, chemical, biological, and ergonomic hazards.
- Management is committed to an open, participatory process of continuous evaluation and improvement, focused on the long-term economic performance of the firm.
- Work is organised to conserve and enhance the efficiency and creativity of employees.
- The security and well-being of all employees are a priority, as is the continuous development of their talents and capacities.
- The communities around workplaces are respected and enhanced economically, socially, culturally and physically; equity and fairness are promoted.

(Veleva & Ellenbecker, 2001)

Nevertheless, these principles concerned a linear economy and did not take into consideration principles of circular economy or solutions proposed in Industry

4.0 or lean production schemes. In 2021, Viles et al. proposed rules that also refer to the concept of circular economy and Industry 4.0. They identify the following:

- Design for circularity. Design processes, products, and packing to consume minimum natural resources and energy to sustain the ecosystem's regenerative capacities. Follow design for disassembly to allow – if possible – for recycling, repairing, reconditioning, refurbishing or remanufacturing.
- Conserve resources and preserve their value. Use natural resources and energy that are appropriate for the desired sustainable goals. Preserve the value of resources for as long as possible within production facilities (internal recirculation) and consider the concept of industrial symbiosis to circulate resources (external recirculation).
- Manage waste sustainably. Emphasise waste-prevention activities by reintroducing resources within the intended flow. For resources that reach the waste management stage, use the waste management hierarchy following these strategies: reduce waste, then reuse and recycle, minimising all disposal routes, including landfilling and waste to energy.
- Pursue a risk-free environment. Reduce or eliminate chemical substances, physical agents, and technologies that present a risk to the environment. Reduce greenhouse gases emissions to reach net-zero emissions.
- Prioritise employees' well-being. Embed employee safety and well-being in the day-to-day work. Choose practices and workplaces that preserve the physical, functional, and psychological comfort of employees.
- Enhance management's commitment to sustainability. Establish an organisational culture enabling high sustainability performance. Empower employees and develop their talents. Promote diversity, equity and inclusion in the workplace.
- Make a positive contribution to the community. Contribute to better economic, environmental, social, cultural, and physical outcomes of the communities in which the company operates and in those where its decisions can have an impact.
- Promote value chain stakeholder collaboration. Establish fluid communication and collaboration with all the stakeholders of the value chain to make processes and products more sustainable.
- Measure and optimise sustainable processes. Define a set of "Key Performance Indicators" to optimise production processes. Monitor short-term and long-term sustainability performance of the production system by encouraging digitalisation.
- Boost the use of sustainable technologies. Improve existing technologies with more sustainable alternatives, and provide information on both the potential benefits and risks of sustainable production. Consider the best

available techniques; these techniques involve both the technology used and the design, construction, maintenance, and operation of the installation.

(Viles, et al., 2022)

Summary

Sustainable development, as Goal 12 of the 2030 Agenda for Sustainable Development, was formulated as follows: ensuring sustainable consumption and production patterns – it requires a systematic approach and cooperation of entities that participate in the entire supply chain. Achievement of the sustainable production goal is constantly guided through global, regional and national policies, which encourage a transition to a circular economy with a more effective use of resources and lesser pollution.

The first part of this chapter describes how the concept of sustainable development came about and what the links between sustainable production and circular economy are, Industry 4.0 and lean production. The second part identifies three dimensions of sustainable production: the environmental, economic and social realms. In the last part principles of sustainable production are presented.

Sustainable production may be considered a complex strategy that achieves success only through the involvement of the entire supply chain. In this sense, in order to promote sustainability, there is a need for a strong ability to identify and pursue common and mutual benefits for producers, suppliers, and customers in an integrated and holistic way (Ciliberto, et al., 2021). This chapter refers to sustainable production and is related to producers' actions, but we must be aware that the consumer is an equally important element in this process. This process envisages educational or other projects for consumers which are intended to raise their awareness about sustainable production and the related lifestyle by, for example, carrying out information actions on product standards and labelling or consumer involvement in public procurement.

References

- Acerbi, F., & Taisch, M. (2020). A literature review on circular economy adoption in the manufacturing sector. *Journal of Cleaner Production*, 273. <https://doi.org/10.1016/j.jclepro.2020.123086>
- Antonoli, D., Ghisetti, C., Mazzanti, M., & Nicolli, F. (2022). Sustainable production: The economic returns of circular economy practices. *Business Strategy and The Environment*, 31, 2603–2617. <https://doi.org/10.1002/bse.3046>.
- Bae, J. W., & Kim, Y. W. (2008). Sustainable value on construction projects and lean construction. *Journal of Green Building*, 3(1), 156–167. <https://doi.org/10.3992/jgb.3.1.156>.
- Bataille, C., Åhman, M., Neuhoﬀ, K., Nilsson, L. J., Fischedick, M., Lechtenböhmer, S., Solano-Rodriguez, B., Denis-Ryan, A., Stiebert, S., Waisman, H., Sartor, O., & Rahbar, S. A. (2018). A review of technology and policy deep decarbonization pathway

- options for making energy-intensive industry production consistent with the Paris Agreement. *Journal of Cleaner Production*, 187, 960–973. <https://doi.org/10.1016/J.JCLEPRO.2018.03.107>.
- Betancourt Morales, C. M., & Zartha Sossa, J. W. (2020). Circular economy in Latin America: A systematic literature review. *Business Strategy and the Environment*, 29(6), 2479–2497. <https://doi.org/10.1002/bse.2515>.
- Ciliberto, C., Szopik-Depczyńska, K., Tarczyńska-Luniewska, M., Ruggieri, A., & Iop-polo, G. (2021). Enabling the circular economy transition: A sustainable lean manufacturing recipe for Industry 4.0. *Business Strategy and the Environment*, 30(7), 3255–3272. <https://doi.org/10.1002/bse.2801>.
- Davis, S. et al. (2018). Net-zero emissions energy systems. *Science*, 360(6396). <http://doi.org/10.1126/science.aas9793>.
- de Sousa Jabbour, A. B. L., Jabbour, C. J. C., Godinho Filho, M., & Roubaud, D. (2018). Industry 4.0 and the circular economy: A proposed research agenda and original roadmap for sustainable operations. *Annals of Operations Research*, 270(1), 273–286. <https://doi.org/10.1007/s10479-018-2772-8>.
- Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California Management Review*, 36, 90–100. <https://doi.org/10.2307/41165746>.
- Elkington, J. (1998a). Accounting for the triple bottom line. *Measuring Business Excellence*, 2(3), 18–22. <https://doi.org/10.1108/eb025539>.
- Elkington, J. (1998b). Partnerships from cannibals with forks: The triple bottom line of 21st-century business. *Environmental Quality Management*, 8(1), 37–51. <https://doi.org/10.1002/tqem.3310080106>.
- European Commission. (2019). *Report From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions On The Implementation Of The Circular Economy Action Plan*. European Commission.
- European Commission. (2020a). *Environmental Technologies Action Plan [Eco-innovation Action Plan]*. European Commission.
- European Commission. (2020b). *A New Circular Economy Action Plan for a Cleaner and More Competitive Europe*. European Commission.
- Francis, A., & Thomas, A. (2020). Exploring the relationship between lean construction and environmental sustainability: A review of existing literature to decipher broader dimensions. *Journal of Cleaner Production*, 252, 119913. <https://doi.org/10.1016/j.jclepro.2019.119913>.
- Geldermann, J., Treitz, M., & Rentz, O. (2007). Towards sustainable production networks. *International Journal of Production Research*, 45, 4207–4224. <https://doi.org/10.1080/00207540701440014>.
- Hauschild, M., Jeswiet, J., & Alting, L. (2005). From life cycle assessment to sustainable production: Status and perspectives. *CIRP Annals*, 54 (2), 1–21. [https://doi.org/10.1016/S0007-8506\(07\)60017-1](https://doi.org/10.1016/S0007-8506(07)60017-1).
- ILO. (2015). Guidelines for a just transition towards environmentally sustainable economies and societies for all. https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_432859.pdf.

- Joshi, K., Venkatachalam, A., & Jawahir, I. S. (2006). A new methodology for transforming 3R concept into 6R concept for improved product sustainability. In *Proceedings of the IV Global Conference on Sustainable Product Development and Life Cycle Engineering*, Sao Paulo, Brazil, 3–6.
- Khaw-ngern, K., Peuchthonglang, P., Klomkul, L., & Khaw-ngern, Ch. (2021). The 9Rs strategies for the circular economy 3.0. *Psychology and Education*, 58(1), 1440–1446. <https://pdfs.semanticscholar.org/8e5c/34b5865c21a0544158cf5235a9bbb31319c6.pdf>
- Krajnc, D., & Glavic, P. (2003). Indicators of sustainable production. *Clean Technologies and Environmental Policy*, 5, 279–288. <https://doi.org/10.1007/s10098-003-0221-z>.
- Lauritzen, F. (2008). Sustainable production as industrial policy. In *OECD Sustainable Development Studies Measuring Sustainable Production*. OECD Publishing, 19–22. ISBN 978-92-64-04412-8.
- Lebel, L., & Lorek, S. (2008). Enabling sustainable production-consumption systems. *Annual Review of Environment and Resources*, 33, 241–275. <https://doi.org/10.1146/ANNUREV.ENVIRON.33.022007.145734>.
- Lowell Center. (1998). *Lowell Center for Sustainable Production. Sustainable Production: A Working Definition*. Informal Meeting of the Committee Members.
- McCarthy, A., Dellink, R., & Bibas, R. (2018). The macroeconomics of the circular economy transition: A critical review of modelling approaches. OECD Environment Working Papers, No. 130, OECD Publishing. <https://doi.org/10.1787/af983f9a-en>.
- Machado, C. G., Winroth, M. P., & Ribeiro da Silva, E. H. D. (2019). Sustainable manufacturing in Industry 4.0: An emerging research agenda. *International Journal of Production Research*, 1–23. <https://doi.org/10.1080/00207543.2019.1652777>
- O'Brien, Ch. (1999). Sustainable production – a new paradigm for a new millennium. *International Journal of Production Economics*, 60(1), 1–7.
- OECD. (2017). *The Land-Water-Energy Nexus: Biophysical and Economic Consequences*. OECD Publishing. <https://doi.org/10.1787/9789264279360-en>.
- Oxford Economics. (2019). *How Robots Change the World: What Automation Really Means for Jobs and Productivity*. Oxford Economics. <http://resources.oxfordeconomics.com/how-robotschange-the-world>.
- Porter, M. E., & van der Linde, C. (1995a). Green and competitive: Ending the Stalemate. *Harvard Business Review Reprint*, 73, 120–134. http://kentlundgren.se/artiklar/veten-skapliga/Porter_Linde_1995.pdf
- Porter, M., & van der Linde, C. (1995b). Toward a new conception of the environment – competitiveness relationship. *Journal of Economic Perspectives*, 9(4), 97–118. <https://doi.org/10.1257/jep.9.4.97>.
- Potting, J., Hekkert, M., Worrell, E., & Hanemaaijer, A. (2017). *Circular Economy: Measuring Innovation in the Product Chain*. Policy Report. PBL Netherlands Environmental Assessment Agency.
- Schneider, R. (2008). Measuring social dimensions of sustainable production. In *OECD Sustainable Development Studies Measuring Sustainable Production*. OECD Publishing, 39–47. ISBN 978-92-64-04412-8.
- Stahel, W. R., & MacArthur, E. (2019). *The Circular Economy. A User's Guide*. Routledge. <https://doi.org/10.4324/9780429259203>

- Veleva, V., & Ellenbecker, M. J. (2001). Indicators of sustainable production: Framework and methodology. *Journal of Cleaner Production*, 9, 519–549. [https://doi.org/10.1016/S0959-6526\(01\)00010-5](https://doi.org/10.1016/S0959-6526(01)00010-5).
- Viles, E., Kalemkerian, F., Garza-Reyes, J. A., Antony, J., & Santos, J. (2022). Theorizing the principles of sustainable production in the context of circular economy and industry 4.0. *Sustainable Production and Consumption*, 33, 1043–1058. <https://doi.org/10.1016/j.spc.2022.08.024>
- Wiles, Ch., & Watts, P. (2014). Continuous process technology: A tool for sustainable production. *Green Chemistry*, 16, 55–62. <https://doi.org/10.1039/C3GC41797B>.
- Wyns, T., Robson, I., & Khnadekar, G. (2018). *A Bridge Towards a Carbon Neutral Europe*. Institute for European Studies. https://www.ies.be/files/Industrial_Value_Chain_25sept.pdf.

10 Sustainable supply chains

Monika Jedynak

Introduction

Considerations regarding the integration of sustainable development undertaken from the perspective of supply chain management are present in the academic literature (Hassini et al., 2012; Koberg & Longoni, 2019; Linton et al., 2007). Traditionally, supply chain management is defined as the management of physical, information, and financial flows in networks of intra- and inter-organisational relationships that together add value and achieve customer satisfaction (Mentzer, Dewitt, et al., 2001; Stock & Boyer, 2009). From a process perspective, it includes planning, procurement, production, and distribution logistics, but it does not focus solely on any one of these areas (Cooper et al., 1997).

Unlike the traditional supply chain, which usually focuses on economic and financial business performance, a sustainable supply chain is characterised by a clear integration of environmental or social goals that extend the economic dimension to the triple bottom line (Gold et al., 2013; Seuring & Müller, 2008a). The issue of implementing the principles of sustainable development into supply chain management has been widely discussed in recent years (Ahi & Searcy, 2013; Ansari & Kant, 2017; Baraniecka, 2015; Beske-Janssen, Johnson, & Schaltegger, 2015; Brandenburg, Gruchmann, & Oelze, 2019; de Oliveira, Espindola, da Silva, da Silva, & Rocha, 2018; Gimenez & Tachizawa, 2012; Marić & Opazo-Basáez, 2019; Urbaniak, 2018b). Managing supply chains in a sustainable manner is becoming a growing problem for companies of all sizes and operating in many industries. Meeting environmental and social standards at all stages of the supply chain ensures that (at least) a minimum level of sustainability is achieved. This more reactive approach to responding to external pressure from governments, consumers, and non-governmental organisations (NGOs) or the media (Seuring & Müller, 2008b) can be complemented by the development and introduction of sustainable products. This discussion focuses on closely related areas, such as sustainable, responsible, green, closed, or ethical chains, and the concepts are often used interchangeably (Ahi & Searcy, 2015; Gurtu et al., 2015). In the following, I will present and briefly discuss supply chains that respect the principles of sustainable development.

Sustainable supply chain

We have been observing the interest of researchers in sustainable supply chains in the literature for some time (Ahi & Searcy, 2013; Ansari & Kant, 2017; Kumar & Bangwal, 2022; Touboullic & Walker, 2015). According to one of the more often cited definitions, sustainable supply chain management is:

the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements.

(Seuring & Müller, 2008a, p. 1700)

A sustainable supply chain transparently integrates an organisation's social, environmental, and economic goals through the systematic coordination of inter-organisational business processes to improve the long-term economic performance of the organisation, its supply chain and stakeholders (Carter & Rogers, 2008; Taticchi et al., 2013; Zimon et al., 2019). A feature of such a chain is the use of environmentally friendly resources to sustain its development in the long term (Golińska, 2014). Sustainable supplier selection and order allocation are core activities in sustainable supply chain management that can significantly impact a company's efficiency and impact profitability, flexibility, and even agility (Hendiani et al., 2020). According to Sisco et al. (2011), a sustainable supply chain means managing environmental, social, and economic impacts and encouraging good management practices throughout the life cycle of goods and services.

A sustainable supply chain allows you to achieve organisational goals through the use of innovative technologies (Kim et al., 2014), but the implementation of sustainable supply chain management also requires overcoming barriers (Yadav & Singh, 2020). The most important internal barriers include cost, lack of legitimacy, lack of commitment and support from top management, and lack of training; while external barriers include regulation, weak supplier involvement, resistance to the adoption of advanced technologies, financial constraints, and industry-specific barriers (Tseng et al., 2019; Walker et al., 2008).

Socially responsible supply chain

A socially responsible supply chain refers to the concept of corporate social responsibility (CSR) and is defined as a union of its participants who jointly adapt, implement, and coordinate values, strategies, and tactics to combine all levels of social responsibility with business processes in the chain (Li et al., 2021; Vaaland & Owusu, 2012). The concept of corporate social responsibility

was incorporated into the supply chain by Carter and Jennings (2002) arguing that suppliers may be in a better competitive position due to the increased involvement of buyers in socially responsible activities. In turn, Carter and Rogers (2008) emphasise that the integration of environmental, social, and economic criteria in supply chain management allows an organisation to achieve long-term economic profitability.

The inclusion of CSR principles in supply chain management has gained importance in recent years, due to the negative effects on the organisation resulting from the socially irresponsible behaviour of its suppliers (Cole & Aitken, 2019; Sinkovics et al., 2016; Tang, 2018). Integrating CSR and supply chain management means taking into account such aspects as, among others: social issues as a priority during purchasing processes (Alghababsheh & Gallear, 2020; Miemczyk & Luzzini, 2019; Sancha et al., 2016); the impact of modern-day slavery and how organisations should deal with it in their supply chains (Bodendorf et al., 2022; Gold et al., 2015; New, 2015) and how ethical issues are dealt with in the context of the supply chain (Choi et al., 2022; Eltantawy et al., 2009; Shafiq et al., 2020). Thus, CSR in supply chains focuses on the development and implementation of practices that serve the main economic goals of the company, while taking into account legal, ethical, and discretionary obligations in the supply chains (Carroll, 2016).

Green supply chain

In response to increasingly stringent environmental regulations and the need to meet them, supply chain partners are increasingly making decisions to cooperate (Chen et al., 2017; Somjai et al., 2020). The concept of a green supply chain reflects the joint efforts of manufacturers and supply chain partners to achieve common environmental goals (Yang et al., 2020). Green supply chain management focuses on inter-organisational interactions from the perspective of factors influencing economic performance and environmental aspects, such as the minimisation of greenhouse gas emissions, environmental waste, optimisation and use of resources, and reduction of waste resulting from its use (Sarkis et al., 2011; Tseng et al., 2019; Villanueva-Ponce et al., 2015). To obtain greater benefits from cooperation within the green supply chain, an environmental management company must effectively and efficiently manage its internal and external processes by building an inter-organisational team, sharing information, and jointly solving environmental problems (Aslam et al., 2018; Green et al., 2012; Wu, 2013). Companies are therefore adopting environmentally friendly supply chain practices as a priority for both environmental sustainability goals and financial performance (Hashmi & Akram, 2021; Ramanathan et al., 2014).

Green supply chain management covers all stages of production: product design, supplier selection, material resources, production process, product

packaging, product delivery to customers, and recycling (Witkowski & Pisarek, 2017). The green supply chain, which includes an inclusive philosophy of sourcing, production, distribution, and reverse logistics, aims to improve the sustainability and environmental performance of companies (Birou et al., 2019; Hashmi & Akram, 2021; Yildiz Çankaya & Sezen, 2019). According to Birasnav et al. (2022) there are external and internal practices that are followed in green supply chain management. External processes include (1) Supplier management and collaboration, (2) Customer collaboration, and (3) Community and NGO collaboration. The internal processes, on the other hand, include (1) Internal environmental management, (2) Green Logistics, (3) Green purchasing, (4) Green technology, (5) Green finance (investment recovery), and (6) Life cycle analysis and measurements. Therefore, the implementation of green supply chain practices requires the involvement of both organisations and stakeholders to achieve significant environmental goals.

Circular supply chain

Circular Supply Chain Management integrates the concept of a circular economy with supply chain management. According to Farooque et al. (2019) circular supply chain management is the integration of circular thinking with supply chain management and the surrounding industrial and natural ecosystems. It systematically restores technical materials and regenerates biological materials toward a zero-waste vision through system-wide innovation in business models and supply chain functions from product/service design to end-of-life and waste management, involving all stakeholders in a product/service life-cycle, including parts/product manufacturers, service providers, consumers, and users (Farooque et al., 2019).

The purpose of these types of chains is to organise and coordinate organisational tasks such as production, marketing, information technology, finance, logistics, and customer service, within all entities and institutions involved in the supply chain, to minimise waste and emissions, through resources and circular management energy (González-Sánchez et al., 2020; Sun et al., 2020). These activities will result in improving operational efficiency and effectiveness and generating a competitive advantage (De Angelis et al., 2018; Geissdoerfer et al., 2018; Kühl et al., 2022). The development of circular supply chains depends on four dimensions: (1) greater strength in the relationships established in the supply chain, (2) adaptation of logistics and organisation, (3) disruptive and smart technologies, and (4) a functioning environment (González-Sánchez et al., 2020). Figure 10.1 shows the course of typical circular supply chain processes.

The circular supply chain includes the processes of the flow of materials and flow of returns as well as the accompanying information flows. The goal of manufacturers is to capture added value in the supply chain.

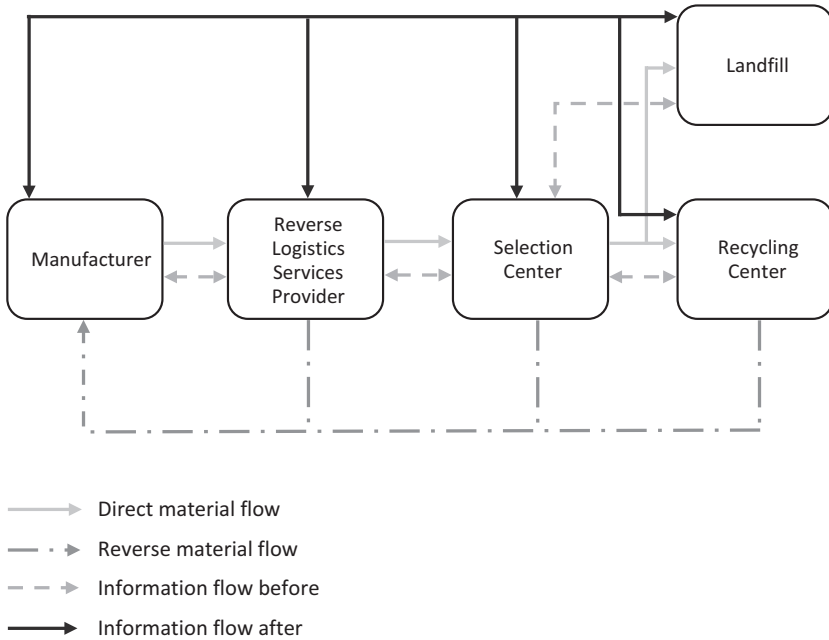


Figure 10.1 Circular supply chain reverse processes

Source: Own elaboration based on: (Centobelli et al., 2022).

Closed-loop supply chains

The **closed-loop** supply chain integrates and coordinates the flow of goods both forward – from suppliers of raw materials for production to downstream entities (e.g., consumers); as well as managing the backflows from downstream suppliers to upstream suppliers (Kuvvetli & Erol, 2020). According to Guide and Van Wassenhove (2009) a closed-loop supply chain constitutes “the design, control, and operation of a system to maximize value creation over the entire life cycle of a product with the dynamic recovery of value from different types and volumes of returns over time” and also includes product return management, leasing, and remanufacturing (Govindan et al., 2020; Guide & Van Wassenhove, 2009; Niu et al., 2019).

The goal of closed-loop supply chains is to recover the value of products by reusing them, and improving or replacing some components so that the product obtained in this way is of the full value (Wang et al., 2018; Zu-Jun et al., 2016). This type of chain can be more cost-effective and energy-efficient than the traditional one, due to the reduction of waste and input materials and the improvement of the company’s social image (Bhatia et al., 2020).

Closed-loop supply chains consist of two parts – reverse chain and direct chain (forward). In the direct chain, the flow of products starts with the suppliers,

continues through the factory, and then distributors deliver the final products to customers to meet their requirements (Govindan et al., 2020; Malekinejad et al., 2022). The reverse chain starts with picking up the products used by end consumers and sending them down the supply chain (Govindan et al., 2020). Coordination of flows in the direct and return chain and placing them in parallel next to each other create a closed-loop supply chain. It includes direct reuse, repair, modernisation, and reproduction (Bhatia et al., 2022; S. Kumar & Yamaka, 2007). Returns of products from consumers to producers or another party characterise the main difference with the classic supply chain, which focuses on the forward flows of goods (Brzeziński et al., 2021; De Giovanni & Zaccour, 2022; Katsoras & Georgiadis, 2022). A closed-loop supply chain thus effectively connects the conventional supply chain with reverse logistics.

Conclusions

In the context of supply chains, issues such as environment, ethics, diversity, labour and human rights, fair trade, health and safety, and corporate philanthropy have been explored in different types of chains (Hashmi & Akram, 2021; Karthick & Uthayakumar, 2022; Kumar et al., 2022; Malekinejad et al., 2022). Within the supply chains, initiatives are more often undertaken aimed at caring for the environment or society (Carter & Jennings, 2004; Ciliberti et al., 2008; Maignan et al., 2002; Yuen et al., 2017).

Sustainable supply chain management means extending the traditional concept of supply chain management with the dimensions of sustainable development. This is reflected in the various supply chains that address economic, environmental, and social demands. Traditionally, many companies only considered profitability and economic factors when designing their supply chain network (Tang & Zhou, 2012). However, the current trend in recent years has turned towards decision-making in supply chain management through the prism of integrating environmental and social aspects with economic aspects (Brandenburg et al., 2014; Lee & Tang, 2018; Li et al., 2021). Going beyond economic goals and integrating environmental and social goals into supply chain decisions is driven by increasing pressure from various stakeholders – including governments, workers, and customers – concerned about issues such as global warming, depletion of natural resources, human rights, etc. (Brandenburg et al., 2014; Majhi et al., 2021).

On the other hand, the international market causes the pressure and expectations of stakeholders to often become global. Globalisation places demands on supply chain management to go beyond purely economic issues, and also take into account, for example, fair working conditions, and environmentally friendly production. Due to the growing awareness of the public about environmentally friendly (green) products, green improvement has become an important factor in supply chain management.

Introducing the principles of sustainable development in supply chains requires that this concept is embedded in the entire organisation, including subsidiaries abroad and offshore suppliers. Considering the growing importance of the “triple-bottom-line” in supply chain management, the ecological and social dimensions are important determinants of modern supply chains (Winter & Lasch, 2016). The pressure to create shared value is forcing companies to deliver win-win outcomes in terms of social responsibility, environmental care, and cost-effectiveness. Internal and external stakeholders also monitor corporate social responsibility and its impact on the environment. The inclusion of the principles of sustainable development in the management of supply chains, therefore, seems to be a necessity.

References

- Ahi, P., & Searcy, C. (2013). A comparative literature analysis of definitions for green and sustainable supply chain management. *Journal of Cleaner Production*, 52, 329–341. <https://doi.org/10.1016/j.jclepro.2013.02.018>
- Ahi, P., & Searcy, C. (2015). An analysis of metrics used to measure performance in green and sustainable supply chains. *Journal of Cleaner Production*, 86, 360–377. <https://doi.org/10.1016/j.jclepro.2014.08.005>
- Alghababsheh, M., & Gallea, D. (2020). Socially sustainable supply chain management and suppliers' social performance: The role of social capital. *Journal of Business Ethics*, 0123456789. <https://doi.org/10.1007/s10551-020-04525-1>
- Ansari, Z. N., & Kant, R. (2017). A state-of-art literature review reflecting 15 years of focus on sustainable supply chain management. *Journal of Cleaner Production*, 142, 2524–2543. <https://doi.org/10.1016/j.jclepro.2016.11.023>
- Aslam, H., Rashid, K., Wahla, A. R., & Tahira, U. (2018). Drivers of green supply chain management practices and their impact on firm performance: A developing country perspective. *Journal of Quantitative Methods*, 2(1), 87–113. <https://doi.org/10.29145/2018/jqm/020104>
- Baraniecka, A. (2015). Rozwój ekologicznych łańcuchów dostaw jako skutek kryzysów: ekonomicznego i środowiskowego. *Prace Naukowe Uniwersytetu Ekonomicznego We Wrocławiu*, 383, 235–248. <https://doi.org/10.15611/pn.2015.383.17>
- Beske-Janssen, P., Johnson, M. P., & Schaltegger, S. (2015). 20 years of performance measurement in sustainable supply chain management – what has been achieved? *Supply Chain Management*, 20(6), 664–680. <https://doi.org/10.1108/SCM-06-2015-0216>
- Bhatia, M. S., Jakhar, S. K., Mangla, S. K., & Gangwani, K. K. (2020). Critical factors to environment management in a closed loop supply chain. *Journal of Cleaner Production*, 255, 120239. <https://doi.org/10.1016/j.jclepro.2020.120239>
- Bhatia, M. S., Srivastava, R. K., Jakhar, S. K., & Kumar, S. (2022). What's critical for closed-loop supply chain operations? – Findings from the Indian small and medium manufacturing enterprises. *Journal of Cleaner Production*, 372, 133791. <https://doi.org/10.1016/j.jclepro.2022.133791>

- Birasnav, M., Chaudhary, R., Henry Dunne, J., Bienstock, J., & Seaman, C. (2022). Green supply chain management: A theoretical framework and research directions. *Computers and Industrial Engineering*, 172(PA), 108441. <https://doi.org/10.1016/j.cie.2022.108441>
- Birou, L. M., Green, K. W., & Inman, R. A. (2019). Sustainability knowledge and training: outcomes and firm performance. *Journal of Manufacturing Technology Management*, 30(2), 294–311. <https://doi.org/10.1108/JMTM-05-2018-0148>
- Bodendorf, F., Wonn, F., Simon, K., & Franke, J. (2022). Indicators and countermeasures of modern slavery in global supply chains: Pathway to a social supply chain management framework. *Business Strategy and the Environment*. <https://doi.org/10.1002/bse.3236>
- Brandenburg, M., Govindan, K., Sarkis, J., & Seuring, S. (2014). Quantitative models for sustainable supply chain management: Developments and directions. *European Journal of Operational Research*, 233(2), 299–312. <https://doi.org/10.1016/j.ejor.2013.09.032>
- Brandenburg, M., Gruchmann, T., & Oelze, N. (2019). Sustainable supply chain management-A conceptual framework and future research perspectives. *Sustainability (Switzerland)*, 11(24). <https://doi.org/10.3390/SU11247239>
- Brzeziński, J., Marzantowicz, L., Ocicka, B., Tyczyna, E., Wieteska, G., & Wieteska-Rosiak, B. (2021). Łańcuchy dostaw bioopakowań w gospodarce o obiegu zamkniętym — koncepcja badań. *Marketing i Rynek*, 03(2021), 3–13. <https://doi.org/10.33226/1231-7853.2021.3.1>
- Carter, C. R., & Jennings, M. M. (2002). Social responsibility and supply chain relationships. *Transportation Research Part E: Logistics and Transportation Review*, 38(1), 37–52. [https://doi.org/10.1016/S1366-5545\(01\)00008-4](https://doi.org/10.1016/S1366-5545(01)00008-4)
- Carter, C. R., & Jennings, M. M. (2004). The role of purchasing in corporate social responsibility: A structural equation analysis. *Journal of Business Logistics*, 25(1), 145–186. <https://doi.org/10.1002/j.2158-1592.2004.tb00173.x>
- Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution and Logistics Management*, 38(5), 360–387. <https://doi.org/10.1108/09600030810882816>
- Centobelli, P., Cerchione, R., Vecchio, P. Del, Oropallo, E., & Secundo, G. (2022). Blockchain technology for bridging trust, traceability and transparency in circular supply chain. *Information and Management*, 59(7), 103508. <https://doi.org/10.1016/j.im.2021.103508>
- Chen, L., Zhao, X., Tang, O., Price, L., Zhang, S., & Zhu, W. (2017). Supply chain collaboration for sustainability: A literature review and future research agenda. *International Journal of Production Economics*, 194(April), 73–87. <https://doi.org/10.1016/j.ijpe.2017.04.005>
- Choi, T.-M., Feng, L., & Li, Y. (2022). Ethical fashion supply chain operations: product development and moral hazards. *International Journal of Production Research*, 1–18. <https://doi.org/10.1080/00207543.2022.2025943>
- Ciliberti, F., Pontrandolfo, P., & Scozzi, B. (2008). Logistics social responsibility: Standard adoption and practices in Italian companies. *International Journal of Production Economics*, 113(1), 88–106. <https://doi.org/10.1016/j.ijpe.2007.02.049>
- Cole, R., & Aitken, J. (2019). Selecting suppliers for socially sustainable supply chain management: post-exchange supplier development activities as pre-selection

- requirements. *Production Planning and Control*, 30(14), 1184–1202. <https://doi.org/10.1080/09537287.2019.1595208>
- Cooper, M. C., Lambert, D. M., & Pagh, J. D. (1997). Supply chain management: More than a new name for logistics. *The International Journal of Logistics Management*, 8(1), 1–14. <https://doi.org/10.1108/09574099710805556>
- De Angelis, R., Howard, M., & Miemczyk, J. (2018). Supply chain management and the circular economy: Towards the circular supply chain. *Production Planning and Control*, 29(6), 425–437. <https://doi.org/10.1080/09537287.2018.1449244>
- De Giovanni, P., & Zaccour, G. (2022). A selective survey of game-theoretic models of closed-loop supply chains. *Annals of Operations Research*, 314(1), 77–116. <https://doi.org/10.1007/s10479-021-04483-5>
- de Oliveira, U. R., Espindola, L. S., da Silva, I. R., da Silva, I. N., & Rocha, H. M. (2018). A systematic literature review on green supply chain management: Research implications and future perspectives. *Journal of Cleaner Production*, 187, 537–561. <https://doi.org/10.1016/j.jclepro.2018.03.083>
- Eltantawy, R. A., Fox, G. L., & Giunipero, L. (2009). Supply management ethical responsibility: reputation and performance impacts. *Supply Chain Management: An International Journal*, 14(2), 99–108. <https://doi.org/10.1108/13598540910941966>
- Farooque, M., Zhang, A., Thürer, M., Qu, T., & Huisingh, D. (2019). Circular supply chain management: A definition and structured literature review. *Journal of Cleaner Production*, 228(July), 882–900. <https://doi.org/10.1016/j.jclepro.2019.04.303>
- Geissdoerfer, M., Morioka, S. N., de Carvalho, M. M., & Evans, S. (2018). Business models and supply chains for the circular economy. *Journal of Cleaner Production*, 190, 712–721. <https://doi.org/10.1016/j.jclepro.2018.04.159>
- Gimenez, C., & Tachizawa, E. M. (2012). Extending sustainability to suppliers: A systematic literature review. *Supply Chain Management*, 17(5), 531–543. <https://doi.org/10.1108/13598541211258591>
- Gold, S., Hahn, R., & Seuring, S. (2013). Sustainable supply chain management in “Base of the Pyramid” food projects-A path to triple bottom line approaches for multinationals? *International Business Review*, 22(5), 784–799. <https://doi.org/10.1016/j.ibusrev.2012.12.006>
- Gold, S., Trautrim, A., & Trodd, Z. (2015). Modern slavery challenges to supply chain management. *Supply Chain Management: An International Journal*, 20(5), 485–494. <https://doi.org/10.1108/SCM-02-2015-0046>
- Golińska, P. (2014). Metodyka oceny zrównoważonego wykorzystania zasobów w procesach wtórnego wytwarzania – na przykładzie branży samochodowej. *Gospodarka Materialowa i Logistyka*, 6, 17–26.
- González-Sánchez, R., Settembre-Blundo, D., Ferrari, A. M., & García-Muiña, F. E. (2020). Main dimensions in the building of the circular supply chain: A literature review. *Sustainability (Switzerland)*, 12(6), 1–25. <https://doi.org/10.3390/su12062459>
- Govindan, K., Mina, H., Esmaili, A., & Gholami-Zanjani, S. M. (2020). An Integrated hybrid approach for circular supplier selection and closed loop supply chain network design under uncertainty. *Journal of Cleaner Production*, 242, 118317. <https://doi.org/10.1016/j.jclepro.2019.118317>
- Green, K. W., Zellbst, P. J., Meacham, J., & Bhadauria, V. S. (2012). Green supply chain management practices: impact on performance. *Supply Chain Management: An International Journal*, 17(3), 290–305. <https://doi.org/10.1108/13598541211227126>

- Guide, V. D. R., & Van Wassenhove, L. N. (2009). The evolution of closed-loop supply chain research. *Operations Research*, 57(1), 10–18. <https://doi.org/10.1287/opre.1080.0628>
- Gurtu, A., Searcy, C., & Jaber, M. Y. (2015). An analysis of keywords used in the literature on green supply chain management. *Management Research Review*, 38(2), 166–194. <https://doi.org/10.1108/MRR-06-2013-0157>
- Hashmi, S. D., & Akram, S. (2021). Impact of green supply chain management on financial and environmental performance: Mediating role of operational performance and the moderating role of external pressures. *Logforum*, 17(3), 359–371. <https://doi.org/10.17270/I.J.LOG.2021.602>
- Hassini, E., Surti, C., & Searcy, C. (2012). A literature review and a case study of sustainable supply chains with a focus on metrics. *International Journal of Production Economics*, 140(1), 69–82. <https://doi.org/10.1016/j.ijpe.2012.01.042>
- Hendiani, S., Mahmoudi, A., & Liao, H. (2020). A multi-stage multi-criteria hierarchical decision-making approach for sustainable supplier selection. *Applied Soft Computing*, 94, 106456. <https://doi.org/10.1016/j.asoc.2020.106456>
- Karthick, B., & Uthayakumar, R. (2022). A closed-loop supply chain model with carbon emission and pricing decisions under an intuitionistic fuzzy environment. In *Environment, Development and Sustainability* (Issue 0123456789). Springer Netherlands. <https://doi.org/10.1007/s10668-022-02631-w>
- Katsoras, E., & Georgiadis, P. (2022). An integrated system dynamics model for closed loop supply chains under disaster effects: The case of COVID-19. *International Journal of Production Economics*, 253(June), 108593. <https://doi.org/10.1016/j.ijpe.2022.108593>
- Kim, T., Glock, C. H., & Kwon, Y. (2014). A closed-loop supply chain for deteriorating products under stochastic container return times. *Omega*, 43, 30–40. <https://doi.org/10.1016/j.omega.2013.06.002>
- Koberg, E., & Longoni, A. (2019). A systematic review of sustainable supply chain management in global supply chains. *Journal of Cleaner Production*, 207, 1084–1098. <https://doi.org/10.1016/j.jclepro.2018.10.033>
- Kühl, C., Bourlakis, M., Aktas, E., & Skipworth, H. (2022). Product-service systems and circular supply chain practices in UK SMEs: The moderating effect of internal environmental orientation. *Journal of Business Research*, 146(December 2020), 155–165. <https://doi.org/10.1016/j.jbusres.2022.03.078>
- Kumar, P., Mangla, S. K., Kazancoglu, Y., & Emrouznejad, A. (2022). A decision framework for incorporating the coordination and behavioural issues in sustainable supply chains in digital economy. *Annals of Operations Research*. <https://doi.org/10.1007/s10479-022-04814-0>
- Kumar, R., & Bangwal, D. (2022). An assessment of sustainable supply chain initiatives in Indian automobile industry using PPS method. *Environment, Development and Sustainability*, 0123456789. <https://doi.org/10.1007/s10668-022-02456-7>
- Kumar, S., & Yamaoka, T. (2007). System dynamics study of the Japanese automotive industry closed loop supply chain. *Journal of Manufacturing Technology Management*, 18(2), 115–138. <https://doi.org/10.1108/17410380710722854>
- Kuvvetli, Y., & Erol, R. (2020). Coordination of production planning and distribution in closed-loop supply chains. *Neural Computing and Applications*, 32(17), 13605–13623. <https://doi.org/10.1007/s00521-020-04770-5>

- Lee, H. L., & Tang, C. S. (2018). Socially and environmentally responsible value chain innovations: new operations management research opportunities. *Management Science*, 64(3), 983–996. <https://doi.org/10.1287/mnsc.2016.2682>
- Li, X., Xu, M., & Shi, X. (2021). Coordination of a socially responsible supply chain with cause marketing campaigns. *Journal of Systems Science and Systems Engineering*, 30(6), 728–747. <https://doi.org/10.1007/s11518-021-5516-2>
- Linton, J. D., Klassen, R., & Jayaraman, V. (2007). Sustainable supply chains: An introduction. *Journal of Operations Management*, 25(6), 1075–1082. <https://doi.org/10.1016/j.jom.2007.01.012>
- Maignan, I., Hillebrand, B., & McAlister, D. (2002). Managing socially-responsible buying: how to integrate non-economic criteria into the purchasing process. *European Management Journal*, 20(6), 641–648. [https://doi.org/10.1016/S0263-2373\(02\)00115-9](https://doi.org/10.1016/S0263-2373(02)00115-9)
- Majhi, J. K., Giri, B. C., & Chaudhari, K. S. (2021). Coordinating a socially responsible supply chain with random yield under CSR and price dependent stochastic demand. *International Journal of Supply and Operations Management*, 8(2), 194–211. <https://doi.org/10.22034/IJSOM.2021.2.6>
- Malekinejad, P., Ziaeeian, M., & Hosseini Bamakan, S. M. (2022). A communication model for reducing the bullwhip effect in closed-loop supply chain. *Advances in Industrial and Manufacturing Engineering*, 5(June), 100086. <https://doi.org/10.1016/j.aime.2022.100086>
- Marić, J., & Opazo-Basáez, M. (2019). Green servitization for flexible and sustainable supply chain operations: A review of reverse logistics services in manufacturing. *Global Journal of Flexible Systems Management*, 20(December), 65–80. <https://doi.org/10.1007/s40171-019-00225-6>
- Mentzer, J. T., Dewitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). Defining supply chain management. *Journal of Business Logistics*, 22(2), 1–25.
- Miemczyk, J., & Luzzini, D. (2019). Achieving triple bottom line sustainability in supply chains: The role of environmental, social and risk assessment practices. *International Journal of Operations and Production Management*, 39(2), 238–259. <https://doi.org/10.1108/IJOPM-06-2017-0334>
- New, S. J. (2015). Modern slavery and the supply chain: The limits of corporate social responsibility? *Supply Chain Management: An International Journal*, 20(6), 697–707. <https://doi.org/10.1108/SCM-06-2015-0201>
- Niu, S., Zhuo, H., & Xue, K. (2019). DfRem-driven closed-loop supply chain decision-making: A systematic framework for modeling research. *Sustainability (Switzerland)*, 11(12). <https://doi.org/10.3390/SU11123299>
- Ramanathan, U., Bentley, Y., & Pang, G. (2014). The role of collaboration in the UK green supply chains: An exploratory study of the perspectives of suppliers, logistics and retailers. *Journal of Cleaner Production*, 70, 231–241. <https://doi.org/10.1016/j.jclepro.2014.02.026>
- Sancha, C., Gimenez, C., & Sierra, V. (2016). Achieving a socially responsible supply chain through assessment and collaboration. *Journal of Cleaner Production*, 112, 1934–1947. <https://doi.org/10.1016/j.jclepro.2015.04.137>
- Sarkis, J., Zhu, Q., & Lai, K. H. (2011). An organizational theoretic review of green supply chain management literature. *International Journal of Production Economics*, 130(1), 1–15. <https://doi.org/10.1016/j.ijpe.2010.11.010>

- Seuring, S., & Müller, M. (2008a). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, 16(15), 1699–1710. <https://doi.org/10.1016/j.jclepro.2008.04.020>
- Seuring, S., & Müller, M. (2008b). Core issues in sustainable supply chain management – a Delphi study. *Business Strategy and the Environment*, 17(8), 455–466. <https://doi.org/10.1002/bse.607>
- Shafiq, A., Ahmed, M. U., & Mahmoodi, F. (2020). Impact of supply chain analytics and customer pressure for ethical conduct on socially responsible practices and performance: An exploratory study. *International Journal of Production Economics*, 225, 107571. <https://doi.org/10.1016/j.ijpe.2019.107571>
- Sinkovics, N., Hoque, S. F., & Sinkovics, R. R. (2016). Rana plaza collapse aftermath: Are CSR compliance and auditing pressures effective? *Accounting, Auditing and Accountability Journal*, 29(4), 617–649. <https://doi.org/10.1108/AAAJ-07-2015-2141>
- Sisco, C., Chorn, B., & Pruzan-Jorgensen, P. M. (2011). *Supply chain sustainability: A practical guide for continuous improvement*. <https://unglobalcompact.org/library/205>
- Somjai, S., Vasuvanich, S., Laosillapacharoen, K., & Jernsittiparsert, K. (2020). The impact of the greening of the supplier on competitive advantage: Does green innovation matter in Thai auto industry? *International Journal of Supply Chain Management*, 9(1), 54–61.
- Stock, J. R., & Boyer, S. L. (2009). Developing a consensus definition of supply chain management: A qualitative study. *International Journal of Physical Distribution and Logistics Management*, 39(8), 690–711. <https://doi.org/10.1108/09600030910996323>
- Sun, L., Wang, Y., Hua, G., Cheng, T. C. E., & Dong, J. (2020). Virgin or recycled? Optimal pricing of 3D printing platform and material suppliers in a closed-loop competitive circular supply chain. *Resources, Conservation and Recycling*, 162(June), 105035. <https://doi.org/10.1016/j.resconrec.2020.105035>
- Tang, C. S. (2018). Socially responsible supply chains in emerging markets: Some research opportunities. *Journal of Operations Management*, 57(January), 1–10. <https://doi.org/10.1016/j.jom.2018.01.002>
- Tang, C. S., & Zhou, S. (2012). Research advances in environmentally and socially sustainable operations. *European Journal of Operational Research*, 223(3), 585–594. <https://doi.org/10.1016/j.ejor.2012.07.030>
- Taticchi, P., Tonelli, F., & Pasqualino, R. (2013). Performance measurement of sustainable supply chains: A literature review and a research agenda. *International Journal of Productivity and Performance Management*, 62(8), 782–804. <https://doi.org/10.1108/IJPPM-03-2013-0037>
- Touboulic, A., & Walker, H. (2015). Theories in sustainable supply chain management: A structured literature review. *International Journal of Physical Distribution & Logistics Management*, 45(1/2), 16–42. <https://doi.org/10.1108/IJPDLM-05-2013-0106>
- Tseng, M.-L., Islam, M. S., Karia, N., Fauzi, F. A., & Afrin, S. (2019). A literature review on green supply chain management: Trends and future challenges. *Resources, Conservation and Recycling*, 141, 145–162. <https://doi.org/10.1016/j.resconrec.2018.10.009>
- Urbaniak, M. (2018). The role of green product development in building relationship in supply chain. *Journal of Advanced Management Science*, 103–108. <https://doi.org/10.18178/joams.6.2.103-108>
- Vaaland, T., & Owusu, R. (2012). What is responsible supply chain? *International Journal of Business Management*, 7(4), 154–171.

- Villanueva-Ponce, R., Garcia-Alcaraz, J. L., Cortes-Robles, G., Romero-Gonzalez, J., Jiménez-Macías, E., & Blanco-Fernández, J. (2015). Impact of suppliers' green attributes in corporate image and financial profit: Case maquiladora industry. *International Journal of Advanced Manufacturing Technology*, 80(5–8), 1277–1296. <https://doi.org/10.1007/s00170-015-7082-6>
- Walker, H., Di Sisto, L., & McBain, D. (2008). Drivers and barriers to environmental supply chain management practices: Lessons from the public and private sectors. *Journal of Purchasing and Supply Management*, 14(1), 69–85. <https://doi.org/10.1016/j.pursup.2008.01.007>
- Wang, Y., Hazen, B. T., & Mollenkopf, D. A. (2018). Consumer value considerations and adoption of remanufactured products in closed-loop supply chains. *Industrial Management & Data Systems*, 118(2), 480–498. <https://doi.org/10.1108/IMDS-10-2016-0437>
- Winter, S., & Lasch, R. (2016). Environmental and social criteria in supplier evaluation – Lessons from the fashion and apparel industry. *Journal of Cleaner Production*, 139, 175–190. <https://doi.org/10.1016/j.jclepro.2016.07.201>
- Witkowski, J., & Pisarek, A. (2017). Istota zielonych łańcuchów dostaw – propozycja systematyzacji pojęć. *Studia Ekonomiczne*, 315(315), 11–26.
- Wu, G. (2013). The influence of green supply chain integration and environmental uncertainty on green innovation in Taiwan's IT industry. *Supply Chain Management: An International Journal*, 18(5), 539–552. <https://doi.org/10.1108/SCM-06-2012-0201>
- Yadav, S., & Singh, S. P. (2020). Blockchain critical success factors for sustainable supply chain. *Resources, Conservation and Recycling*, 152, 104505. <https://doi.org/10.1016/j.resconrec.2019.104505>
- Yang, Q., Geng, R., & Feng, T. (2020). Does the configuration of macro- and micro-institutional environments affect the effectiveness of green supply chain integration? *Business Strategy and the Environment*, 29(4), 1695–1713. <https://doi.org/10.1002/bse.2462>
- Yildiz Çankaya, S., & Sezen, B. (2019). Effects of green supply chain management practices on sustainability performance. *Journal of Manufacturing Technology Management*, 30(1), 98–121. <https://doi.org/10.1108/JMTM-03-2018-0099>
- Yuen, K. F., Thai, V. V., & Wong, Y. D. (2017). Corporate social responsibility and classical competitive strategies of maritime transport firms: A contingency-fit perspective. *Transportation Research Part A: Policy and Practice*, 98, 1–13. <https://doi.org/10.1016/j.tra.2017.01.020>
- Zimon, D., Tyan, J., & Sroufe, R. (2019). Implementing sustainable supply chain management: reactive, cooperative, and dynamic models. *Sustainability*, 11(24), 7227. <https://doi.org/10.3390/su11247227>
- Zu-Jun, M., Zhang, N., Dai, Y., & Hu, S. (2016). Managing channel profits of different cooperative models in closed-loop supply chains. *Omega*, 59, 251–262. <https://doi.org/10.1016/j.omega.2015.06.013>

11 Sustainable marketing

Katarzyna Wiktoria Syrytczyk

Introduction

The marketing concept indicates meeting the needs and requirements of customers. In today's global society, customers are getting more concerned about global economic, social and environmental problems: people are aware of population growth, widening gap between rich and poor societies, global warming, resource scarcity issues, increase in health problems caused by air and water pollution, and chemically treated food. What customers want today is a better quality of life for current and future generations. The quality of life of future generations depends on how today's companies protect the environment and take responsibility for their actions. Customers want to support companies that demonstrate strong ethics and stewardship of human beings and the planet. Organisations are being forced to comply with the principles of sustainable development and to act in a sustainable way to remain successful. This success is not only guided by the economic aspect but also by social and environmental aspects. This responsible approach must be evident in business strategies, practices and behaviours. Sustainable marketing requires responsible actions, tools that take into account social and ecological aspects, and sustainable marketing practices that create value for society as a whole.

The main goal of this chapter is to discuss the concept of sustainable marketing, which is "socially and environmentally responsible marketing that meets the present needs of consumers and businesses, and at the same time, also preserving or enhancing the ability of future generations to meet their needs" (Kotler, Armstrong, 2017). To achieve that aim, based on sustainable marketing literature, there were discussed: definition of sustainable marketing, its roots and evolution, examples of the common criticisms of traditional and green marketing, actions that promote sustainable marketing, principles and elements of sustainable marketing and its role in modern marketing.

Sustainability, responsibility and sustainable marketing

The problem of the imbalance of economic, social and ecological development has become the subject of increased global public interest since the 1960s. The

United Nations has taken steps to implement the concept of sustainable development. Initially, attention was focused on activities related to the problems of resource depletion and environmental protection. Later, the area of interest was expanded to include the social and economic spheres. It was recognised that the main goal of sustainable development is the quality of life, as indicated by mental and material dimensions (Kozłowski, 2000). Today, most conversations about sustainability are about human well-being (Hurth, Whittlesea, 2017).

Currently, in the literature on the subject, the concept of sustainable development is the dominant concept of socio-economic development. The main goal of sustainable development is to ensure that it “meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987). Over the years the international community associated with the United Nations has tried to establish and clarify the goals to be followed by sustainable development. The present 17 Sustainable Development Goals (SDGs) were adopted by the UN member countries, who declared their readiness to achieve them by 2030, and to contribute towards implementing them by incorporating the 2030 Agenda as a reference framework into their strategies, policies and processes (United Nations General Assembly, 2015). Today, companies aspiring to stay sustainable, are taking efforts to manage in ways that support the objectives of the UN 2030 Agenda and SDGs.

On the corporate level, the concept that encompasses issues such as sustainability and corporate philanthropy is the corporate social responsibility (CSR) and it has never been more prominent on corporate agenda (Smith, Lenssen, 2009). The term CSR has always been difficult to define; there is no single, generally agreed definition (Taneja, Taneja, Gupta, 2011). International Organization for Standardization (ISO, 2010) considered social responsibility as:

responsibility of an organization for the impacts of its decisions and activities on society and the environment, through transparent and ethical behaviour that: contributes to sustainable development, including health and the welfare of society; takes into account the expectations of stakeholders; is in compliance with applicable law and consistent with international norms of behaviour; and is integrated throughout the organization and practised in its relationships.

Today's companies need to develop competitive strategies aimed to meet the expectations of society and different stakeholders. They are interested in establishing friendly relations with their external (customers, business partners, creditors, local community, and others) and internal (owners, employees, managers, and shareholders) stakeholders (Freeman, 2010). If the company meets the consumers' needs, its shareholders will also be rewarded. More companies are coming to understand that it is in their economic interest to address social and environmental impacts in a manner that is integrated with their operations. Being a sustainable company has some advantages for the company: sustainable

thinking creates innovation and new products without increasing the environmental footprint, or it can help save money by reducing energy consumption or minimising waste.

Marketing has been defined by the American Marketing Association as “the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large” (AMA, 2017). This definition has evolved and became more sustainable than the earlier ones, highlighting marketing as value-based customer relationships that benefit the organisation and its stakeholders. Marketing is still about creating value for consumers, but today it also mentions the importance of partners and the need for creating value for society at large. Sustainable marketing is generally considered to be within the boundaries of sustainable development (Peattie, 2001). Martin and Schouten (2012) define sustainable marketing as:

the process of creating, communicating, and delivering value to customers in such a way that both natural and human capital are preserved or enhanced throughout (...) so that all the marketing processes are environmentally and socially benign while helping to bring about a society in which striving for sustainability is the norm.

What sustainable marketing is not

The traditional marketing concept focuses on meeting the current needs of both the target customers as well as the company’s short-term sales and growth. These two can be achieved by engaging customers and giving them what they want at a given moment. However, sometimes marketing does not serve the future best interests of either the customers or the business as it creates too much materialism and too few social goods. Marketing has been criticised for being a driver of unsustainable outcomes. Unsustainable overconsumption and overselling of private goods result in social costs which may include air pollution, resource shortages, environmental deterioration, population growth, world hunger and poverty. Marketing, through its consumption-oriented practices, may have promoted unsustainable production and consumption practices. Today’s challenge is to stop or reverse that unsustainable production and consumption. Under such conditions, the traditional marketing concept turned out not to be an appropriate philosophy (Crompton, Alexander, Shrubsole, 2011).

Some companies still use questionable marketing practices that may cause future harm to the environment or society. Those practices are not consistent with sustainable marketing and they will not result in customer value and satisfaction and will not create sustainable customer relationships. Marketing has been accused of harming consumers through high prices, deceptive practices, high-pressure selling, unsafe products, poor service for disadvantaged consumers and planned obsolescence (Kotler, Armstrong, 2017).

High prices are mainly caused by high costs of distribution, advertising, sales promotion, excessive mark-ups and packaging that adds mainly psychological, not functional, value. On the other hand, some consumers are willing to pay more for high-quality products that provide them that psychological value. Other questionable marketing practices include deceptive practices that lead consumers to think they will get more value than they actually do. These deceptive practices can be used in promotion, packaging, and pricing. Some practices may include misrepresenting the product's features, using misleading labelling or terms, or a false price reduction. By using such practices, companies will lose consumers, who did not get what they expected. By using high-pressure selling practices, consumers are pushed to buy products they actually did not want to have. Critics also complain that marketing pushes products that are low quality, do not perform well or are sometimes even harmful and unsafe. Sometimes companies refuse to open or expand more stores to underserved communities, because they do not want to focus on low-income areas (Kotler, Armstrong, 2017).

Another criticism involves the practice of some companies of planned obsolescence of products. It is a business strategy in which obsolescence is planned and built into the product from its early conception. The effect of this strategy is that such products have a limited lifetime, they become unserviceable or unprofitable to repair and a consumer feels the need to purchase new products and services that the manufacturer brings out as replacements for the old ones (Hindle, 2008; Slade, 2006). Methods supporting the strategy of planned obsolescence are also used in services: no possibility of repairing the product outside authorised service centres due to the necessity of using specialised tools; expensive spare parts consisting of large modules; frequent changes of product components (Hamrol, Najlepszy, 2013). Major types of the act of intentionally shortening a product's usable life are (Aladeojebi, 2013):

- technical obsolescence – occurs when producers create a new product, due to rapid changes in technology, to replace the older version, which is no longer needed even though it is still working but does not provide the same satisfaction because more functions are available in the newer version;
- limited functional life design – a process according to which products are designed with a specific lifetime, producers create disposable products or build mechanisms that end the life of a product;
- design for limited repair – aims to produce a product, the cost of repair of which is so high that the consumer decides to replace that product;
- design aesthetics that lead to a shorter period of satisfaction – products that are designed to wear out easily and look old as soon as a newer version is offered.

All the above-mentioned practices have a negative impact on individuals, on the environment and lead to the waste of resources. Shorter, more expensive,

energy- and raw material-consuming use of products is causing excessive waste that leads to environmental degradation. And it is the society that pays for the environmental damage. Thus, those practices contradict the idea of sustainable development and socially responsible business.

There are also some questionable green marketing practices. Today, due to the fact, that green markets are expanding, more companies are communicating about the greenness of their products and practices. More companies have website sections that are dedicated to disclosing environmental and social policies and performance. Green advertising has nearly tripled since 2006 (Delmas, Burbano, 2011). Some studies show, that there is a difference between consumer buying behaviour and the environmental concern of consumers. Even if consumers express a positive attitude about the environment, they can have a problem with turning this attitude into positive behaviour (Mataracı & Kurtuluş, 2020). Along with the increasing number of green products and claims, the phenomenon of greenwashing is also becoming a significant problem. Greenwashing is characterised as (Lyon, Maxwell, 2011) “the selective disclosure of positive information about a company’s environmental or social performance, without full disclosure of negative information on these aspects, so as to create an overly positive corporate image”. This image is misleading and deceives customers because claims about the company’s environmental performance or the environmental benefits of a product or service are simply false. A company that uses greenwashing strategy simultaneously engages in two behaviours: poor environmental performance and positive communication about its environmental performance (Delmas, Burbano, 2011). Consumers are deliberately misled by being sent false or incomplete marketing messages containing information about a company’s concern for the environment when, apart from the green label, the products have little to do with ecology. Companies using greenwashing strategies usually spend more funds on promoting supposedly environmentally friendly products and actions rather than on changing the production process and following sustainability rules. Greenwashing is definitely unethical, as organisations take advantage of consumers’ ecological sensitivity. The TerraChoice (2010) report on environmental claims made in the North American consumer market showed that the number of products claiming to be green increased by 73%. Over 95% of green products committed at least one of the seven sins of greenwashing. The seven sins of greenwashing (TerraChoice, 2010) are the sin of the hidden trade-off (green claims are based on a narrow set of attributes of the product), the sin of no proof (claims that cannot be substantiated by easily accessible supporting information or by a certification), the sin of vagueness (claims that are poorly defined or broad that its real meaning may be misunderstood by the consumer), the sin of irrelevance (claims that may be truthful but are unimportant for consumers seeking environmentally preferable products), the sin of lesser of two

evils (claims that may be true within the product category, but that distracts the consumer from the greater environmental impacts of the category as a whole), the sin of fibbing (claims that are simply false), the sin of worshiping false labels (claims that give the impression of third-party endorsement where no such endorsement exists).

On the other hand, because of the fact that many activists accuse companies of greenwashing claims and may encourage consumers to boycott their products, some managers hesitate to promote their ecological products. The way to avoid greenwashing sins is to have an approach to marketing communication which is based on dialogue with stakeholders, and not to rely on the selective use of green information (Peattie, Belz, 2010). To reduce the occurrence of greenwashing, effort should be put into increasing the environmental awareness of customers; spreading knowledge of the greenwashing phenomenon; introducing legal regulations defining and counteracting the occurrence of greenwashing; giving reliable information about the labels that green companies can use; trying to unify green labels; encouraging companies to apply green standards and report clearly on their environmental activities.

Sustainability in marketing

The idea of marketing has evolved from a product-driven approach (later defined as Marketing 1.0) that was focused on boosting sales at the lowest possible cost, through a consumer-centric focus (defined as Marketing 2.0), but treating consumers as passive targets to Marketing 3.0 – value-driven marketing in which consumers are treated as partners (Kotler et al., 2010). Before the sustainable marketing concept became popular, in the 1970s, scientists first started to focus on ecological marketing that was connected with environmental problems. Later, in the 1980s, the concept of environmental marketing discussed the need of using clean technology, and understanding and targeting the green consumer (Hunt, 2011). Marketing has also been acknowledged as having an impact on identities, culture and societal behaviour (Hurth, Whittlesea, 2017).

Peattie and Belz (2010) mentioned that there were only two sets of ideas about marketing that fundamentally challenged the dominant marketing paradigm. The first set of ideas includes macro-marketing, societal marketing, ethical marketing, green marketing, environmental marketing and eco-marketing. These concepts discussed the social and environmental impacts of marketing activities. The second set of ideas emphasises the process of forming and maintaining relationships with customers as well as the process of delivering value to them. Peattie and Belz (2010) merged these two sets of challenging ideas and presented a vision of a new integrated approach to sustainability marketing. They emphasise the need of involving social and environmental criteria in marketing

thinking, marketing values and marketing goals. Sustainable marketing requires progress towards more sustainable consumption and production and innovative thinking in four key areas (Peattie, Belz, 2010):

- treating socio-ecological problems as a starting point of the marketing process; these problems and the customer's wants and needs should be considered in a balanced and coordinated way;
- a holistic approach to understanding consumer behaviour; sustainable marketing must take into consideration all the stages of consumer behaviour, not only the phase before purchase and the moment of purchase but also the use and post-use phase of the consumption process;
- reconfiguration of the marketing mix; Belz and Peattie (2009) proposed a new "4Cs" sustainability marketing mix which is more customer orientated: customer solutions, customer cost, convenience and communication;
- appreciation of the transformational potential of marketing activities and relationships.

Kotler and Armstrong (2017) point out two major movements that promote sustainable marketing: consumerism, which is to improve the rights and power of buyers in relation to sellers and the second movement – environmentalism, which is to protect and improve people's current and future living environment. The marketing system's aim should be to maximise life quality not to maximise consumption or consumer satisfaction. Currently, most companies are adopting policies of environmental sustainability, that do both: sustain the environment and generate profits. First of all, companies need to realise that they should become part of the solution to social and environmental problems, and not to be a part of these problems. Then they need to develop a vision of sustainability which is to guide companies through the stages of sustainability strategy. The main stages of sustainable strategy were defined by Hart (1997). Actions that can be undertaken at the most basic level are connected with pollution prevention, which means eliminating and minimising waste before it is created, implementing internal programs to design ecologically safer products, recyclable and biodegradable packaging, better pollution controls, and more energy-efficient operations (Kotler, Armstrong, 2017). At the next level – product stewardship – minimising all environmental impacts throughout the full life cycle of today's products and making them easier to recover, reuse, recycle, or safely return to nature after usage. Such actions also allow the reduction of costs of the product. Further actions include developing new clean technologies that make it possible to replace current products and processes with cleaner and environmentally friendly ones. In the future, to direct activities, such as pollution prevention, product stewardship, and clean technology, companies need to develop a strategy framework, and a vision of sustainability to help create sustainable value.

There can also be seen the need to co-create new businesses to serve the needs of the poor and underserved.

Today, marketers to bring value to customers must take responsibility for sustainable marketing. To guide marketing systems in their long-term performance, help create customer value and strengthen customer relationships, Kotler (2017) lists five sustainable marketing principles:

- consumer-oriented marketing – company should organise its marketing activities from the consumer's point of view by delivering superior value to carefully chosen customers,
- customer value marketing – this principle says that a company should put most of its resources into marketing activities designed to build customer value,
- innovative marketing – this means the company should continuously improve its products and marketing,
- sense-of-mission marketing – a company should adopt social and environmental responsibility missions; when consumers perceive that a company is socially oriented then the company should be able to gain competitive advantage, improve reputation, and enhance consumer satisfaction (Pivato, Misani, Tencati, 2008),
- societal marketing – a company should make their decisions after considering what consumers want, what the company's requirements are, and what their and society's long-term interests are.

Sustainable marketing goals can be achieved only when companies respect ethical rules, when they develop corporate marketing ethics policies, which are guidelines for everyone in the organisation. Kotler (2017) noticed that these policies should include relations with distributors, standards of advertising, customer service, pricing, product development, and also general ethical standards.

A new theoretical perspective on sustainable marketing, by expanding the concept of the marketing mix, was provided by Pomeroy (2017). The purpose of adding new elements was to provide more decision areas that will enable broader communication with stakeholders to assure them of sustainability efforts. New elements can provide the marketer with a guide for marketing for sustainability, can encourage marketing managers to review and transform marketing management and finally, can raise the level of sustainability-oriented business in the marketplace. Pomeroy introduced ten controllable marketing variables. The first four are the traditional McCarthy's (1960) four Ps: product, price, promotion and place. The others are taken but recalibrated from the literature of services marketing: participants or people, processes, and physical evidence. Pomeroy, to highlight the role of human resource management, also included participants in the mix – the company's personnel, the customer,

and other customers in the service environment. The new ones are priorities, promises, principles, and partnerships. Those new Ps will contribute to the creation of individual and social values. Pomeroy argued that the expanded mix for sustainability marketing is a necessary condition for marketers to optimally drive sustainability marketing and facilitate more sustainable consumption. The assumptions of Pomeroy's (2017) expanded concept of the marketing mix are

- Products should be examined from both perspectives: production perspective (materials that are used in production as well as processes and their social and environmental impact) and consumption perspective (impacts of their consumption and use).
- A sustainable price should include the cost of production externalities – the economic, environmental, and social costs of a product's manufacture. Such a price should provide value for customers and a fair profit for the business.
- Sustainable promotion should not only inform and remind consumers about the products but at the same time, also inform them along with other stakeholders about the sustainability solutions the company provides and also about the company as a whole.
- Sustainable place, or marketing channels, should not cause environmental and social harm in the process of making a product or service available for use or consumption.
- Participants will implement the change towards a more sustainable company and take part in social and environmental actions.
- Sustainable physical evidence should inform about the firm's sustainability orientation, such as the use of recycled materials.
- Sustainable processes are the sustainable service delivery and operating systems including investing in e.g. renewable energy.
- Sustainable principles are the company's values, an element of the company's identity. A company's principles should demonstrate that it is sustainability-oriented. They should reflect the company's public commitment to some of the SDGs.
- Promises around sustainability should be expressed in terms of the triple bottom line and SDGs.
- Partnership occurs internally, that relies on internal marketing and human resource management, as well as externally which includes the traditional members of a company's value-delivery network.

Sustainability should be embedded within the entire organisation, including its subsidiaries abroad, offshore suppliers and should include employee training and sharing of experience, training of key personnel at the supplier level, positive incentives for suppliers in the form of long-term contracts and increased purchasing orders, and regular auditing of suppliers' efficiency (Andersen, Skjoett-Larsen, 2009). The sustainability of a product depends upon the sustainability of

the society in which it is produced and consumed (Peattie, Belz, 2010). Sustainable goals must span the entire value chain. Product sustainability might depend on: (1) how the company sources the raw materials contained in the product, (2) the sustainability of energy, (3) the social and environmental practices of all the companies within the supply chain regarding human rights, working conditions, product safety and quality, environmental standards and ethical behaviour of suppliers, (4) how the product is purchased and used, and (5) what happens at the end of the product's life. It is also important to encourage the company's customers, to make their activities more sustainable, to encourage suppliers, and others, to create more responsible supply and distribution chains. Companies may also work with their customers to improve the environmental impact of their products in use. Small everyday consumer actions can add up to make a big difference.

Some scholars argue that for marketing to become a predominant force for sustainability it will require a paradigm shift in assumptions, through managerial approaches (Hurth, Whittlesea, 2017). Hurth and Whittlesea (2017) characterised and examined the compatibility of sustainable marketing with three of the marketing paradigms that are significant for sustainable marketing management. Two paradigms: make-and-sell and sense-and-respond were recognised as incompatible, and the third emerging paradigm called guide-and-co-create was discovered to be aligned with marketing management that can deliver sustainability. The guide-and-co-create paradigm helps to create and sustain a successful business that delivers long-term societal well-being outcomes, but that requires marketers to guide customers and other stakeholders. Hurth and Whittlesea (2017) introduced significant aspects of a new paradigm that form six principles for "a sustainable marketing maturity framework":

- the objective of a marketing manager is to serve the long-term well-being of the target groups, and that can be achieved through serving the long-term well-being of stakeholders who make this objective possible,
- marketing managers must be aware of the vital importance of their social leadership role, and they must keep this idea in mind while making decisions,
- marketing managers can best transition along with their stakeholders towards long-term well-being through the principles of co-creation,
- marketing managers must demonstrate long-term thinking in their decisions,
- marketing managers must work internally and externally to co-create and report on the most appropriate indicators for long-term wellbeing,
- marketing managers must work to clearly emphasise the central role of marketing in developing and maintaining business models.

Companies, to take the next step on their way to sustainable society must also be able to communicate the results of their sustainable strategy. Traditional financial reports no longer display the level of transparency and data many stakeholders have come to expect today. Communication of sustainable strategy is

possible through implementing environmental, social and governance reporting. Some companies are incorporating financial and non-financial information into one integrated report, that:

brings together the material information about an organisation's strategy, governance, performance and prospects in a way that reflects the commercial, social and environmental context within which it operates. It provides a clear and concise representation of how an organization demonstrates stewardship and how it creates value, now and in the future.

(Towards Integrated Reporting, 2011)

Conclusions

The concept of sustainable marketing is becoming more popular thanks to the growing importance of the idea of sustainable development. Sustainable development can be achieved not only by active government intervention but also by proactive corporate marketing (Sheth, Parvatiyar, 2021). Marketing can enable the implementation of sustainable development at a company level, when its activities are concentrated on achieving values of ethical, social, environmental and economic character. Companies that claim to be sustainable need to approach sustainability with real purpose and should not treat sustainability as a marketing tool. The main theme of sustainable marketing is the ability of a company to create, communicate, deliver and preserve value for consumers, partners and society. Sustainable marketing must be visible in socially and environmentally responsible actions that meet both the immediate and future needs of customers, companies, and society as a whole. Achieving sustainable marketing behaviour requires a shift in mainstream marketing management by those that implement, approve, support and deliberate marketing activities (Crompton, Alexander, Shrubsole, 2011). The idea of sustainability should move towards the marketing mainstream.

The concept of sustainable marketing has emerged as both a trend in academic research as well as an important business issue, which can be a source of competitive advantage and is becoming a necessity. Sustainable marketing endures forever, in that it delivers solutions to people's needs which are ecologically orientated, viable from the perspective of technical feasibility and economic competitiveness, and based on relationships (Peattie, Belz, 2010). Even the stability of our global market system depends on responsible behaviour, sustainable business models and proactive management of the impact of business on society (Smith, Lenssen, 2009).

References

- Aladeojebi, T. K., Planned Obsolescence. *International Journal of Scientific & Engineering Research*, Volume 4, Issue 6, June 2013, p. 1504–1508.
- American Marketing Association, 2017, <https://www.ama.org/the-definition-of-marketing-what-is-marketing/>.

- Andersen, M., Skjoett-Larsen, T., Corporate Social Responsibility in Global Supply Chains, *Supply Chain Management: An International Journal*, 2009, Volume 14, Issue 2, p. 75–86.
- Belz, F.-M., Peattie, K., Sustainability Marketing: A Global Perspective, Chichester 2009.
- Crompton, T., Alexander, J., Shrubsole, G., *Think of Me As Evil: Opening the Ethical Debates in Advertising*. Report, UK: Public Interest Research Centre (PIRC) and World Wildlife Fund (WWF), 2011.
- Delmas, M. A., Burbano, V. C., The Drivers of Greenwashing, *California Management Review*, Fall 2011, Volume 54, Issue 1, p. 64–87.
- Freeman, R. E., *Strategic Management: A Stakeholder Approach*, Cambridge University Press, 2010.
- Hamrol, A., Najlepszy, Z., *Za i przeciw planowanemu ograniczaniu trwałości wyrobów*, Inżynieria Maszyn, R. 18, z. 1, 2013.
- Hart, S. L., Beyond Greening: Strategies for a Sustainable World, *Harvard Business Review*, Jan/Feb 1997, Volume 75, Issue 1, p. 66–76.
- Hindle, T., *Guide to Management Ideas & Gurus*, London: The Economist in Association with Profile Books LTD, 2008, p. 147–148.
- Hunt, S. D., Sustainable Marketing, Equity, and Economic Growth: A Resource-Advantage, Economic Freedom Approach, *Journal of the Academy of Marketing Science*, 2011, Volume 39, Issue 1, p. 7–20.
- Hurth, V., Whittlesea, E., Characterising Marketing Paradigms for Sustainable Marketing Management, *Social Business*, 2017, Volume 7, Issue 3–4, p. 359–390.
- ISO 26000:2010, *Guidance on Social Responsibility: Terms and Definitions*, 2.18.
- Kotler, P., Armstrong, G., *Principles of Marketing 17th Edition*, London: Pearson Education, 2017.
- Kozłowski, S., *Ekorozwój. Wyzwanie XXI wieku*. Warszawa: Wydawnictwo Naukowe PWN, 2000.
- Lyon, T. P., Maxwell, J. W., Greenwash: Corporate Environmental Disclosure under Threat of Audit, *Journal of Economics & Management Strategy*, 2011, Volume 20, Issue 1, p. 3–41.
- Martin, D. M., Schouten, J. W., *Sustainable Marketing*, Upper Saddle River, NJ: Pearson Prentice Hall, 2012.
- Mataraci, P., Kurtuluş, S., Sustainable Marketing: The Effects of Environmental Consciousness, Lifestyle and Involvement Degree on Environmentally Friendly Purchasing Behavior, *Journal of Global Scholars of Marketing Science*, 2020, Volume 30, Issue 3, p. 304–318.
- McCarthy, E. J., *Basic Marketing, A Managerial Approach*. Homewood, IL: Irwin, 1960.
- Peattie, K., Towards Sustainability: The Third Age of Green Marketing, *The Marketing Review*, 2001, 2(2), p. 129–146.
- Peattie, K., Belz, F. -M., Sustainability Marketing: An Innovative Conception of Marketing, *Marketing Review St. Gallen*, 2010, 27(5), p. 8–15.
- Pivato, S., Misani, N., Tencati, A., The Impact of Corporate Social Responsibility on Consumer Trust: The Case of Organic Food, *Business Ethics: A European Review*, 2008, 17(1), p. 3–12.
- Pomeroy, A., Marketing for Sustainability: Extending the Conceptualisation of the Marketing Mix to Drive Value for Individuals and Society at Large, *Australasian Marketing Journal*, 2017, Volume 25, Issue 2, p. 157–165.

- Report of the World Commission on Environment and Development: Our Common Future, Annex to document A/42/427- Development and International Co-operation: Environment, United Nations, 1987.
- Sheth, J. N., Parvatiyar, A., Sustainable Marketing: Market-Driving, Not Market-Driven, *Journal of Macromarketing*, 2021, Volume 41, Issue 1, p. 150–165.
- Slade, G., *Made to Break: Technology and Obsolescence in America*, Harvard University Press, Boston, 2006.
- Smith, N. C., Lenssen, G., (Eds.), *Mainstreaming Corporate Responsibility*, 2009, Wiley & Sons.
- Taneja, S. S., Taneja, P. K., Gupta, R. K., Researches in Corporate Social Responsibility: A Review of Shifting Focus, Paradigms, and Methodologies, *Journal of Business Ethics*, 2011, Volume 101, Issue 3, p. 343–364.
- The Sins of Greenwashing. Home and family edition. TerraChoice, 2010.
- Towards Integrated Reporting. *Communicating Value in the 21st Century*, International Integrated Reporting Committee, 2011.
- United Nations General Assembly. *Resolution adopted by the General Assembly on 25 September 2015: A/RES/70/1*. Transforming Our World: The 2030 Agenda for Sustainable Development, 2015.

12 Sustainable servitisation in the automotive sector

An exploratory study

*Damiano Petrolo, Lucrezia Songini, and
Paolo Gaiardelli*

Introduction

The 2030 Agenda for Sustainable Development, signed on 25 September 2015 by the governments of the 193 member states of the United Nations (UN) and approved by the UN General Assembly, has called on institutions, governments, companies and society to make massive efforts to achieve 17 Sustainable Development Goals (SDGs), comprising 169 environmental, economic, social, and institutional targets.

The resulting challenges have led the scientific and professional communities to reflect on the implementation of new business models that can ensure simultaneously environmental, economic, and social benefits (Raith and Siebold, 2018). Perhaps not by chance, interdisciplinary scientific debates concerning sustainable business models have been increasing considerably in recent years (Nosratabadi et al., 2019).

Among others, a topic that has attracted noticeable attention is that of sustainable mobility (Holden et al., 2019). The issue holds many interrelated challenges. From an environmental perspective, it requires the reduction of the carbon emissions of vehicles to achieve zero impact, which drives the development of new electric, hydrogen, and hybrid engines (Shin et al., 2019). To create these new high-tech solutions, a significant challenge emerges on the economic sustainability front, as high research, development and production costs have to be incurred and covered, mainly by manufacturers (Tanç et al., 2019). Last but not least, from a social perspective, the experimentation with inclusive mobility models, supported in particular by the expansion of sharing economy, is leading to renewed ways of using and conceiving vehicles, such as car-pooling and car-sharing, as well as implementing alternative urban mobility solutions, such as scooters and bike sharing (Nosratabadi et al., 2019). In this regard, it is worth mentioning the concept of Mobility-as-a-Service (MaaS), understood as the development of digital platforms aimed at providing citizens with several complementary mobility services within a single digital environment (Smith and Hensher, 2020).

Through this manuscript, our aim is to enter the debate on sustainable mobility. To be more specific, in the following sections we will focus on servitisation, intended as the attention paid by manufacturing companies to enlarging their offering through services (Gaiardelli et al., 2016; Pistoni and Songini, 2018). Furthermore, we will present and discuss how servitisation can support environmental, economic, and social sustainability. The focus of this chapter, intended as a pilot and exploratory study which is part of a larger research project involving several Italian universities and research centres, is the automotive and heavy and commercial vehicles industries, which are intrinsically linked to the concept of sustainable mobility, and can be considered reference sectors for understanding the relationship between sustainability and servitisation, as both paradigms have long been common elements of these businesses.

In the following, we present and discuss the theoretical background of servitisation and its relation to environmental, economic and social sustainability. Then, we introduce the methodology and describe the sample involved for the purpose of this study. Next, we present the main findings on the relationship between servitisation and environmental, economic and social sustainability in the automotive sector. Finally, we discuss the results, highlighting the limitations of this work, and presenting our conclusive considerations.

Theoretical background

Servitisation

Servitisation, conceived as the integration of services and products into the offerings of companies aiming to create added value for customers (Raddats et al., 2019), is considered one of the major recent trends in the manufacturing industry (Zheng et al., 2021).

The factors that have contributed to the expansion of servitisation in manufacturing are manifold. A first ally is, without a doubt, digitisation (Frank et al., 2019; Tao and Qi, 2017). Indeed, the acceleration in technological advances and the consequent digital transition make it possible to design and implement advanced systems of services to be offered to customers (Rapaccini et al., 2020). In other words, digitisation can be seen as “an enabler and a driver of servitisation” (Martín-Peña et al., 2018: 96). Several studies have found that the interplay between digitisation and servitisation positively impacts the profitability of manufacturing companies (e.g., Abou-Foul et al., 2021; Kharlamov and Parry, 2021; Kohtamäki et al., 2020).

Consistently with the previous consideration, the increased profitability lies as a second factor contributing to the expansion of servitisation in the modern industry (Wang et al., 2018). Despite the debate among scholars and practitioners on the impact of servitisation on profitability is still open, due to many contradictory findings (Ambroise et al., 2018), the scientific evidence seems to be

more consistent regarding the positive impact of servitisation on the operational (Atif et al., 2021) and innovation performance (e.g., Shen et al., 2021; Weigel and Hadwich, 2018).

Finally, servitisation enables manufacturing companies to have higher levels of customer proximity (Kastalli and Van Looy, 2013), thus achieving greater interactions with customers than non-servitised companies (Tan et al., 2019). This becomes even more important for competitiveness, as service interactions trigger co-creation processes between producers, customers (e.g., Huikkola et al., 2016; Sjödin et al., 2016) and other partners of the service ecosystem (Gaiardelli and Songini, 2018).

Servitisation and sustainability

Servitisation seems to be an extra arrow in the fight for sustainability (Kanatli and Karaer, 2022).

From an environmental point of view, several recent studies have found that servitisation affects the thinking of manufacturing companies, leading them to reflect on how to create added value for their customers, also in environmental terms (Chávez et al., 2019). In this regard, the recent history of servitisation of manufacturing is full of examples of companies that have developed green product-service solutions, properly designed to respond to the growing concern of society about the issues of natural resource depletion and environmental degradation and to create awareness of green issues in that part of the population not yet concerned on the environment. This is the case of green maintenance services, where activities are carried out using reconditioned spare parts and making use of energy from renewable sources, or just eliminating the use of paper as much as possible thanks to digitalised processes. Such a gradual transformation towards a greener servitisation has also stimulated the implementation of circular economy business models (Abdelkafi et al., 2022; Doni et al., 2019). This applies in many industries, such as mining (e.g., Vargas et al., 2022), agricultural machinery (e.g., Kolling et al., 2022), and electrical and electronic equipment production (e.g., Kim et al., 2022). Among others, sustainable mobility has been emerging as a new business model characterising the automotive industry that entails significant changes in consumption models. The latter are increasingly shifting from a logic based on customer ownership of vehicles to solutions geared towards the satisfaction of needs through the use of a product and/or one or more related services (the so-called product-service system). In this respect, sustainable mobility represents an advanced stage in the evolution towards result-oriented servitisation, whose implementation may create remarkable positive effects on the environment, as it leads to less use of raw materials, components and energy for the production of smaller volumes of vehicles. In addition, the shared use of the same vehicles by many users means greater

efficiency in the utilisation of the product during its life cycle. Further positive effects on the environment result from decreased traffic and thus lower air pollutant emissions, reduced noise pollution, and improved road safety, which translates into more livable and people-friendly cities.

From an economic point of view, although the scientific and professional communities agree that servitisation has a positive impact on manufacturing companies' profitability, there is a risk of being faced with the so-called servitisation paradox (Li et al., 2015). The latter consists of two facets (Brax et al., 2021): (i) the financial paradox emerges when companies are unable to cover the investments made to build their service offerings (Gebauer et al., 2005); (ii) the organisational paradox happens when servitisation generates organisational rigidity due to a failure to change in terms of capabilities and mindset in the transition from a product-oriented to a service-oriented organisation (Brax, 2005). Therefore, the recognition of the servitisation paradox should invite us to reflect on servitisation as a holistic strategy that requires profound organisational changes (Martín et al., 2020), not automatically implying economic sustainability. In this respect, with regard to sustainable mobility, the biggest challenge is to figure out how and when the massive investments required in technology and infrastructure both by car manufacturers and institutions can start generating economic returns. In addition, the evolution toward sustainable mobility entails significant changes in revenue models and pricing policies, which pose challenges for both product-service providers and customers.

Finally, with reference to the social dimension, scientific evidence of the impact of servitisation on social performance is limited and dispersed (Moro et al., 2022). Some studies have indeed found that servitisation has a positive impact on social sustainability (e.g., Graça, 2021; Zighan et al., 2021) while others have only indicated its potential influence (e.g., Martín et al., 2020; Zhang et al., 2021). However, a clear gap in the literature on this issue emerges, despite the development of new business and consumption models, such as MaaS, that can have positive effects from this perspective. Indeed, they enable greater accessibility to products/services by customers, greater flexibility and customisation in meeting their needs, and a better quality of life for customers and the community.

Methodology

The exploratory nature of this work led us to choose a qualitative methodology, based on in-depth interviews involving managers and entrepreneurs of the automotive industry, belonging to firms operating at different positions of the service network. Given the pilot nature of this study, we decided to involve a

limited number of people to better manage the complexities and any unforeseen contingencies that may arise.

Specifically, the sample was composed of three experts in the automotive industry: the Managing Director of Alpha and President of the Italian branch of one of the most relevant European Association of automotive makers; the Service Design & User Experience Director of Beta; and the Owner and Managing Director of Gamma. Respectively, the involved people represent the point of view of an industrial and commercial vehicle manufacturer, an automotive trade association, an innovative mobility service provider, and a dealer. As a consequence, this composition of the research sample allowed us to achieve a high level of heterogeneity of views, experiences, and opinions on the same issue. Furthermore, the experts' long experience in this field and the senior positions held in their respective companies allowed us to draw highly strategic and generalised considerations.

The interviews were conducted during a roundtable where all three experts were involved; it was recorded and then transcribed. Then, we applied a coding process (Williams and Moser, 2019) which resulted in three codes in line with our research objective: Environmental sustainability, Economic sustainability, and Social sustainability. In the following section, we report the main results of our analysis.

Results

Environmental sustainability

As evidenced by the Alpha's and Beta's top managers, the automotive sector's main challenge in terms of environmental sustainability concerns the production of less polluting vehicles, intending to achieve zero emissions. In this sense, vehicle manufacturers have long since begun the research and development process leading them to produce vehicles with low environmental impact.

Beta is a new mobility company we are building within the Delta group, which has already been engaged in fleet electrification for several years. Today, the main challenge is creating solutions with little environmental impact. Delta has already embarked on a very long journey of electrification, which began with the Zeta car and continues with other increasingly electrified solutions.

(Beta's Service Design & User Experience Director)

Another of the promises is hydrogen, so we are working hard on that. However, this solution requires a proper infrastructure to put electric or hydrogen

vehicles on the road. Also, it is important to understand how this energy is generated. The risk is that we move the problem upstream, thus having vehicles with zero or almost zero impact but producing energy from fossil fuels or coal. So, we have to be committed but very pragmatic.

(Alpha's Managing Director)

Two main relevant challenges emerge from the previous consideration. The first concerns the need to implement infrastructures, also investing in renewable energy sources, to support the mobility of electric or hydrogen vehicles. In this respect, investments by central governments seem to play a crucial role. The second lies in technological innovation. Indeed, even though the search for environmentally friendly vehicles began a time ago, with electric and hydrogen solutions, the game seems to have only just started, as the solutions currently developed, in particular in heavy truck vehicles sector, do not yet seem to be sufficient to satisfy transportation and logistic companies' needs:

All of truck manufacturers are at the forefront of this transition to electric, with all the difficulties involved. However, today's technology allows us to have these kinds of vehicles more for urban use. Long-distance transport with an electric vehicle is not possible yet, and long distances are still the predominant part of the sector.

(Alpha's Managing Director)

In this context, a service-oriented business can effectively contribute to addressing critical issues that automotive companies have to face. For instance, new services can be offered to help drivers to use and manage a technology they are unfamiliar with and whose potential they may not fully exploit:

We must be good at assisting customers and helping them raise a new generation of drivers, desperately needed, trained in ecological and sustainable driving.

(Gamma's Managing Director)

Furthermore, the implementation of solutions and tools for measuring environmental impact can be proposed to increase users' awareness of the pollution produced by their vehicles and activities.

We are developing solutions to reduce the environmental impact, involving different types of users and bringing out through tangible measurements, such as data, the reduction of CO₂ and noise pollution of vehicles on the road today.

(Beta's Service Design & User Experience Director)

Finally, services can help create competencies and tools to support eco-driving and, more broadly, eco-mobility. However, as pointed out by Alpha's top management, the big enemy to beat in the fight for environmental sustainability remains obsolete vehicle fleets as the number of old vehicles on the road is still too high.

Frankly, we must look to the future, but we must also hit the big target... and the big target today is the fleet, which is old and thus has an impact both from an ecological point of view in terms of emissions and, let me say, from an economic and safety point of view.

(Alpha's Managing Director)

And it would be a cost-free initiative [...]. There would be a number of reasons why these vehicles could serenely retire. There is, perhaps, not the will to do so.

(Gamma's Managing Director)

Economic sustainability

The high commitment to environmental sustainability of automotive players translates into a high economic interest. However, as highlighted by the experts, matching environmental with economic sustainability still remains an open issue to solve.

The big problem remains matching environmental with economic sustainability, which is a really big problem, actually. The only thing that can act as a buffer is government aids.

(Gamma's Managing Director)

Here, public economic support plays a crucial role, especially in the business-to-business, as the market cannot totally afford the high costs of product-service providers, due, on one hand to high costs of electric and hydrogen-powered vehicles, and on the other hand on the available technology that seems to be more suitable for urban mobility rather than to meet the needs of the freight transport.

The ecological transition in the freight mobility sector happens, and there is no second thought. The problem is to reconcile the light vehicle and the last-mile mobility requirements with the technical features of vehicles; on the heavy vehicle we still have to find the right balance between the hardware costs and the customer's ability to pay these costs.

(Gamma's Managing Director)

However, what central governments make available to large manufacturers does not seem to be sufficient to cover the huge costs incurred in producing environmentally friendly vehicles.

Today, without government subsidies, an electric heavy truck vehicle is not economically sustainable. We, as a country, are called upon to support this transition. The solutions of public support, to date, are totally insufficient.

(Alpha's Managing Director)

Consequently, it becomes essential to think, design and develop alternative and sustainable business models to enable resilient organisations and create suitable sources of capital to support the investments in research and development of low-impact vehicles.

As manufacturers and distribution networks, we will be called upon to change our skin. It is clear that these new types of vehicles will not have the "classic" sources of profit that we are used to.

(Alpha's Managing Director)

The subject of electrification requires manufacturers to invest a lot. If we then go on to the subject of mobility, this is even more complex because, to date, no business model is adaptable and, above all, scalable to meet all mobility needs. When it comes to car sharing, there are different business models. We are exploring others, but they are very costly.

(Beta's Service Design & User Experience Director)

Hence, two main observations arise. First, new business models enabling manufacturing companies to be resilient and economically sustainable go through use-oriented servitisation strategies, such as car-sharing. Second, citizens and users play a critical role in supporting these new business models. Therefore they cannot shy away from the challenge, even if this requires to rethink and change their (often bad) habits.

... We are looking for other strands that are more economically sustainable. This implies people change their habits. If we are resilient, these changes will become a habit. Without this, we will go nowhere. So, an economically sustainable service-based business model is a key to achieving a long life and giving all the experiments we are doing a chance.

(Beta's Service Design & User Experience Director)

Social sustainability

The issue of our habits as citizens, customers and users of mobility services becomes particularly relevant with regard to social perspective. In this context,

digitalisation plays a key role. By enabling simple, user-friendly and affordable access to services, it stimulates the demand for mobility services thus facilitating the transition of the vehicle idea from a mere physical product to be purchased to a platform for the provision of service solutions. Consistently, it fosters the shift of customers from consumers to users.

Environmental sustainability is undoubtedly done by bringing less and less polluting solutions to the market. [...] we can create platforms to personalise individual needs, including public and private transport. They can be increasingly easy to access, increasingly digitised, and they are very user-friendly and affordable. However sustainability comes through the ability to make people change their habits. That is the biggest challenge.

(Beta's Service Design & User Experience Director)

Finally, two other considerations arise. First, the needs of the new generations in terms of mobility, such as integrated and usership-based mobility, are far different from those of previous generations, posing the challenge of creating new solutions that meet the new forms of demand. Second, servitisation offers numerous solutions for satisfying both integrated and usership-based mobility, thus meeting the needs and demands of the new generation while promoting social sustainability.

[...] indeed, approaching integrated mobility is totally different from what we have experienced till now. It is really about redesigning completely one's rules of life.

(Gamma's Managing Director)

Considering also the social issues of the new generations, which increasingly focus on usership and less on ownership, Beta was born two years ago with the aim of providing asset-based mobility services based on the electrified vehicles of the Delta group.

(Beta's Service Design & User Experience Director)

Final conclusion and limitations

The fight for environmental, economic and social sustainability in the automotive sector presents many challenges and hides many pitfalls. In light of the results obtained in this study, servitisation seems to be a valuable ally of automotive manufacturing companies. From an environmental point of view, on the one hand, one of the main challenge is to achieve zero emissions, which necessarily means investing in research and development for producing vehicles with little or no environmental impact, on the other it is also necessary to modernise the current fleets, replacing them with new vehicles that perform better in terms of emissions and safety. In this sense, our results suggest that servitisation might,

both directly and indirectly, impact environmental sustainability. The direct impact concerns the reduction of the adoption of raw materials, components and energy, less pollution and more livable cities, as a consequence of the diffusion of mobility as a service. The indirect impact implies the need to change the *modus operandi* of product-service providers and customers, by training drivers and raising people's awareness about environmental issues, in line with what has already emerged in other sectors.

However, continued investments in research and development are needed, thus requiring product-service providers to maintain a high profitable business. As the results show, this cannot be achieved without substantial central government supports. At the same time, service solutions can help by providing direct economic support, thus fostering automotive companies' resilience and at the same time stimulating citizens and consumers, to question their driving and mobility habits as well as rethinking their *modus vivendi*. In this perspective, servitisation acts as a lever for promoting social sustainability.

The evidence of this research must be read in the light of its limitations. In particular, we recognise that the exploratory nature of our study led to the choice of starting with a sample which, although heterogeneous in terms of representation of the industry, is composed of a limited number of people. Nevertheless, the quantity and quality of the emerging themes demonstrated the importance of deepening the role of servitisation in environmental, economic, and social sustainability in the automotive sector.

Servitisation cannot and should not be considered the panacea for such a complex phenomenon as sustainable development. Rather, it represents a valuable ally for environmental, economic, and social sustainability that becomes particularly valuable when there is an orchestration of the efforts of the different actors involved.

References

- Abdelkafi, N., Pero, M., Masi, A., & Capurso, I. (2022). Revisiting the servitization-sustainability link: A case study in the professional printing supply chain. *Cleaner Logistics and Supply Chain*, 4, 100061.
- Abou-Foul, M., Ruiz-Alba, J. L., & Soares, A. (2021). The impact of digitalization and servitization on the financial performance of a firm: An empirical analysis. *Production Planning & Control*, 32(12), 975–989.
- Atif, S., Ahmed, S., Wasim, M., Zeb, B., Pervez, Z., & Quinn, L. (2021). Towards a conceptual development of Industry 4.0, servitisation, and circular economy: A systematic literature review. *Sustainability*, 13(11), 6501.
- Ambroise, L., Prim-Allaz, I., & Teyssier, C. (2018). Financial performance of servitized manufacturing firms: A configuration issue between servitization strategies and customer-oriented organizational design. *Industrial Marketing Management*, 71, 54–68.

- Brax, S. (2005). A manufacturer becoming service provider—challenges and a paradox. *Managing Service Quality: An International Journal*, 15(2), 142–155.
- Brax, S. A., Calabrese, A., Ghiron, N. L., Tiburzi, L., & Grönroos, C. (2021). Explaining the servitization paradox: A configurational theory and a performance measurement framework. *International Journal of Operations & Production Management*, 41(5), 517–546.
- Chávez, C. A. G., Romero, D., Rossi, M., Luglietti, R., & Johansson, B. (2019). Circular lean product-service systems design: A literature review, framework proposal and case studies. *Procedia CIRP*, 83, 419–424.
- Doni, F., Corvino, A., & Martini, S. B. (2019). Servitization and sustainability actions. Evidence from European manufacturing companies. *Journal of Environmental Management*, 234, 367–378.
- Frank, A. G., Mendes, G. H., Ayala, N. F., & Ghezzi, A. (2019). Servitization and Industry 4.0 convergence in the digital transformation of product firms: A business model innovation perspective. *Technological Forecasting and Social Change*, 141, 341–351.
- Gaiardelli, P., & Songini, L. (2018). Modelli di business, servizi e performance nel settore del veicolo pesante (*Business models, services and performance in the heavy vehicle industry*). EGEA, Milan.
- Gaiardelli, P., Songini, L., Morgantini, M., & Bonesio, P. (2016). Successful product-service strategies and managerial practices: A case study research of the Italian heavy truck assistance networks. *Procedia CIRP*, 47, 102–107.
- Gebauer, H., Fleisch, E., & Friedli, T. (2005). Overcoming the service paradox in manufacturing companies. *European Management Journal*, 23(1), 14–26.
- Graça, S. S. (2021). A global PSS framework for sustainable B2B partnership. *Sustainability*, 13(6), 3066.
- Holden, E., Gilpin, G., & Banister, D. (2019). Sustainable mobility at thirty. *Sustainability*, 11(7), 1965.
- Huikkola, T., Kohtamäki, M., & Rabetino, R. (2016). Resource Realignment in Servitization: A study of successful service providers explores how manufacturers modify their resource bases in transitioning to service-oriented offerings. *Research-Technology Management*, 59(4), 30–39.
- Kanathl, M. A., & Karaer, Ö. (2022). Servitization as an alternative business model and its implications on product durability, profitability & environmental impact. *European Journal of Operational Research*, 301(2), 546–560.
- Kastalli, I. V., & Van Looy, B. (2013). Servitization: Disentangling the impact of service business model innovation on manufacturing firm performance. *Journal of Operations Management*, 31(4), 169–180.
- Kharlamov, A. A., & Parry, G. (2021). The impact of servitization and digitization on productivity and profitability of the firm: A systematic approach. *Production Planning & Control*, 32(3), 185–197.
- Kim, C. H., Kuah, A. T., & Thirumaran, K. (2022). Morphology for circular economy business models in the electrical and electronic equipment sector of Singapore and South Korea: Findings, implications, and future agenda. *Sustainable Production and Consumption*, 30, 829–850.

- Kohtamäki, M., Parida, V., Patel, P. C., & Gebauer, H. (2020). The relationship between digitalization and servitization: The role of servitization in capturing the financial potential of digitalization. *Technological Forecasting and Social Change*, 151, 119804.
- Kolling, C., de Medeiros, J. F., Ribeiro, J. L. D., & Morea, D. (2022). A conceptual model to support sustainable product-service system implementation in the Brazilian agricultural machinery industry. *Journal of Cleaner Production*, 355, 131733.
- Li, J. H., Lin, L., Chen, D. P., & Ma, L. Y. (2015). An empirical study of servitization paradox in China. *The Journal of High Technology Management Research*, 26(1), 66–76.
- Martín, M. G., Álvarez, A. P., Ordieres-Meré, J., Villalba-Díez, J., & Morales-Alonso, G. (2020). New business models from prescriptive maintenance strategies aligned with sustainable development goals. *Sustainability*, 13(1), 1–26.
- Martín-Peña, L. M., Díaz-Garrido, E., & Sánchez-López, J. M. (2018). The digitalization and servitization of manufacturing: A review on digital business models. *Strategic Change*, 27(2), 91–99.
- Moro, S. R., Cauchick-Miguel, P. A., & de Sousa Mendes, G. H. (2022). Adding sustainable value in product-service systems business models design: A conceptual review towards a framework proposal. *Sustainable Production and Consumption*, 32, 492–504.
- Nosratabadi, S., Mosavi, A., Shamshirband, S., Zavadskas, E. K., Rakotonirainy, A., & Chau, K. W. (2019). Sustainable business models: A review. *Sustainability*, 11(6), 1663.
- Pistoni, A., & Songini, L. (2018). *Servitization strategy and managerial control*, Emerald Group Publishing Limited, Howard House, Wagon Lane, Bingley.
- Raddats, C., Kowalkowski, C., Benedettini, O., Burton, J., & Gebauer, H. (2019). Servitization: A contemporary thematic review of four major research streams. *Industrial Marketing Management*, 83, 207–223.
- Raith, M. G., & Siebold, N. (2018). Building business models around sustainable development goals. *Journal of Business Models*, 6(2), 71–77.
- Rapaccini, M., Saccani, N., Kowalkowski, C., Paiola, M., & Adrodegari, F. (2020). Navigating disruptive crises through service-led growth: The impact of COVID-19 on Italian manufacturing firms. *Industrial Marketing Management*, 88, 225–237.
- Shen, L., Sun, C., & Ali, M. (2021). Role of servitization, digitalization, and innovation performance in manufacturing enterprises. *Sustainability*, 13(17), 9878.
- Shin, J., Hwang, W. S., & Choi, H. (2019). Can hydrogen fuel vehicles be a sustainable alternative on vehicle market?: Comparison of electric and hydrogen fuel cell vehicles. *Technological Forecasting and Social Change*, 143, 239–248.
- Sjödin, D. R., Parida, V., & Wincent, J. (2016). Value co-creation process of integrated product-services: Effect of role ambiguities and relational coping strategies. *Industrial Marketing Management*, 56, 108–119.
- Smith, G., & Hensher, D. A. (2020). Towards a framework for Mobility-as-a-Service policies. *Transport Policy*, 89, 54–65.
- Tan, K. H., Ji, G., Chung, L., Wang, C. H., Chiu, A., & Tseng, M. L. (2019). Riding the wave of belt and road initiative in servitization: Lessons from China. *International Journal of Production Economics*, 211, 15–21.
- Tanç, B., Arat, H. T., Baltacıoğlu, E., & Aydın, K. (2019). Overview of the next quarter century vision of hydrogen fuel cell electric vehicles. *International Journal of Hydrogen Energy*, 44(20), 10120–10128.

- Tao, F., & Qi, Q. (2017). New IT driven service-oriented smart manufacturing: Framework and characteristics. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 49(1), 81–91.
- Vargas, J. P., Muñoz Lagos, A. P., Feriz Torres, J. G., Kinney, I. S., Pérez Cortés, S., & Hurtado, J. P. (2022). Achieving circularity through novel product-service systems in the mining industry: An opportunity for circularity. *Sustainability*, 14(6), 3614.
- Wang, W., Lai, K. H., & Shou, Y. (2018). The impact of servitization on firm performance: A meta-analysis. *International Journal of Operations & Production Management*, 38(7), 1562–1588.
- Weigel, S., & Hadwich, K. (2018). Success factors of service networks in the context of servitization – Development and verification of an impact model. *Industrial Marketing Management*, 74, 254–275.
- Williams, M., & Moser, T. (2019). The art of coding and thematic exploration in qualitative research. *International Management Review*, 15(1), 45–55.
- Zhang, J., Qi, L., Wang, C., & Lyu, X. (2021). The impact of servitization on the environmental and social performance in manufacturing firms. *Journal of Manufacturing Technology Management*, 33(3), 425–447. <https://doi.org/10.1108/JMTM-11-2020-0451>
- Zheng, T., Ardolino, M., Bacchetti, A., & Perona, M. (2021). The applications of Industry 4.0 technologies in manufacturing context: A systematic literature review. *International Journal of Production Research*, 59(6), 1922–1954.
- Zighan, S., Alkalha, Z., Bamford, D., Reid, I., & Zu'bi, M. F. (2021). Servitisation through structural adaptation. *Journal of Service Theory and Practice*, 31(3), 468–490. <https://doi.org/10.1108/JSTP-06-2020-0144>

13 Sustainable HRM

Giulia Flamini and Luca Gnan

Introduction

The COVID-19 pandemic has significantly impacted the nature and process of work (Mefi and Asoba, 2021). The COVID-19 pandemic has led to significant changes in how work is organized and performed, with many organizations implementing reduced working hours, remote and smart working, and reorganizing work processes to adapt to the crisis (Manuti et al., 2020). These changes have significantly impacted employees, increasing role ambiguity, job insecurity, and social isolation (Manuti et al., 2020). Research has shown that such changes can harm the Person–Environment (P–E) fit, well-being, satisfaction, and productivity of employees (Liang et al., 2022). P–E fit refers to the degree to which an individual's values, needs, and abilities are congruent with the demands and opportunities of their work environment. A poor P–E fit can lead to decreased job satisfaction, well-being, motivation, and commitment and increased turnover (Kristof-Brown et al., 2005). Implementing remote and smart working, for instance, can lead to increased feelings of isolation and disconnection from the organization and can negatively impact employees' well-being and motivation (Liang et al., 2022; Liao et al., 2021). Additionally, job insecurity and role ambiguity can lead to increased stress and anxiety among employees, negatively impacting their well-being and productivity (Sverke et al., 2002; Van der Heijden et al., 2004).

The quality of human capital is crucial for achieving sustainable development (Kinowska, 2021). Employees are considered a strategic resource for achieving sustainability and improving sustainable performance (Lorincová et al., 2019), particularly during and after a crisis such as the COVID-19 pandemic (Mefi and Asoba, 2021; Manuti et al., 2020).

The ability of organizations to successfully navigate and survive during and after the COVID-19 pandemic is closely tied to their ability to manage change effectively. According to the traditional change management literature, one of the key factors in successful change management is the ability to gain the support and buy-in of employees (Kotter, 1996; Lewin, 1947). This can be achieved by creating positive attitudes among employees towards the change, which is

closely linked to building mutual trust between the organization and its employees. Sustainable human resource management (HRM) practices can build mutual trust and create positive employee attitudes toward change. Organizational behavior research has shown sustainable HRM (Su-HRM) practices, such as promoting diversity and inclusion, fostering employee engagement and well-being, and implementing policies that minimize the negative impact of the organization on the environment (Gao and Bansal, 2013a).

Moreover, Su-HRM can increase employee trust and commitment to the organization (Den Hartog and Koopman, 2004; Koopman and Thierry, 1996). Su-HRM practices can also help organizations address the challenges posed by the pandemic, such as the shift towards remote working, the need for increased flexibility, and the impact on employee mental and physical health (Manuti et al., 2020). For example, organizations can adopt flexible work arrangements, work-life balance, and employee engagement and well-being programs to mitigate the harmful effects of the pandemic on employees' mental and physical health (Aslam et al., 2020; Zhang and Wang, 2021).

In addition, Su-HRM practices can also help organizations develop their employees' capabilities and competencies, which is critical for organizations to respond to the changing market conditions and achieve long-term success (Lorincová et al., 2019). This can include practices such as training and development, the design of reward systems, and trust-sensitive, participative leadership (Thom and Schupbach-Bronnimann, 2003; Thom and Zaugg, 2002). In conclusion, adopting Su-HRM practices can play a critical role in creating positive employee attitudes toward change and building mutual trust, which is crucial for organizations to survive during and after the pandemic.

Su-HRM is a holistic approach that prioritizes the organization's and its employees' long-term well-being. This approach considers HRM practices' environmental, social, and economic impacts and aims to balance these three effects (Gollan and Roberts, 2017). Su-HRM aims to ensure that the organization's human capital is managed responsibly and ethically while also promoting the organization's long-term viability (Jackson and Ruderman, 2013). One of the key components of Su-HRM is creating a work environment that is inclusive, equitable, and supportive of both employees and the wider community (Sarkis and Sundaram, 2016). This includes promoting diversity and inclusion and implementing policies and practices that support the well-being of employees and their families, such as flexible working arrangements and parental leave (Brammer and Pavelin, 2016). Su-HRM practices include implementing green initiatives, such as reducing carbon emissions and waste and promoting sustainable employee consumption patterns (Sarkis and Sundaram, 2016). Su-HRM also includes fostering employee engagement and well-being. This includes providing opportunities for employees to develop their skills and advance their careers, promoting a healthy work-life balance, and supporting employee well-being, such as health and wellness programs (Brammer and Pavelin, 2016). It's important to note that Su-HRM is not a one-time initiative but a continuous

process that requires ongoing attention, monitoring, and adaptation to changing circumstances. Su-HRM practices must be aligned with the organization's strategic goals and be integrated into the overall management system (Jackson and Ruderman, 2013). In conclusion, Su-HRM is a holistic approach to managing human resources that prioritizes the organization's and its employees' long-term well-being. By creating an inclusive, equitable, and supportive work environment, implementing policies and practices that minimize the negative impact of the organization on the environment, and fostering employee engagement and well-being, organizations can promote sustainable development and improve their long-term viability.

Hence, Su-HRM research conceptualizes Su-HRM as a system of practices aimed at simultaneously creating a mutual benefit between employers and employees (Stankevičiūtė and Savanevičienė, 2018; Zaugg, 2002) and a bundle of tools for corporate sustainability. Therefore, Su-HRM may be interpreted as an extension of corporate sustainability (Strenitzzerová and Achimský, 2019b), presenting the same tensions and paradoxes (Hahn et al., 2014).

On the one hand, Ehnert (2009b) highlights the importance of carefully crafting a bundle of HRM practices to achieve a sustainable strategy. On the other, the Author also recognizes the potential tensions and paradoxes that may arise in the process, such as balancing efficiency and capability, economic and relational rationality, and short-term and long-term effects. Hence, Su-HRM requires a complete approach and a bundle of efficient and effective practices to create value for the organization and its stakeholders (Gollan and Roberts, 2017). Su-HRM practices should be designed to balance economic, social, and environmental considerations to achieve long-term success (Brammer and Pavelin, 2016). This highlights the need to consider short-term and long-term effects in implementing Su-HRM practices (Ehnert, 2009b). In synthesis, the Author identified three key paradoxes of a Su-HRM:

- a Tensions between deploying human resources efficiently and maintaining their capabilities.
- b Tensions between economic and relational rationality (here, the main aim is to maintain social legitimacy by acting responsibly).
- c Tensions between short and long-term effects.

The COVID-19 pandemic has prompted researchers and practitioners to explore new frontiers in HRM (Ulrich, 2020) to solve the three above paradoxes. This includes a continued focus on improving employee employability, self-responsibility, and work-life balance (Thom and Zaugg, 2004), creating economic value, organizational flexibility, and viability, and achieving mutually beneficial outcomes for employees and employers.

However, the new reality created by COVID-19 also poses significant different challenges to the principles of Su-HRM (Kinowska, 2021). The COVID-19 pandemic has brought about significant changes in the nature and process of

work, requiring organizations to adapt and find new ways to manage their human resources sustainably (Mefi and Asoba, 2021). According to Boxall (2013), an HRM system creates mutual benefits for employers and employees by aligning their needs and interests. This requires organizations to consider three key conditions: capability match, commitment match, and contribution match (Valizade et al., 2016).

Capability match refers to the fit between the employer's need for a competent workforce and the employees' need for a conducive work environment. The pandemic has led to changes such as implementing remote and smart working. Therefore, organizations must find ways to adapt their Su-HRM practices to ensure that the work environment is conducive to the development and performance of employees, even in the changed context.

Commitment match refers to the fit between the employer's need for employee commitment and the employees' need for job security and fair treatment from the employer. The pandemic has led to increased job insecurity and role ambiguity. Organizations must find ways to adapt their Su-HRM practices to ensure that employees feel secure in their changed jobs and are treated fairly to foster a sense of commitment.

Contribution match refers to the extent to which the employer and employees perceive that their needs are being met. The pandemic has led to changes in how work is organized and performed, and organizations must find ways to adapt their Su-HRM practices to ensure that employees feel their needs are met.

In conclusion, the pandemic has brought about significant challenges for organizations in terms of managing their human resources sustainably. To meet these challenges, organizations must find different ways to adapt their Su-HRM practices to ensure that they align with the new reality created by the pandemic to create mutual benefits and encourage even a more substantial alignment between employer–employee interests (Boxall, 2013). Employees who perceive the employer as supportive are induced to accept any change and support the corporate sustainability strategy and its challenges.

The chapter investigates the possible role of Su-HRM practices in leading employees to develop positive, proactive organizational behaviors during and after the COVID-19 pandemic emergency, helping the employer to corporate survive.

Combining the three key paradoxes (Ehnert, 2009b) and the three key conditions (Boxall, 2013), the chapter intends to explore how modern (post-COVID-19) organizations might solve these paradoxes and accomplish these conditions with a different mutual approach to a Su-HRM, implying

- a HR practices or HR systems as configurations of HR practices that promote well-being and human flourishing are “the right thing[s] to do on ethical grounds” (Guest, 2017, p. 34) because the needs of employees are still too often neglected.

- b Organizations that address mutual benefits in employment relationships outperform those that do not regard individual performance (Guest, 2017) and sustainability (Laszlo et al., 2020).

This chapter examines and elaborates on a potential trajectory for HRM in the post-pandemic era (Ulrich, 2020). The objective is to comprehend how organizations can navigate the tensions inherent in Su-HRM and ensure organizational resilience over time by implementing HRM practices. These practices should alleviate employees' concerns about job security, facilitate positive engagement with change, and ultimately contribute to organizational survival.

The chapter is composed of three sections, including this introduction. The second section describes Su-HRM and its paradoxes and introduces the change management approach needed to implement Su-HRM. The third wrap up the chapter's content, adding recommendations for research and practice.

Sustainable HRM

Integrating sustainability principles into organizational practices has been a topic of significant interest in the academic literature. The Brundtland Commission of the United Nations defined sustainability in 1987 as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (p. 43). Organizations have adopted this concept worldwide to align their practices and operations with the principles of sustainability (Gladwin et al., 1995; Starik and Rands, 1995; van Marrewijk and Werre, 2003). Corporate sustainability necessitates that organizations effectively reconcile economic, ecological, and social concerns (Elkington, 1997, Manzoor et al., 2019) while also balancing short- and long-term perspectives (Manzoor et al., 2019). With this approach, organizations focus on income consumption rather than capital (Dyllick and Hockerts 2002). However, as Berger et al. (2007, p. 143) noted, “the integration of these elements is often fraught with paradoxes and contradictions.” These inherent tensions can be difficult to navigate and manage, so managers must be able to effectively address these challenges (Hahn et al., 2014).

Research studies have also highlighted the importance of incorporating sustainability into organizational decision-making (Bansal, 2005; Burritt and Schaltegger, 2010). Furthermore, various frameworks and models have been developed to assist organizations in integrating sustainability principles into their practices and operations (Esty and Winston, 2009; Friedman and Porter, 2011). Additionally, a growing body of research has focused on the role of leadership in promoting and implementing sustainability within organizations (Banerjee and Eshghi, 2019; Lindgreen et al., 2010). These studies have emphasized the importance of top management support and commitment to driving sustainability initiatives within organizations.

In summary, integrating sustainability principles into organizational practices has been a topic of ongoing research and interest in the academic literature. The concept of sustainability necessitates that organizations effectively reconcile economic, ecological, and social concerns while also balancing short- and long-term perspectives. However, integrating these elements is often fraught with paradoxes and contradictions, which managers must navigate effectively. Research has also highlighted the importance of incorporating sustainability into the organizational decision-making process, developing frameworks and models to assist organizations in integrating sustainability principles and the role of leadership in promoting and implementing sustainability within organizations.

Managers must strive to simultaneously attain economic, environmental, and social outcomes, as proposed by the triple bottom line framework put forth by Elkington (1997). This requires taking into account the multifaceted implications of organizational actions at the societal level, as highlighted by Jensen (2001), and addressing the prevalent short-term orientation of shareholders, as discussed by Held (2001), Slawinski and Bansal (2012), and Hahn et al. (2014). The achievement of sustainability requires the participation of various stakeholders with diverse interests, which inherently leads to tensions and conflicts, as noted by Hahn et al. (2014) and Maon et al. (2008). The holistic approach to corporate sustainability posits that it is unfeasible to eliminate sustainable tensions and organizations must adopt a paradoxical mindset to manage them effectively, as proposed by Berger et al. (2007), Gao and Bansal (2013b), Hahn et al. (2010), Kleine and Hauff (2009), Liu (2012), Smith and Lewis (2011), and Smith and Tushman (2005). Furthermore, organizations must be vigilant to avoid unintended consequences, as Hahn et al. (2014) and Clarkson (1995) highlighted.

Su-HRM practices are valuable means for organizations to address the inherent tensions of sustainability (Ehnert, 2009a; Kinowska, 2021; Strenitzzerová and Achimský, 2019a). However, as extensions of a sustainable strategy, Su-HRM practices are subject to the same corporate sustainability tensions and paradoxes that managers must reconcile (Hahn et al., 2014).

The concept of Su-HRM is relatively recent, as noted by Stankevičiūtė and Savanevičienė (2018). Like the definition of corporate sustainability, it centers around satisfying the conflicting interests of different stakeholders. Su-HRM refers to integrating HRM strategies and practices that align with and contribute to the organization's long-term financial, social, and ecological goals, internally and externally, while addressing unintended consequences and negative feedback, as proposed by Ehnert et al. (2014). This approach to HRM balances economic, social, and environmental sustainability, ensuring that the organization's actions are responsible and ethical, as Sarkis and Sundaram (2016) emphasized. This concept of Su-HRM is becoming more relevant as organizations are facing increasing pressure to operate more responsibly and ethically and to meet the demands of various stakeholders, including employees, customers, suppliers, regulators, and society as a whole (Bansal and McWilliams, 2011; Baumgartner and Ebner, 2018; Blowfield and Murray, 2008).

Su-HRM aims to “deploy employees in a way that their long-term development and performance are not derogated but increased” (Zaugg, 2002, p. 14). Su-HRM emphasizes employees’ satisfaction in their work (Esfahani et al., 2017), as employees are considered a crucial and leading element in achieving sustainability (Lorincová et al., 2019). Su-HRM aims to create a work environment that supports satisfying employees’ aspirations, needs, and interests and encourages positive actions that align with organizational goals (Lorincová et al., 2019). This approach to HRM aims to create a work environment that is inclusive, equitable, and supportive of both employees and the wider community (Jackson and Ruderman, 2013). It also involves implementing policies and practices that minimize the negative impact of the organization on the environment while maximizing its positive contributions to society (Sarkis and Sundaram, 2016).

As articulated by Ehnert (2009b), the practice of Su-HRM includes not only the attraction and retention of motivated and skilled employees but also the provision of a healthy work environment and development opportunities, even in adverse circumstances (Kinowska, 2021) such as the ongoing pandemic (Mefi and Asoba, 2021; Manuti et al., 2020).

Research literature indicates that the failure of sustainable corporate strategies to produce desirable outcomes is often a result of a lack of integration of HRM in their strategic planning and implementation processes (BCG and MIT, 2009; Fenwick, 2007). To effectively manage changes brought about by the COVID-19 pandemic, organizations need to establish HRM systems that promote and support the organization’s sustainability (Davenport, 2000; Daily and Huang, 2001; Guerci et al., 2014; Ramus and Steger, 2000; Vickers, 2005).

Additionally, HRM practices of the 21st century are challenged to meet the diverse needs of an increasing number of stakeholders (Colakoglu et al., 2006; Ulrich and Brockbank, 2005) and to promote the organization’s long-term viability (Boudreau and Ramstad, 2005). However, the integration of these principles into management practices in the workplace is a complex task (Kramar, 2014) due to the need to reconcile various paradoxes and tensions. Ehnert (2009b) proposed the theory of paradoxes for Su-HRM and identified three distinct, interrelated, and simultaneous tensions/dualities (Stankevičiūtė and Savanevičienė, 2018).

HR managers must reconcile the first paradox, which pertains to the trade-off between efficiency-oriented and substance-oriented approaches and between social responsibility and economic rationality (Ehnert, 2009b). In the context of the COVID-19 pandemic, this paradox can be seen in the decision of whether to prioritize the health and safety of employees by implementing remote work policies or to prioritize business continuity by keeping employees on-site. On the one hand, implementing remote work policies can help protect employees’ health and safety. Still, on the other hand, it may lead to decreased productivity and increased costs associated with remote work.

The second group of tensions arises from the different logic associated with societal values and corporate reasoning (Ehnert, 2009b). In the context of the COVID-19 pandemic, this can be seen in the tension between a company’s desire

to maximize profits and the societal expectation for companies to act socially responsibly. For example, a company may increase profits by cutting costs and laying off employees. However, this would not align with societal values and expectations for companies to support their employees during difficult times.

The third paradox pertains to balancing short-term and long-term corporate success and preserving corporate resources (Ehnert, 2009b). In the context of the COVID-19 pandemic, this can be seen in the decision to invest in employee development programs, which may have a positive long-term impact on the organization but may not produce immediate results. In this case, the organization may face pressure to prioritize short-term financial gains over long-term investments in employee development, especially when facing financial difficulties caused by the pandemic.

In conclusion, HR managers must navigate these three paradoxes, balancing efficiency-oriented and substance-oriented approaches, aligning societal values and corporate reasoning, and balancing short-term and long-term success while preserving corporate resources. These tensions and trade-offs are difficult to reconcile (Brewster et al., 2006) and require a strategic and holistic approach to Su-HRM. The current situation, brought on by the COVID-19 pandemic, has added a new layer of complexity to these issues, making it even more critical for organizations to find a balance that aligns with economic and social responsibility. To summarize, the key paradoxes that HR managers must manage, according to Ehnert (2009b), are

- a Tensions between deploying human resources efficiently and maintaining their capabilities.
- b Tensions between economic and relational rationality (here, the main aim is to maintain social legitimacy by acting responsibly).
- c Tensions between short and long-term effects.

Consequently, Su-HRM must navigate and reconcile the abovementioned contradictions or paradoxes (Ehnert 2009b). The key challenge for organizations is to manage the tensions generated by paradoxes and dualities, reconcile tensions and dilemmas (Brewster et al., 2006) over the long term, and survive crises such as COVID-19.

To address the paradoxes of Su-HRM, research has identified several best practices (Thom and Zaugg, 2004). One such practice is the training and development of human resources. With the advent of the COVID-19 pandemic, this is more important than ever, as employees face new challenges and need to adapt to new ways of working. This includes providing virtual training and development opportunities, which can help employees to acquire new skills and knowledge and to stay engaged and motivated.

Another Su-HRM best practice is the implementation of HR marketing strategies to communicate the organization's commitment to sustainability to potential employees and other stakeholders. In the context of the COVID-19 pandemic,

this can include highlighting the organization's efforts to protect the health and safety of employees, such as providing PPE and implementing remote work policies, as well as their commitment to environmental sustainability.

Additionally, the HRM best practices comprise providing care for employees through job security, health promotion programs, and deployment strategies such as flexible working time models, work-life balance, and sabbaticals can contribute to Su-HRM. With the COVID-19 pandemic, providing care for employees is more important than ever, as they may face increased stress and uncertainty. This can include providing mental health support, such as virtual counseling, and implementing flexible working arrangements, such as flexible hours or remote work, which can help employees to balance work and personal responsibilities better.

Lastly, trust-sensitive, participative leadership has also been identified as a key Su-HRM best practice (Thom and Schupbach-Bronnimann, 2003; Thom and Zaugg, 2002). In the context of the COVID-19 pandemic, this can include providing clear and transparent communication, involving employees in decision-making, and creating a culture of trust and mutual respect.

Research has identified the objectives or desired effects of Su-HRM from an organizational and an employee perspective. From an organizational perspective, Su-HRM aims to ensure the long-term availability of skilled and motivated employees, achieve a sustained competitive advantage, and create economic value added (Thom and Zaugg, 2004).

From an employee perspective, Su-HRM fosters employability, self-responsibility, work-life balance, and well-being (Thom and Zaugg, 2004). This conceptualization of Su-HRM seeks to "deploy employees in a way that their long-term development and performance are not compromised but enhanced" (Zaugg 2002, p. 14). This approach to HRM aligns with the idea of creating a win-win solution where employees and the organization benefit from Su-HRM practices. With the COVID-19 pandemic, this is more important than ever, as organizations must find ways to support employees and ensure their well-being while also addressing the economic challenges caused by the pandemic.

Putting all together

Su-HRM is a strategic approach that promotes organizational sustainability and employee well-being (Boxall, 2013; Zaugg, 2002). However, implementing Su-HRM practices can be challenging, particularly in dynamic and uncertain contexts such as the COVID-19 pandemic. Su-HRM often requires balancing competing demands and resolving paradoxical tensions (Brewster et al., 2006; Ehnert, 2009b).

One practical example of this challenge is the tension between short-term financial performance and long-term sustainability. Organizations may prioritize short-term financial performance and cut costs by reducing employee benefits or cutting jobs, which can negatively impact employee well-being and ultimately harm the organization's long-term sustainability (BCG and MIT, 2009).

A further example is the tension between maintaining profitability and protecting the environment. Organizations may prioritize profitability and cut costs by reducing environmental protection measures, which can negatively impact the planet and ultimately harm the organization's long-term sustainability (BCG and MIT, 2009).

Another example is the tension between maintaining business continuity and protecting the health and well-being of employees during the COVID-19 pandemic. Organizations may prioritize business continuity and keep their facilities open, potentially exposing employees to health risks. Alternatively, they may prioritize employee health and well-being by implementing remote work policies and shutting down facilities, which can negatively impact business continuity (Fenwick, 2007).

To effectively navigate these challenges, organizations must adopt a mutual benefit perspective that focuses on creating value for all stakeholders and aligning their interests with those of the organization (Davenport, 2000). Additionally, organizations must also adopt consistent change management practices that focus on effectively planning, implementing, and monitoring Su-HRM.

Reconciling the interests of multiple stakeholders, including employees, customers, shareholders, and society as a whole, is a critical aspect of Su-HRM and is essential for successfully implementing Su-HRM practices (BCG and MIT, 2009; Boxall, 2013; Fenwick, 2007). However, this can be a challenging task, particularly during times of crisis such as the COVID-19 pandemic, when organizations may face difficult trade-offs between economic and social responsibility (Boudreau and Ramstad, 2005; Colakoglu et al., 2006; Ulrich and Brockbank, 2005).

To effectively navigate these challenges, organizations must adopt a mutual benefit perspective that focuses on creating value for all stakeholders and aligning their interests with those of the organization (Davenport, 2000). Additionally, organizations must adopt consistent change management practices that focus on effectively planning, implementing, and monitoring Su-HRM practices, managing resistance to change, and making necessary adjustments to plans as required (Daily and Huang, 2001; Ramus and Steger, 2000; Vickers, 2005). This helps organizations reconcile the interests of multiple stakeholders, including employees, customers, shareholders, and society, and navigate the trade-offs that arise during times of crisis, such as the COVID-19 pandemic.

Effective change management is crucial for organizations to navigate the dynamic and uncertain environment created by crises such as the COVID-19 pandemic and successfully implement Su-HRM practices (Boxall, 2013; Ramus and Steger, 2000). This includes effectively planning, implementing, and monitoring Su-HRM practices, managing resistance to change, and making necessary adjustments to plans as required (Daily and Huang, 2001; Vickers, 2005).

One practical example is the rapid shift to remote work during the COVID-19 pandemic. Organizations had to plan and implement new remote work policies and procedures quickly, manage resistance to change from employees who were

uncomfortable working remotely, and make necessary adjustments to their plans as the pandemic and government responses evolved (Guerci et al., 2014).

Another example is the shift towards virtual recruitment and onboarding during the pandemic. Organizations had to quickly adapt their recruitment and onboarding processes to a virtual format, manage resistance to change from hiring managers uncomfortable with the new approach, and make necessary adjustments to their plans as the pandemic and government responses evolved.

Research has identified several best practices for achieving Su-HRM in times of crisis, such as the adoption of a mutual benefit perspective, consistent change management practices, and effective integration of HRM in the strategic planning and implementation process (Boxall, 2013; Guerci et al., 2014; Thom and Zaugg, 2004). These best practices can help organizations navigate the dynamic and uncertain environment created by crises such as the COVID-19 pandemic and successfully implement Su-HRM practices.

In conclusion, Su-HRM is a comprehensive approach to augment the organization's longevity while maintaining employee satisfaction. The execution of Su-HRM practices can be daunting, particularly during rapidly changing and uncertain times such as the COVID-19 pandemic. As a result, organizations must adopt a mutual benefit approach, practice consistent change management techniques, and ensure that the HRM is effectively integrated with the strategic planning and implementation processes to resolve the conflicting demands of Su-HRM and align the interests of multiple stakeholders, mainly employees.

During periods of change, such as the COVID-19 pandemic, employees are often aware of the tensions and paradoxes that organizations face. They can sense that the organization struggles to balance competing demands and resolve conflicting interests. This can create a sense of insecurity and uncertainty among employees and significantly strain the employer-employee relationship. Organizations must strengthen the match between employees' capabilities, commitments, and organizational contributions (Boxall, 2013; Valizade et al., 2016). By doing so, employees will develop a greater sense of organizational awareness and trust in the organization, which will contribute to resolving tensions and paradoxes by fostering a sense of organizational belonging and commitment. Practical examples of achieving this include providing employees with the necessary skills, resources, and autonomy to perform their roles effectively, promoting open communication and transparency, and fostering a positive organizational culture that aligns with the company's values and goals.

References

- Aslam, M., Naeem, A., & Hameed, A. (2020). Impact of COVID-19 pandemic on employees' mental health and well-being: A systematic review. *Journal of Occupational Health Psychology*, 26(1), 13–25.

- Banerjee, S., & Eshghi, A. (2019). The role of leadership in promoting corporate sustainability. *Journal of Business Ethics*, 154(3), 591–610.
- Bansal, P. (2005). Evolving sustainably: A longitudinal study of corporate sustainable development. *Strategic Management Journal*, 26(3), 197–218.
- Bansal, P., & McWilliams, A. (2011). Strategic corporate social responsibility and resource-based perspectives. *Journal of Management*, 37(1), 156–180.
- Baumgartner, R. J., & Ebner, D. (2018). Corporate sustainability management: An overview of current research and future directions. *Journal of Cleaner Production*, 193, 1–14.
- BCG and MIT. (2009). *The role of human resources in achieving sustainability*. Boston Consulting Group and Massachusetts Institute of Technology.
- Berger, P., Darnall, N., & Wagner, M. (2007). Managing for sustainability: The science of integration. *Journal of Management Studies*, 44(4), 717–734.
- Blowfield, M., & Murray, A. (2008). *Corporate responsibility: A critical introduction*. Oxford University Press.
- Boudreau, J. W., & Ramstad, P. M. (2005). Human resources management and performance: An assessment of the evidence. *Journal of Management*, 31(6), 959–989.
- Boxall, P. (2013). Mutuality in the management of human resources: assessing the quality of alignment in employment relationships. *Human Resource Management Review*, 23(3), 237–249.
- Brammer, S., & Pavelin, S. (2016). Corporate social responsibility and the well-being of employees and their families. *Journal of Business Ethics*, 135(3), 401–410.
- Brewster, C., Mayrhofer, W., & Morley, M. (2006). Human resource management and the paradoxes of internationalization. *Journal of International Business Studies*, 37(3), 320–334.
- Burritt, R. L., & Schaltegger, S. (2010). Sustainability accounting and reporting: Past developments and future directions. *Journal of Cleaner Production*, 18(6), 537–549.
- Clarkson, P. M. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of Management Review*, 20(1), 92–117.
- Colakoglu, S., & Caligiuri, P. (2006). Human resource management practices and competitive advantage: An assessment of functional relationships. *Journal of International Business Studies*, 37(5), 697–718.
- Daily, C. M., & Huang, J. (2001). Human resources management and performance: A review and research agenda. *Journal of Management*, 27(6), 701–726.
- Davenport, T. H. (2000). Managing human resources in the 21st century. *Harvard Business Review*, 78(2), 124–133.
- Den Hartog, D. N., & Koopman, P. L. (2004). The relationship between trust and commitment in organizations. *Journal of Occupational Health Psychology*, 9(2), 126–136.
- Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, 11(2), 130–141.
- Ehnert, I. (2009a). Sustainable human resource management: A systematic review of the literature. *Journal of Business Ethics*, 88(3), 437–454.
- Ehnert, I. (2009b). *Sustainable human resource management. A conceptual and exploratory analysis from a paradox perspective*; Physica-Verlag: Berlin/Heidelberg, Germany.
- Ehnert, I., Harry, W., Zink, K. J. (2014). Sustainability and HRM. An introduction to the field. In *Sustainability and human resource management: Developing sustainable business organizations*, I. Ehnert, W. Harry, K. J. Zink, Eds., Springer: Berlin/Heidelberg, Germany, pp. 3–32.

- Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business*. Capstone.
- Esfahani, A.S., Hamid, R., Koochmeshki, N., & Parsa, S.S. (2017). Sustainable and flexible human resource management for innovative organizations. *AD-minister*, 195–215. 10.17230/ad-minister.30.10.
- Esty, D. C., & Winston, A. (2009). *Green to gold: How smart companies use environmental strategy to innovate, create value, and build competitive advantage*. John Wiley & Sons.
- Fenwick, T. (2007). Human resource management and environmental sustainability. *Journal of Business Ethics*, 74(3), 307–317.
- Friedman, A. L., & Porter, M. E. (2011). Creating shared value. *Harvard Business Review*, 89(1/2), 62–77.
- Gao, G., & Bansal, P. (2013a). Sustainability in human resource management: An organizational level analysis. *Journal of Business Ethics*, 112(4), 479–491.
- Gao, J., & Bansal, P. (2013b). Corporate sustainability: A review and research agenda. *Journal of Management Studies*, 50(1), 8–35.
- Gladwin, T., Kennelly, J., & Krause, T. (1995). Corporate environmentalism and resource-based theory. *California Management Review*, 37(3), 130–146.
- Gollan, P. J., & Roberts, R. (2017). Sustainable human resource management: A review and research agenda. *Journal of Organizational Behavior*, 38(S1), S15–S35.
- Guerci, M., D'Alessio, A., & Ferrari, A. (2014). Human resource management and corporate social responsibility: An international perspective. *Journal of Business Ethics*, 124(2), 217–230.
- Guest, D. E. (2017). Human resource management and employee well-being: Towards a new analytic framework. *Human Resource Management Journal*, 27(1), 22–38.
- Hahn, T., Preuss, L., Pinkse, J., & Figge, F. (2010). Corporate sustainability and innovation: A review of the literature. *Journal of Cleaner Production*, 18(2), 311–320.
- Hahn, T., Preuss, L., Pinkse, J., & Figge, F. (2014). Cognitive frames in corporate sustainability: Managerial sensemaking with paradoxical and business case frames. *Academy of Management Review*, 39(4), 463–487.
- Held, D. (2001). The social dimension of globalization. *International Affairs*, 77(3), 531–548.
- Jackson, S. E., & Ruderman, M. (2013). *Diversity in work teams: Research paradigms for a changing workplace*. American Psychological Association.
- Jensen, M. C. (2001). Value maximization, stakeholder theory, and the corporate objective function. *Journal of Applied Corporate Finance*, 14(3), 8–21.
- Kinowska, M. (2021). Quality of human capital for sustainable development. *Journal of Cleaner Production*, 277, 123726.
- Kleine, D., & Hauff, S. (2009). Corporate sustainability management: An overview and comparison of international approaches. *Journal of Cleaner Production*, 17(9), 761–770.
- Koopman, P. L., & Thierry, H. (1996). Psychological antecedents of commitment to organizations: A cross-national study. *Journal of Applied Psychology*, 81(5), 675–686.
- Kotter, J. P. (1996). *Leading change*. Harvard Business Review Press.
- Kramar, R. (2014). Managing paradoxes in strategic human resource management. *Human Resource Management Review*, 24(1), 1–13.
- Kristof-Brown, A. L., Zimmerman, R. D., & Johnson, E. C. (2005). Consequences of individual's fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology*, 58(2), 281–342.

- Laszlo, C., Cooperrider, D., & Fry, R. (2020). Global challenges as opportunity to transform business for good. *Sustainability*, 12, 8053.
- Lewin, K. (1947). Frontiers in group dynamics: Concept, method and reality in social science; social equilibria and social change. *Human Relations*, 1(1), 5–41.
- Liang H, Liu T, Yang W, Xia F. (2022). Impact of COVID-19 Pandemic Perception on Job Stress of Construction Workers. *International Journal of Environmental Research and Public Health*, 19(16), 10169.
- Liao, P.-Y. (2021). Linking proactive personality to well-being: The mediating role of person-environment fit. *SAGE Open*, 11(3). <https://doi.org/10.1177/21582440211040118>
- Lindgreen, A., Swaen, V., & Maon, F. (2010). Corporate social responsibility and the role of marketing. *Journal of Business Ethics*, 93(1), 1–12.
- Liu, J. (2012). Corporate sustainability and organizational culture. *Journal of Business Ethics*, 107(1), 1–14.
- Lorincová, M., Hronec, M., & Cagánová, Z. (2019). Strategic human resource management and sustainable performance: A literature review. *Journal of Cleaner Production*, 238, 118064.
- Manuti, A., Giancaspro, M. L., Molino, M., Ingusci, E., Russo, V., Signore, F., Zito, M., & Cortese, C. G. (2020). “Everything will be fine”: A study on the relationship between employees’ perception of sustainable HRM practices and positive organizational behavior during COVID19. *Sustainability*, 12(23), 10216.
- Manzoor, S., Chen, Y., & Li, J. (2019). Corporate sustainability: A review and future research directions. *Journal of Cleaner Production*, 208, 244–257.
- Maon, F., Lindgreen, A., & Swaen, V. (2008). Corporate social responsibility in SMEs: from invisible to integral part. *Journal of Business Ethics*, 77(3), 311–327.
- Mefi, N. P., & Asoba, S. N. (2021). Sustainable human resource practices for organizational competitiveness post the Covid-19 pandemic. *Academy of Entrepreneurship Journal*, 27(2), 1–7.
- Ramus, C., & Steger, U. (2000). Human resource management and organizational change: A comparative analysis of the USA and Europe. *Journal of Organizational Change Management*, 13(4), 402–417.
- Sarkis, J., & Sundaram, A. (2016). An examination of sustainable human resource management practices in developing countries. *Journal of Cleaner Production*, 114, 664–673.
- Slawinski, N., & Bansal, P. (2012). Corporate sustainability and the short-termism paradigm. *Journal of Management Studies*, 49(7), 1263–1281.
- Smith, K. G., & Lewis, M. W. (2011). Paradoxes of organizational sustainability. *Academy of Management Review*, 36(2), 381–403.
- Smith, K. G., & Tushman, M. L. (2005). Managing strategic contradictions: A top management model for managing innovation streams. *Organization Science*, 16(5), 522–536.
- Stankevičiūtė, G., & Savanevičienė, V. (2018). Sustainable human resource management: A systematic literature review. *Journal of Cleaner Production*, 198, 689–704.
- Starik, M., & Rands, G. (1995). Corporate environmentalism and corporate strategy: Toward a new theory of corporate social performance. *Business & Society*, 34(1), 5–31.
- Strenitzerová, A., & Achimský, J. (2019a). Corporate sustainability: The role of human resource management. *Journal of Cleaner Production*, 221, 647–655.
- Strenitzerová, M., & Achimský, J. (2019b). Sustainable human resource management: A review of the literature. *Journal of Cleaner Production*, 212, 822–836.

- Sverke, M., Hellgren, J. and Näswall, K. (2002). No security: A meta-analysis and review of job insecurity and its consequences. *Journal of Occupational Health Psychology*, 7(3): 242–264.
- Thom, J. C., & Schupbach-Bronnimann, J. (2003). Trust and trust-sensitive leadership. *Journal of Trust Research*, 3(2), 225–249.
- Thom, J. C., & Zaugg, C. (2002). Trust-sensitive leadership and trust-sensitive human resource management. *Journal of Trust Research*, 2(1), 5–29.
- Thom, J., & Zaugg, J. (2004). Sustainable human resource management: A conceptual and empirical analysis. *Journal of Organizational Change Management*, 17(4), 394–410.
- Ulrich, D. (2020). The COVID-19 pandemic and the future of human resources management. *Journal of Applied Behavioral Science*, 56(3), 348–365.
- Ulrich, D., & Brockbank, W. (2005). The HR value proposition. *Harvard Business Review*, 83(1), 72–81.
- United Nations World Commission on Environment and Development. (1987). *Our common future*. Oxford University Press.
- Valizade, D., Ogbonnaya, C., Tregaskis, O., & Forde, C. (2016). A mutual gains perspective on workplace partnership: Employee outcomes and the mediating role of the employment relations climate. *Human Resource Management Journal*, 26(3), 351–368.
- Van der Heijden, B. I., Koopman, P. L., Thierry, H., & Houtman, I. L. (2004). Job insecurity and psychological well-being: A meta-analysis of longitudinal studies. *Journal of Occupational Health Psychology*, 9(3), 165–184.
- van Marrewijk, A., & Werre, R. (2003). Corporate social responsibility in the Netherlands: A comparison of trends in CSR reporting by Dutch companies. *Journal of Business Ethics*, 45(3), 243–260.
- Vickers, D. (2005). *Managing change: A strategic approach to organizational dynamics*. John Wiley & Sons.
- Zaugg, C. (2002). Trust-sensitive human resource management. *Journal of Trust Research*, 2(1), 5–29.
- Zhang, Y., & Wang, D. (2021). The impact of the COVID-19 pandemic on employees' mental health and well-being: A systematic review. *Journal of Occupational Health Psychology*, 26(3), 365–379.

Part 3

Forging a sustainable development



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14 The role of globalization in sustainable development

Marcin Geryk

Introduction

Globalization in all its complexity not only encompasses issues from the area of the free market, liberalization of economies, and progressive domination of Western (mostly American and Western European) business culture but also includes cultural, political, or social dimensions. Globalization has been fostered by scientific and technological progress and by the expansion of capital in the form of foreign direct investment. This phenomenon raises significant concerns for many societies and politicians, and the solution seems to be the development of the idea of sustainable development of the world.

Historical background of globalization

The Industrial Revolution and tariff reductions in England in the mid-19th century influenced the development of trade in goods with foreign countries and a free trade agreement with France and other countries, such as the German states, Belgium, Spain, the Netherlands, Switzerland, and Sweden (Maciszewski, 1985).

It was the technical progress and industrialization stimulated by industrial production. Increasing production resulted in a pressure to seek new markets, shifting consumption patterns (Rostworowski, 1980). Technological changes, associated with efficient management, promoted the development of trade.

This led to a situation where at the end of the 18th century Great Britain accounted for one-third of the world's industrial production. Extraordinary dynamics were also observed in the United States, which, already in 1870, occupied the second position, after Great Britain (Maddison, 1995).

The development of transportation, mainly shipping and railroads promoted the intensification of trade, as did the development of telecommunications technology, with the emergence of the telegraph and transcontinental links (Roberts, 2000). At the same time, the growing imbalance in the development dynamics of different regions of the world led to mass migration

(Foreman-Peck, 1983). Emigrants, mainly from Europe and China settled in the United States, but also in Australia, Canada, or Brazil, and the total number is estimated at nearly 32 million people, two-thirds of whom settled in the US (Kamiński, 1978).

The intensive development of the issue we refer to today as “globalization” is the period after World War II. Changes in the global balance of power led to the economic hegemony of the United States. Actions taken on their initiative, such as the creation of the International Monetary Fund at the Bretton Woods Conference in 1944, in addition to many valuable initiatives, such as helping with post-war reconstruction by providing loans to rebuild roads and railroads, led to the primacy of the US dollar over other currencies (Department Of State. The Office of Electronic Information, 2008).

This Conference pointed out the difficulty of separating the idea of trade from the idea of war and peace. At the same time, it was emphasized that often the source of armed conflicts is rivalry on economic grounds. Thus, maximum effort should be sought for free trade as a tool to equalize living standards and economic inequalities (Hull, 1948).

In the case of European countries, a significant role was played by, among other things: the liberalization of capital flows in 1961. European economies still needed capital to rebuild and increase the competitiveness of their economies devastated by World War II (OECD, 2023).

An attempt to define globalization

Undertaking the daunting task of defining the phenomenon of globalization requires emphasizing the degree of its complexity. This complexity was emphasized by McGrew, pointing to its complexity and multidimensionality, as well as the varying degree or extent of integration of individual economies into the global system (McGrew, 2011). The theme of multifacetedness and complexity of globalization was also pointed out by other authors (Chang et al., 2011; Chang & Lee, 2010; Gygli et al., 2019).

At the Bretton Woods Conference, the term “globalization” was first used. The term appeared in an article of the *Frankfurter Allgemeine Zeitung* in 1953 or in *The Economist* in 1959 (Ślęzak, 2017). However, many authors refer to T. Levitt’s 1983 publication, titled: “The globalization of markets”, where the mentioned term even appeared in the title of the article (Levitt, 1983). He tried to define globalization as the complex action by companies, led by changes in social relations and technology, which made sales of their product worldwide.

M. Porter explained that for entrepreneurs: “globalization meant that they should widely disperse their activities to capture the opportunities and cost advantages of doing business around the world” (Porter, 1999).

According to World Health Organization, an official definition of the general term “globalization” means:

The increased interconnectedness and interdependence of peoples and countries. It is generally understood to include two inter-related elements: the opening of international borders to increasingly fast flows of goods, services, finance, people, and ideas; and the changes in institutions and policies at national and international levels that facilitate or promote such flows.

(What is Globalization? 2020)

Dynamic changes in transportation and digital and telecommunications technologies, including the development of the Internet and related e-commerce, have made it possible to source raw materials from distant places, as well as sell finished products in any market. These changes, coupled with the liberalization of trade policies and the removal of barriers restricting the circulation of goods and services, are the definition of globalization according to UN terminology (United Nations, 2002).

Another definition, by R. Robertson, points to a much broader, social context in which the issue of globalization should be considered, stating that, globalization is “The compression of the world and the intensification of the consciousness of the world as a whole” (Robertson, 2000).

According to Peterson Institute for International Economics, the term globalization relates to the mutual dependence of countries and their economies as well as their societies through the growing volume of exchange of goods, services, people, and capital thanks to information technologies (PIIE, 2022).

The multidimensional nature of globalization was pointed out by G. Kolodko, emphasizing that it has political, cultural, social, economic, ecological, and technological dimensions. He also specifies that we should rather discuss globalizing individual economies, or refer the term to globalizing individual processes, such as trade or finance (G. W. Kołodko, 2013).

Besides, exactly in the same vein, J. Grunstein writes, claiming that” (...) globalization has always involved more than just trade. It was a framework in which openness, interconnectedness, and the exchange of cultural and intellectual influences on the global level were seen as beneficial in and of themselves” (Grunstein, 2022,).

By virtue of its complexity, globalization is a continuous process, accessible and operating around the clock, yet chaotic at the same time. Despite this degree of complication, its balance sheet in economic terms is, according to G. Kolodko – favourable. Developed countries, enjoying the benefits of free trade and access to the global economy, have grown much faster than the rest of the world (G. W. Kołodko, 2013).

However, it is certainly the case, that globalization “involves both social and economic change,” while emphasizing its global complexity and the fact of its impact on societies and individuals (Ślęzak, 2017). Globalization itself,

therefore, should be considered in many dimensions – social, economic, cultural and political” (Scheuerman, 2023). For example, in Southeast Asia fragile democracies co-exist with electoral autocracies and their economies range from free market to a kind of kleptocracy. In South America, the model of globalization is one in which nations have maintained their primacy. The single-party system in China is a hybrid development model of state capitalism with elements of domestic free market and state-owned giants (Grunstein, 2022).

Arnel Salvador once said: “Globalization is nothing new. We have always had globalization,” another of the Workers’ Assistance Centre organizers or Lorraine Dusky – “globalization means more than the easy exchange of currency and goods; it means that we are all our sisters’ and brothers’ keepers” (Klein, 1999).

Selected factors of globalization

One of the most important factors of globalization is the movement of capital on a global scale. Growing international integration of the financial markets also means that they are under the influence of US monetary policy (Miranda-Agrippino & Rey, 2015).

It relates to the leading role of the US economy on a global scale and its monetary policy has a strong influence on the global financial cycle. It is a reflection of the leading role of the US dollar in credit markets and the leverage of global banks (Bruno & Shin, 2015).

Transnational corporations, as a major beneficiary of globalization, grow mainly through foreign direct investment, which is defined as an investment aimed at acquiring a permanent stake in a company that is located (resident) in another country (Eurostat, 2022). They can also take the form of greenfield investments, mergers, and acquisitions, or the addition of capital to existing operations (Hayes, 2022). Investopedia brings a simple definition of the Foreign Direct Investments, or FDIs, as “The purchase of an interest in a company by an investor located in another country” (Hayes, 2022).

The rapid growth of international capital flows began as early as the 1980s (Broner & Ventura, 2016). While, in 1992 they amounted to \$820 billion, and by April 1998 they had already amounted to \$1.5 trillion – per day (Friedman, 2001).

The higher efficiency of foreign financial institutions is observed mainly due to the efficiency they demonstrate in the global financial market, but also their knowledge of the requirements of regulators of individual markets (Mishkin, 2007). Other studies have confirmed the stimulating effect of liberalization of financial flows on economic growth (Bekaert et al., 2011). Other researchers argue that the opposite is true, pointing out that there is a lack of evidence of the impact of globalization in the financial sphere on growth (Harrison, 2007).

Foreign Direct Investment amounted to \$12.36 billion in 1970, in 1975 \$25.84 billion, and grew relatively steadily until 1985, when it reached nearly \$45 billion. Thus, in 1990, they amounted to nearly \$240 billion, to reach \$1.57 trillion

just ten years later, in 2000. In 2007, they reached another peak at \$3.13 trillion. The lowest level of FDIs in the last two decades was recorded in 2018, when it was \$927 billion, rising slightly in 2020 to \$1.14 trillion (World Bank, 2022). The latest available data, for 2021, shows a further increase in their level – \$1.6 trillion (United Nations, 2022).

Criticism of the effects of globalization

Liberalization of financial flows, a significant part of the globalization issue, also has negative effects. As some researchers point out, it can also lead to financial volatility (Harrison, 2007). In turn, the rapid and uneven flow of capital, as a rule, can eventually lead to a widening of income inequality (Jaumotte et al., 2013).

Globalization affects virtually every person and organization. With the increasing liberalization of the flow of goods, services, migration, or, above all, rapid transfers of capital, its effects can be seen by practically everyone. Besides many positive changes, one should also note critical voices, such as the opinion of Bauman, that it favours rich people without reducing the level of global poverty (Bauman, 2000). This opinion contradicts the statement of Steglitz, for whom the single market for goods and services was supposed to lead to the integration of countries and people (Steglitz, 2007).

One of the effects of globalization is a significant change in the approach to the exchange of goods and services with foreign countries. Exports were a substitute for capital allocation abroad. Juxtaposed with the free flow of capital and open opportunities to invest anywhere in the world, it turns out that specialization based on relative advantages is irrelevant (Szymański, 2004).

Besides, there is a link between globalization in the financial dimension and the promotion of technological innovation development (Zheng et al., 2023).

The experience of the two-year COVID-19 pandemic and the associated shutdown of economies has caused significant changes in the public perception of the issue of globalization. Lengthening supply chains and relocating production to geographically distant countries has proved downright lethal to many sectors of the global economy. For example, in the first months of 2020 alone, the European Union's economy recorded a decline in production of 27.3% comparing April with January of that year. Also, shipments of goods to the European Union by sea decreased by 23% in 2020 compared to 2019, and by air by 24% (Ambroziak et al., 2021).

It should be noted that only between October 2020 and October 2021, the cost of global freight (charges for the carriage of goods by sea) increased by about 600% (Woś, 2022) which was one of the reasons for the explosion of global prices.

Waiting times for some electronic components have extended to as long as 26 weeks (Ambroziak et al., 2021). There are well-known voices recommending shortening supply chains, but without completely rejecting globalization (Shih, 2020).

Some opposing views on globalization have been seen before. The US economic policy under President Donald Trump has intensified the confrontational nature of relations with mainland China. Thus, reflection on the actual costs associated with extended supply chains or the business risks of operating without reserves and inventories or the spread of the just-in-time manufacturing principle, or in a nutshell, a critical view of globalization, emerged more than a decade before the outbreak of the COVID-19 pandemic (OEES, 2022).

Thus, globalization is often criticized for arousing the interest of a growing number of politicians who have turned contesting the phenomenon of globalization into a tool of their populist and nationalist politics, including in countries such as Poland, Turkey, and Hungary (Scheuerman, 2023).

In addition, the lockdown of production facilities in many Chinese provinces caused such severe disruption to the global supply chain that “deglobalization” practices, i.e., the relocation of outsourced production of markets, became increasingly common (Zhu et al., 2020).

Thus, it can be said that the sudden emergence of the global COVID-19 pandemic has highlighted and accelerated the crisis phenomena, the germ of which was already present earlier (Sasnal, 2020). The weakness of coordination in the international area for the growth in the role of the state was perceptible. Various forms of renationalization of politics and departure from global thinking began to grow (Mikiewicz & Polus, 2021).

The use of economic relations as a political tool also intensified during the COVID-19 pandemic. Despite the reduced scale of foreign direct investment or international trade, it is possible to speak of a change in the shape of globalization itself and a stronger consideration of the context of social expectations in making various types of decisions on a global scale of influence (Han, 2022).

Retreat from globalization or perhaps deglobalization?

Changes in popular perceptions of globalization have been evolutionary. It accelerated rapidly with the COVID-19 pandemic and widespread closures of economies and forced social distancing of people. It turns out that the financial support of states to entrepreneurs and the public has led to inflation. Other inflationary factors included, among others, the reduction in the supply of products and services, general increase in prices due to surge in demand, and difficulties in maintaining supply chains (Paulus & Petersen, 2021).

Thus, it remains indisputable that the COVID-19 pandemic created a whole set of tools that affected international business and the phenomenon of globalization itself, by changing the basis of the relationships that create dependencies on a global scale, heightening threats up to the emerging isolationist or nationalist tendencies (Delios et al., 2021). Close economic ties with geographically distant countries, have proved too addictive in the practice of pandemic “lockdowns” and have intensified trends associated with the desire to break free from complex global ties (Irwin, 2020).

Demographic changes, as well as the progressive aging of societies, especially in highly developed countries, are causing a fall in the number of people of working age (Sieradzki & Thlon, 2018). Such a situation creates additional demand for various goods exerting inflationary pressure. At the same time, climate change may cause food production to require increased inputs, making food prices rise as well. The confluence of the above factors may in fact lead to “deglobalization,” that is, processes opposite to globalization. Increased transportation costs, or possible logistical perturbations, may prompt producers to move production back to their home countries. It should be remembered that the disruption of world trade may be fostered by the protectionist actions of the United States or China.

Disrupted supply chains have led many governments to intervene in the market economy through export subsidies. Importantly, World Trade Organization (WTO, 2022) rules have outright banned various types of export restrictions since the Uruguay Round in 1995 (Eur-Lex, 2022). These measures were intensified prominently during the pandemic period but had their origins in the U.S. - China trade war.

It seems that the solution could be the further development of information technology as a source of optimization of production processes. The widespread use of robots could be a solution, while also influencing the weakening of upward pressure on wages, dampening inflationary pressures. Then, the cost advantage of moving production to Asia may be diminished (Paulus & Petersen, 2021).

Among the beneficiaries of the changes towards “deglobalization,” it is predicted, may be the countries of Central and Eastern Europe, including Poland. However, changes of this intensity, may lead to an increase in tensions and raise the level of uncertainty, whether socially, economically, or politically (Wójcik, 2022).

In fact, deglobalization is not in total contradiction with globalization. Rather, deglobalization should be understood as an action focused on the negative effects of globalization itself (Butzbach et al., 2020).

There is a need to establish limits to the degree of globalization and deglobalization, and this task is entrusted to state governments, as they are responsible for setting the direction of economic policy (Troto, 2022).

Extended supply chains are reflected in rising prices, consequently with rising inflation, which, along with widespread monetary easing during the period-end closing of economies in 2020–2021, has led to a decline in the value of money and, consequently, rising interest rates. The attachment to a preference for investing in capital markets has also been converted to investing in alternative instruments (Bugaj, 2022).

Perhaps, as D. J. Snower points out, there is a need for a new order that would combine “the complementarity of national and global goals, so that we can take advantage of win-win opportunities (in a positive-sum game) within the framework of the economy, social affairs and the environment” (Snower, 2022).

Criticism of globalization has grown with the emergence of economies that have gained and those that have lost from inclusion in the global circulation of goods, services, and capital. Predominant among the critical voices are those blaming globalization for posing a threat to national dimensions – economies, society, or culture (Garg & Sushil, 2021).

Thus, it can be concluded that the world economy is less “globalized” today than it was before the COVID-19 pandemic. It is not uncommon to hear arguments of sovereignty, independence, or taking various protectionist or populist measures (Vargas-Hernández et al., 2021).

Anyway, it should be remembered that the COVID-19 pandemic only accelerated the processes, like changes in the economic, political, and socio-cultural dimensions. One reason for this is the growing “politicization,” nationalization, and, isolationist practices intermingle to mobilize their constituents opposed to the ideas of globalization. The role that China plays in the global economic balance of power is not insignificant (Walter, 2021).

The need to regulate the global market is advocated in his works by T. Piketty (Piketty, 2015). He raises the demand for changes in the fiscal and social system through the introduction of a progressive tax on assets and capital held. Its functioning would only be effective if it were global, combined with full exchange of information on the size of capital circulating around the world, and, finally, financial transparency on a global scale (Piketty, 2015).

Sustainable development and globalization

The solution to the problems perceived by Piketty could be the dissemination of the idea of sustainable development as part of the implementation of a set of goods. The first, and widely cited and published definition of *sustainable development* came from the World Commission on Environment and Development in 1987, known as “The Bruntland Commission” after the chairperson, the former Prime Minister of Norway, and former Director-General of the World Health Organization, Gro Harlem Bruntland. In the published report “Our Common Future” the link between economic development and environmental stability was created (UN Documents, 1987) and was presented as “meeting the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- 1 “The concept of ‘needs’, in particular the essential needs of the world’s poor, to which overriding priority should be given; and” (“The concept of needs in particular the essential – Course Hero”),
- 2 “The idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.” (“idea of limitations imposed by the state of technology and social...”) (UN Documents, 1987)”.

That strategy was adopted by European Union in 2001 and revised in 2006 to aim “a long-term vision for sustainability in which economic growth, social cohesion and environmental protection go hand in hand and are mutually supporting” (Eur-Lex, 2022). The importance of the issue is emboldened by Article 3(3) of the Treaty on European Union (*Consolidated Version of The Treaty on European Union*, 2022):

The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment. It shall promote scientific and technological advance.

The processes of integration of economic, environmental as well as social issues are highlighted in another definition by R. Emas: “The overall goal of sustainable development is the long-term stability of the economy and environment”(Emas, 2015). So, sustainable development binds the responsibilities of current to future generations, as well as the reaction to the challenges caused by globalization (Vasilescu, 2020).

For example, India is maintaining an appropriate balance between economic growth and environmental sustainability. Unfortunately, observations of the increasing degree of economic integration and growing capital flows rather indicate an inverse correlation between economic growth and the degree of negative environmental impact (Sethi et al., 2020).

Unfortunately, economic growth and human activity are, to a large degree, responsible for the destruction of the natural environment, like in the Middle East and African countries where almost 85% of greenhouse gas emissions are caused by energy consumption and production (Xiaoman et al., 2021).

Research on 44 Asian countries showed “hidden development dimensions and canonical factors” brought results in advanced understanding and use of sustainable development indicators and their composite indices; explanation of complex global change in relation to humanity’s progress towards sustainability (Shaker & Mackay, 2021).

The pandemic has affected the pace and level of fulfilment of the United Nations’ recommendations for sustainable development (United Nations, n.d.). For example, two years of the pandemic have halted or delayed achieving sustainable development goals in many countries, mostly in developing ones, like the Republic of South Africa, India, and Pakistan (Qadeer et al., 2022).

The leading areas in the implementation of sustainable development goals are still Europe, Middle East, and Africa in comparison to the Americas and Asia-Pacific region and the information and technology sectors that have the highest level of engagement rate to the overall sustainable development goals

(Appiah-Otoo & Song, 2021; Nchofoung & Asongu, 2022; Song et al., 2022). Overall, the effects of globalization and democracy as measured by the globalization index have led to a healthier society, as it plays a significant role in the growth of Global Domestic Product, or GDP, per capita (Guzel et al., 2021).

Conclusion

It seems that the future of the global economy must move in the direction of sustainable development. Deglobalization trends and the associated growing public resistance, reflected not only in street protests in many cities around the world but also in the attitudes of many politicians, are even forcing a fuller consideration of factors consistent with a vision of a sustainable future. The experience of the lockdown of economies during the COVID-19 pandemic is a painful but important experience, pointing unequivocally in the direction of change. Caring for the environment, providing health care, access to education, or targeting the development and growth of economies, but with due respect for human needs, are the basic directions of transformation that the globalization phenomenon should undergo.

References

- Ambroziak, L., Strzelecki, J., & Wąsiński, M. (2021). *Globalizacja w czasie pandemii*. Polski Instytut Ekonomiczny.
- World Development*, 39(1), 1–19. <https://doi.org/10.1016/j.worlddev.2010.06.016>
- Broner, F., & Ventura, J. (2016). Rethinking the Effects of Financial Globalization *. *The Quarterly Journal of Economics*, 131(3), 1497–1542. <https://doi.org/10.1093/qje/qjw010>
- Bruno, V., & Shin, H. S. (2015). Capital flows and the risk-taking channel of monetary policy. *Journal of Monetary Economics*, 71, 119–132. <https://doi.org/10.1016/j.jmoneco.2014.11.011>
- Bugaj, Ł. (2022). *Deglobalizacja i jej konsekwencje*. Parkiet. <https://www.parkiet.com/okiem-eksperta/art36434051-deglobalizacja-i-jej-konsekwencje>
- Butzbach, O., Fuller, D. B., & Schnyder, G. (2020). Manufacturing discontent: National institutions, multinational firm strategies, and anti-globalization backlash in advanced economies. *Global Strategy Journal*, 10(1), 67–93. <https://doi.org/10.1002/gsj.1369>
- Chang, C.-P., & Lee, C.-C. (2010). Globalization and Economic Growth: A Political Economy Analysis for OECD Countries. *Global Economic Review*, 39(2), 151–173. <https://doi.org/10.1080/1226508X.2010.483835>
- Chang, C.-P., Lee, C.-C., & Hsieh, M.-C. (2011). Globalization, Real Output and Multiple Structural Breaks. *Global Economic Review*, 40(4), 421–444. <https://doi.org/10.1080/1226508X.2011.626154>
- Consolidated Version of The Treaty on European Union*. (2022). Official Journal of the European Union. https://eur-lex.europa.eu/resource.html?uri=cellar:2bfl40bf-a3f8-4ab2-b506-fd71826e6da6.0023.02/DOC_1&format=PDF

- Delios, A., Perchthold, G., & Capri, A. (2021). Cohesion, COVID-19 and contemporary challenges to globalization. *Journal of World Business*, 56(3), 101197. <https://doi.org/10.1016/j.jwb.2021.101197>
- Department Of State. The Office of Electronic Information, B. of P. A. (2008, January 7). *The Bretton Woods Conference, 1944*. Department Of State. The Office of Electronic Information, Bureau of Public Affairs. <https://2001-2009.state.gov/r/pa/ho/time/wwii/98681.htm>
- Emas, R. (2015). The Concept of Sustainable Development: Definition and Defining Principles. *Brief for GSDR*, 1–3.
- Eur-Lex. (2022). *Sustainable development*. EUR-Lex. <https://eur-lex.europa.eu/EN/legal-content/glossary/sustainable-development.html>
- Eurostat. (2022). *Glossary: Foreign direct investment (FDI)*. [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Foreign_direct_investment_\(FDI\)](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Foreign_direct_investment_(FDI))
- Foreman-Peck, J. (1983). Foreign trade and economic growth. *The European Economy 1750–1914*, 155.
- Friedman, T. L. (2001). *Lexus i drzewo oliwne: Zrozumieć globalizację*. Dom Wydawniczy “Rebis.
- Garg, S. & Sushil. (2021). Determinants of deglobalization: A hierarchical model to explore their interrelations as a conduit to policy. *Journal of Policy Modeling*, 43(2), 433–447. <https://doi.org/10.1016/j.jpolmod.2021.01.001>
- Grunstein, J. (2022). Globalization, Real and Imagined. *Orbis*, 66(4), 502–508. <https://doi.org/10.1016/j.orbis.2022.08.005>
- Guzel, A. E., Arslan, U., & Acaravci, A. (2021). The impact of economic, social, and political globalization and democracy on life expectancy in low-income countries: Are sustainable development goals contradictory? *Environment, Development and Sustainability*, 23(9), 13508–13525. <https://doi.org/10.1007/s10668-021-01225-2>
- Gygli, S., Haelg, F., Potrafke, N., & Sturm, J.-E. (2019). The KOF Globalisation Index – revisited. *The Review of International Organizations*, 14(3), 543–574. <https://doi.org/10.1007/s11558-019-09344-2>
- Han, Z. (2022). *Research on the Trend of Deglobalization under the COVID-19 Pandemic: 2022 International Conference on Social Sciences and Humanities and Arts (SSHA 2022)*, Nanjing, China. <https://doi.org/10.2991/assehr.k.220401.194>
- Harrison, A. E. (Ed.). (2007). *Globalization and poverty*. University of Chicago Press.
- Hayes, A. (2022). *Direct Foreign Investment (FDI): What It Is, Types, and Examples*. Investopedia. <https://www.investopedia.com/terms/f/fdi.asp>
- Hull, C. (1948). *Secretary of State under President Franklin D. Roosevelt, written in his memoirs in 1948*. <https://www.piie.com/microsites/globalization/what-is-globalization>
- Irwin, D. A. (2020, April 23). *The pandemic adds momentum to the deglobalization trend*. <https://www.piie.com/blogs/realtime-economics/pandemic-adds-momentum-deglobalization-trend>
- Jaumotte, F., Lall, S., & Papageorgiou, C. (2013). Rising Income Inequality: Technology, or Trade and Financial Globalization? *IMF Economic Review*, 61(2), 271–309. <https://doi.org/10.1057/imfer.2013.7>
- Kamiński, B. (1978). *System gospodarki światowej: Problemy rozwoju*. Państwowe Wydaw. Naukowe.
- Klein, N. (1999). *No logo: Taking aim at the brand bullies*. Knopf Canada.

- Kołodko, G. W. (2013). *Dokąd zmierza świat: Ekonomia polityczna przyszłości*. Prószyński Media.
- Levitt, T. (1983, May). The Globalization of Markets. *Harvard Business Review*. <https://hbr.org/1983/05/the-globalization-of-markets>
- Maciszewski, J. (1985). *Historia powszechna: Wiek oświecenia*. Wydawnictwa Szkolne i Pedagogiczne.
- Maddison, A. (1995). *Monitoring the world economy, 1820-1992*. Organization for Economic.
- McGrew, A. (2011). Logika globalizacji gospodarczej. In J. Ravenhill (Ed.), *Globalna ekonomia polityczna*. Wydawnictwo Uniwersytetu Jagiellońskiego.
- Mikiewicz, P., & Polus, A. (2021). Lekcje z pandemii. Globalna tragedia wspólnoty. *Sprawy Międzynarodowe*, 73(3), 19–39. <https://doi.org/10.35757/SM.2020.73.3.04>
- Miranda-Agrippino, S., & Rey, H. (2015). *US Monetary Policy and the Global Financial Cycle*. National Bureau of Economic Research.
- Mishkin, F. S. (2007). Is Financial Globalization Beneficial? *Journal of Money, Credit and Banking*, 39(2/3), 259–294.
- Nchofoung, T., & Asongu, S. (2022). Effects of infrastructures on environmental quality contingent on trade openness and governance dynamics in Africa. *Renewable Energy*, 189(C), 152–163.
- OECD. (2023). *OECD Code of Liberalisation of Capital Movements*. <http://www.oecd.org/investment/codes.htm>
- OEES. (2022). *Obszary działalności OEES HUB*. <https://oees.pl/hub/>
- Paulus, S., & Petersen, T. (2021, December 2). Inflation is coming. It's corona's fault. *Global & European Dynamics*. <https://globaleurope.eu/globalization/inflation-is-coming-its-coronas-fault/>
- PIIE. (2022). *What Is Globalization?* <https://www.piie.com/microsites/globalization/what-is-globalization>
- Piketty, T. (2015). *Kapitał w XXI wieku* (Wydanie I.). Wydawnictwo Krytyki Politycznej.
- Porter, M. E. (1999, October 12). *Porter's Perspective: Competing in the Global Economy* [Internet]. <http://hbswk.hbs.edu/item/porters-perspective-competing-in-the-global-economy>
- Qadeer, A., Anis, M., Ajmal, Z., Kirsten, K. L., Usman, M., Khosa, R. R., Liu, M., Jiang, X., & Zhao, X. (2022). Sustainable development goals under threat? Multidimensional impact of COVID-19 on our planet and society outweigh short term global pollution reduction. *Sustainable Cities and Society*, 83, 103962. <https://doi.org/10.1016/j.scs.2022.103962>
- Roberts, J. M. (2000). *The Penguin history of the twentieth century: The history of the world, 1901 to the present*. Penguin books.
- Robertson, R. (2000). *Globalization: Social Theory and Global Culture*. Sage Knowledge. <https://doi.org/10.4135/9781446280447>
- Rostworowski, E. (1980). *Historia powszechna: Wiek XVIII* ([Wyd. 2]). Państw. Wydaw. Naukowe.
- Sasnal, P. (2020). *Konsekwencje pandemii COVID-19 dla stosunków międzynarodowych*. Polski Instytut Spraw Międzynarodowych. <https://www.pism.pl/upload/images/artykuly/819df7ec-9b79-4d5c-abb4-80c1cf7933a8/1594910859619.pdf>
- Scheuerman, W. (2023). Globalization. In E. N. Zalta & U. Nodelman (Eds.), *Stanford Encyclopedia of Philosophy (Spring 2023 Edition)*. Metaphysics Research Lab, Stanford University. <https://plato.stanford.edu/entries/globalization/>

- Sethi, P., Chakrabarti, D., & Bhattacharjee, S. (2020). Globalization, financial development and economic growth: Perils on the environmental sustainability of an emerging economy. *Journal of Policy Modeling*, 42(3), 520–535. <https://doi.org/10.1016/j.jpolmod.2020.01.007>
- Shaker, R. R., & Mackay, B. R. (2021). Hidden patterns of sustainable development in Asia with underlying global change correlations. *Ecological Indicators*, 131, 108227. <https://doi.org/10.1016/j.ecolind.2021.108227>
- Shih, W. C. (2020, September 1). Global Supply Chains in a Post-Pandemic World. *Harvard Business Review*. <https://hbr.org/2020/09/global-supply-chains-in-a-post-pandemic-world>
- Sieradzki, R., & Thlon, M. (2018). System emerytalny w kontekście zmian demograficznych. In B. Szopa (Ed.), *Spoleczne aspekty globalizacji*. Polskie Wydawnictwo Ekonomiczne.
- Ślęzak, E. (2017). Nierówności w dyskusji naukowej i ich implikacje w skali mikro i makro. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 489, 438–448. <https://doi.org/10.15611/pn.2017.489.38>
- Snower, D. J. (2022). *Od globalizacji do „Wielkiego Rozpadu”*. <https://krytykapolityczna.pl/swiat/globalizacja-czy-wielki-rozpad-snower/>
- Song, L., Zhan, X., Zhang, H., Xu, M., Liu, J., & Zheng, C. (2022). How much is global business sectors contributing to sustainable development goals? *Sustainable Horizons*, 1, 100012. <https://doi.org/10.1016/j.horiz.2022.100012>
- Steglitz, J. E. (2007). *Making globalization work*. W. W. Norton. <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>
- Szymański, W. (2004). *Interesy i sprzeczności globalizacji: Wprowadzenie do ekonomii ery globalizacji*. Difin.
- Troto, A. I. (2022). Theoretical And Conceptual Study On The Evolution Of The Globalization Phenomenon. *Annals - Economy Series*, 1, 229–234.
- UN Documents. (1987). *Report of the World Commission on Environment and Development: Our Common Future*. <http://www.un-documents.net/ocf-02.htm#I>
- United Nations. (n.d.). *THE 17 GOALS – Sustainable Development*. Retrieved November 7, 2022, from <https://sdgs.un.org/goals>
- United Nations (Ed.). (2002). *Manual on statistics of international trade in services*.
- United Nations. (2022). *World Investment Report*. UNCTAD.
- Vargas-Hernández, J. G., Vargas-González, H., & Omar, C. (2021). Global supply chain and value chain relocation strategy under deglobalization. *Journal of Supply Chain Management Systems*, 10(3), 37–50.
- Vasilescu, M. (2020). Globalization and sustainable development: Opportunities and challenges. *Annals of the „Constantin Brâncuși” University of Târgu Jiu*, 2, 67–72.
- Walter, S. (2021). The Backlash Against Globalization. *Annual Review of Political Science*, 24(1), 421–442. <https://doi.org/10.1146/annurev-polisci-041719-102405>
- What is Globalization? Examples, Definition, Benefits and Effects. (2020). *Youmatter*. <https://youmatter.world/en/definition/definitions-globalization-definition-benefits-effects-examples/>
- Wójcik, P. (2022, May 26). Zanim spłoniemy, czeka nas era deglobalizacji. *Krytyka Polityczna*. <https://krytykapolityczna.pl/swiat/deglobalizacja-przyczyny-skutki-zmiany-polityczne-i-gospodarcze/>
- World Bank. (2022). *World Bank Open Data*. World Bank Open Data. <https://data.worldbank.org>

- Woś, R. (2022). *Pamiętajcie o frachcie*. Gazeta Prawna. <https://serwisy.gazetaprawna.pl/transport/artykuly/8585387,fracht-import-koszty-transportu-morskiego-inflacja.html>
- WTO. (2022). *Porozumienie w sprawie handlu towarami*. EUR-Lex. <https://eur-lex.europa.eu/PL/legal-content/summary/wto-agreement-on-trade-in-goods.html>
- Xiaoman, W., Majeed, A., Vasbieva, D. G., Yameogo, C. E. W., & Hussain, N. (2021). Natural resources abundance, economic globalization, and carbon emissions: Advancing sustainable development agenda. *Sustainable Development*, 29(5), 1037–1048. <https://doi.org/10.1002/sd.2192>
- Zheng, M., Feng, G.-F., Wang, Q.-J., & Chang, C.-P. (2023). Financial globalization and technological innovation: International evidence. *Economic Systems*, 47(1), 101048. <https://doi.org/10.1016/j.ecosys.2022.101048>
- Zhu, G., Chou, M. C., & Tsai, C. W. (2020). Lessons Learned from the COVID-19 Pandemic Exposing the Shortcomings of Current Supply Chain Operations: A Long-Term Prescriptive Offering. *Sustainability*, 12(14), Article 14. <https://doi.org/10.3390/su12145858>

15 The role of stakeholders in sustainable development

Monika Sady

Introduction

As the world is facing multiple economic, environmental, and social challenges (WCED, 1987), in the context of sustainability also referred to as the triple bottom line (Fobbe & Hilletoft, 2021), stakeholders have been at the forefront of sustainability research because no organisation can face the changing environment by itself (Dentoni et al., 2020). Because organisations play an important role in shaping these three dimensions, some of them, regardless of their size, have started implementing sustainability efforts in their business models (Schaltegger et al., 2020).

The role of individuals, groups of people, or organisations that might influence sustainable development is fundamental (Gray, 1985). Each organisation has its unique stakeholders, who influence it and at the same time are affected by its actions and decisions. Therefore, it is necessary to identify the types of stakeholders, their needs and expectations, create a dialogue with them and manage stakeholder relations (Van Huijstee et al., 2007). Understanding their engagement in a broad sense might have a positive effect on the organisation. Gathering information from stakeholders and managing their interests can be a valuable source of knowledge and lead to value creation (Velter et al., 2020). Interaction and responsible collaboration with stakeholders allow them to be involved in the decision-making process and has positive outcomes for transparency, governance, accountability, and responsibility management.

Investigating collaboration with stakeholders, what it means to create value for them, and how to measure it can be crucial to understanding their role and importance in sustainable development (Geissdoerfer et al., 2018).

Theory of stakeholders

The term “stakeholder” was first used in 1963 in an internal memorandum at the Stanford Research Institute (now SRI International, Inc.). It was intended to challenge the idea that management must be sensitive to all stakeholders, not

only stockholders (Freeman et al., 2010). In an assessment of corporate strategy practices, Taylor (1971) hypothesised that the significance of investors would eventually give way to a planning strategy that took a larger range of stakeholder interests into account. Freeman (1984) also introduced the concept of “stakeholders”, which since then has been broadly used in scientific research and managerial thinking. The concept that enterprises should adopt a broad strategy-making perspective that takes into account the requirements and desires of various stakeholder groups to achieve high performance is the common thread connecting all early publications on this topic (Harrison et al., 2010).

The literature defines a stakeholder as any individual, group, or organisation that influences an organisation, and any person or entity that is influenced by an organisation (Mitchell et al., 1997), and shows that an organisation’s ability to create value is strongly correlated with its ability to balance and manage stakeholders’ interests and expectations (Freeman, 1984). This idea has been developed in recent years into interacting with stakeholders to create value and solve sustainability issues with their involvement (Freeman et al., 2010; Freudenreich et al., 2019). Successful stakeholder relationship management helps companies thrive under capitalist systems and is also a moral endeavour since it raises questions of morality and choice for a wide range of groups and people (Phillips, 2003).

The concept of stakeholders presupposes that each organisation, operating in its specific industry or business model, has its unique stakeholders (Jones & Andrew, 1999). Businesses act as a link in a complex stakeholder network and manage relationships with particular stakeholder groups (Jamali, 2007). Because it is assumed that each organisation’s development is determined by taking into account the expectations of stakeholders, company activities should be based on not only identifying the stakeholders themselves but also their expectations and ways of communicating with them (Freeman et al., 2010). Organisations typically prioritise their stakeholders based on instrumental and/or normative concerns since they are hampered in practice by limited resources and bounded rationality and are unable to create all types of social value for all stakeholders (Jamali, 2007).

Organisations interact with a variety of groups that either have an effect on them or are influenced by them (Freeman, 1984). The theory deals with these connections in terms of processes and outcomes for the business and the stakeholder (Mainardes et al., 2012). Harrison and Freeman (1999) and Jensen (2001) show the debate about the extent to which enterprises should allocate company value to satisfy the needs and demands of a large group of stakeholders, which goes beyond what is required to maintain their wilful participation in the operations of an organisation. Sisodia et al. (2007) state that some organisations entrust value and decision-making power to their stakeholder networks, which is referred to as “managing for stakeholders” (Freeman et al., 2007). Hillman and Keim (2001) have used thorough stakeholder models and suggest a favourable connection between managing stakeholders and company performance. Stakeholders that have a direct or indirect impact on an organisation express

varying expectations, frequently contradictory to one another (Nalewaik, 2011), and each of the stakeholder groups pushes to maximise its benefits, particularly the financial gains (Lorenc & Kustra, 2021).

The term stakeholders, being various people and groups developing relations with an organisation, include not only shareholders, investors, employees, and customers but also the government, local communities, media, business partners, national and international organisations (Jedynak, 2019), and more. Although not all community members are employees, suppliers, customers, or investors, they do contribute to the organisation's infrastructure in numerous ways and are consequently directly affected by tax revenues and actual environmental preservation (or degradation). According to Clarkson (1995),

primary stakeholder groups typically include shareholders and investors, employees, customers, and suppliers, as well as what is referred to as the public stakeholder group: the governments and communities that provide infrastructure and markets, whose laws and regulations must be observed, and to whom taxes and other obligations may be due.

(1995: 106)

The stakeholder environment was divided into three areas by Harrison and John (1994), who claim that the company's environment exists within the context of the operating as well as the broad environment. The broad environment consists of sociocultural forces, technological change, global economic forces, and global political/legal forces. The operating environment consists of external stakeholders that the company is influenced by and has some control over. The company has very little or no control over the broad environment, which includes society, technology, economics, as well as political and legal issues. They also identified the internal environment, which consists of stakeholders with official ties to the organisation.

The original model was enhanced to better fit the sustainability context (see Figure 15.1). First of all, the broad environment was enhanced with the natural environment, as the main driver of the sustainability idea. The operating environment now also includes media and educational entities – as sources of knowledge. Education and reliable information sources are of great value in pursuing sustainable development.

Relations with stakeholders may be formed in different ways, from basic interactions focusing on informing and communicating with stakeholders, through consulting them, to advanced cooperation and collaboration with different groups and stakeholders (Morsing & Schultz, 2006; Sulkowski et al., 2017). A company is a collection of contracts that particular stakeholder groups enter into with the organisation to provide it with particular resources (skills, products and services, money, and capital), in exchange for which stakeholders receive tangible benefits in the form of dividends, remuneration, interest, products

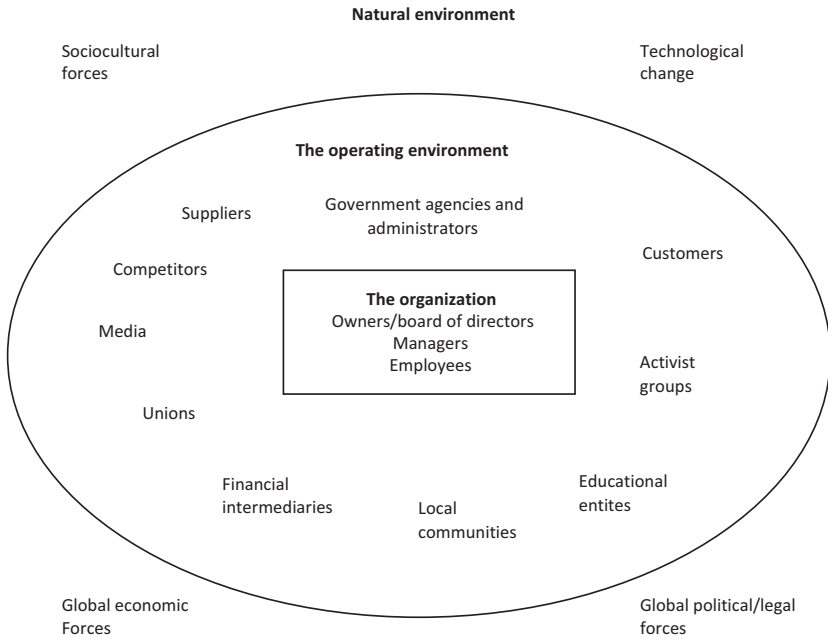


Figure 15.1 The organisation and its primary stakeholders

Source: Own elaboration based on J.S. Harrison and C. H. St. John (1998). *Strategic Management of Organizations and Stakeholders: Concept and Cases*. OH: Southwestern College Publishing. 8

and services, taxes, and cash subsidies (Marcinkowska, 2011). Freeman et al. (2010) believe that when using the relationship between an organisation and its stakeholders, there is a bigger chance to solve the problems of redefining the economic theory to better serve turbulent times and the opportunity of adopting business and ethics combined mindset to improve decisions.

Stakeholders' relations management

Stakeholder mapping is aimed to identify which groups of stakeholders have the highest or the lowest impact, and which of these impacts is positive, indifferent, or negative, as well as which groups are most affected (positively or negatively) by the company, and in what scope. This helps to see stakeholders and entities having relations with the company, so it is impossible to see them as unrelated to the company (Freeman, 1994). The mapping should consist of several steps: the determination of the mapping area, the demarcation of stakeholder groups, the development of a mapping tool, the mapping (levels of interest, levels of impact, and on their basis – development of the matrix), and synthesis (Styk & Bogacz, 2022). Stakeholder maps should be constantly updated, as stakeholders and their influence might change with time.

Oblój (2007) believes that stakeholder analysis should consider three dimensions: stakeholder power (potential allies or opponents who can influence strategy, goals, and activities), stakeholder empowerment (the process of giving stakeholders the authority previously held fully by the managers), and the urgency of stakeholder demand (a subjective assessment of stakeholder expectations based on a conducted audit).

Thinking about two dimensions of stakeholder mapping (level of influence and level of interest), stakeholders can be divided into four groups:

- low influence and low interest: stakeholders will not gain nor lose from the company's sustainable development strategy or activities; their actions cannot affect the strategy and activities either;
- low influence and high interest: stakeholders will probably gain or lose from the company's sustainable development strategy or activities; their interest is high and they want to be informed, but they cannot affect the strategy and activities;
- high influence and low interest: stakeholders' actions will affect the company's strategy and activities; their interest is low and they do not wish to engage;
- high influence and high interest: stakeholders will probably gain or lose from the company's sustainable development strategy or activities; their interest is high and they wish to engage.

Styk and Bogacz (2022) believe, that for every one of these four categories, companies should implement different strategies. Low-influence and low-interest stakeholders should be monitored, low-influence and high-interest stakeholders should be kept informed (about the companies' strategy, goals, and activities), high-influence and low-interest stakeholders should be enabled to maintain satisfaction with collaboration with the company, and high-influence and high-interest stakeholders should be cooperated with closely.

The International Association for Public Participation developed a different approach and prepared four levels of stakeholder engagement: informing, consulting, involving, and collaborating, which evolve from the lowest relation of stakeholder empowerment and stakeholder engagement (inform) to the highest (collaborate) (UN DESA & UNITAR, 2020). *Inform* is based on a one-direction information flow, without expecting any feedback. When stakeholders are willing to be more actively involved and the decisions made by the companies may have a meaningful impact on them – a *consulting* strategy is implemented, but the decision-making is still executed by the company. *Involvement* strategy is present when stakeholders are meaningfully engaged in planning, implementation, and review of the company's sustainable development strategy, goals, and activities. Stakeholders take part in the decision-making process. *Collaborate* is a strategy where the company and its stakeholders decide together (in a long-term collaboration) on the plans, implementation strategy and its review, goals, and activities.

Mitchell et al. (1997) created a different model, in which they identified seven stakeholders' classes, depending on the possession of one, two, or all three attributes: stakeholder power, legitimacy, and need urgency. If a stakeholder does not fit into any category – it is a non-stakeholder class. Latent stakeholders are the ones, who are not likely to give any attention to the company, and they possess only one of the mentioned attributes:

- *dormant stakeholder* – possesses the power to influence the company, but does not have a legitimate relationship with the company or an urgent claim, so their power is unused;
- *discretionary stakeholder* – does not possess the power to influence the company, but does have a legitimate relationship with the company, and does not have an urgent claim, so there is no pressure on managers to engage in relationships with them;
- *demanding stakeholder* - does not possess the power to influence the company, does not have a legitimate relationship with the company, but has an urgent claim, therefore has insufficient qualities to be heard.

Expectant stakeholders possess two of the three attributes and have a demanding attitude:

- power and legitimacy: *dominant stakeholder* – because of their power status and legitimacy, their concerns will matter to the managers;
- legitimacy and urgency: *dependent stakeholder* – because they lack power, their matters will be represented through advocacy or in collaboration with powerful stakeholders;
- urgency and power: *dangerous stakeholder* – they are likely to be violent and demanding.

Stakeholders who possess all three attributes are *definitive stakeholders*, who will be able to get immediate information, decisions, or actions from managers. Their claims will be a priority.

Stakeholders in sustainable development

In 1992 the first United Nations Conference on Environment and Development recognised, that achievement of sustainable development will not be possible without stakeholder engagement. Nine sectors of society (officially referred to as “Major Groups”) were formalised as the main channels of participation that were to be facilitated in UN activities towards sustainable development. These sectors include women, children and youth, indigenous peoples, non-governmental organisations, local authorities, workers and trade unions, business and society, scientific and technological community, and farmers. “The Future We

Want”, the outcome document of the United Nations Rio+20 Conference held in 2012, helped the emergence of other relevant stakeholders: local communities, educational and academic entities, faith groups, foundations and private philanthropic organisations, migrants and their families, older persons, parliamentary networks and associations, persons with disabilities, volunteer groups. The third phase of stakeholders for sustainable development identification can be found in the 2030 Agenda. The Agenda recognises that there are “other stakeholders active in areas related to sustainable development”, who do not fit into the above categories, therefore there is a need to adjust and in specific processes work with relevant actors (UN DESA & UNITAR, 2020). These stakeholder groups, identified as crucial for sustainable development, can also be of interest to sustainability-oriented companies from different industries, operating in various markets.

Stakeholder theory and sustainability management reject the notion of separating ethical issues from business, as they are fundamentally interconnected rather than being in conflict. To interconnect them, social and environmental issues must be linked to a company’s main business to generate actual value for stakeholders or, in terms of sustainability management, contribute to sustainable development (Hörisch et al., 2014). Both ideas go beyond the traditional notion of businesses existing to maximise short-term shareholder value, by implementing a long-term perspective and implementing responsibility in the core business.

Integrating ecological and social impacts into the idea of value creation is a defining characteristic of sustainability-oriented businesses (Schaltegger et al., 2020). The development and maintenance of effective relationships with all stakeholders is a part of the stakeholder perspective on value creation. Unethical behaviour, differing in values, ethical conduct, and sustainability may result in the withdrawal of stakeholder support, endangering the sustainability of the business model (Freudenreich et al., 2019). Bansal and Song (2017) underline, that in addition to sustaining the company, sustainability management also takes into account how organisations may sustain the systems in which they function. To enable outcomes that prioritise the environment, a stakeholder view, through the lens of sustainability management, tries to recognise how organisations address systemic sustainability concerns both internally and in their interactions with stakeholders (Sulkowski et al., 2017).

Marsden and Andriof (1998) believe that companies have a ripple effect on society, the economy and the environment, which is also referred to as the triple bottom line (Elkington, 1997). It is based on the assumption that businesses ought to measure performance in terms of the value added to the economy, environment, and society. The economic impact is realised through shareholders, customers, employees, suppliers, and local communities, and considers such aspects as income and wealth generation, creating jobs, creating product value, and sustainable development. Environmental impact is ascertained by employees, customers, and local communities, and revolves around emissions, waste

control, energy use, product life-cycle, and sustainable development. Social impact is mainly focused on employees and local communities and manifests the involvement in social issues and volunteering, equal opportunities, educational development, and social inclusion (Marsden & Andriof, 1998). Marsden and Andriof (1998) also discuss ethical issues, such as fair trade, moral standards, bribery, human rights, advertising standards, and anti-social products. All these mentioned spheres interrelate (for example human rights are a matter of both, ethical and social spheres). Vanclay (2004) summarised that in literature, the triple bottom line is described in many ways:

- social, environmental, and economic performance,
- sustainable development, sustainable environment, sustainable communities;
- impact on society, the environment, and economic sustainability;
- economic, environmental, and social sustainability;
- economic prosperity, environmental quality, and social justice;
- economic growth, ecological balance, and social progress;
- economic growth, social progress, and environmental health;
- economy, environment, equity;
- profit, people, planet (or planet, people, profit);
- landscapes, lifestyles and livelihoods.

(p. 266)

This concept is effective in helping managers become more aware of the company's overall performance and contributes to a rise in corporate accountability (Harrison & Wicks, 2015).

This influence regarding societal or environmental issues will be even stronger if the stakeholders have purchasing or supply power to influence the company (Campbell, 2007). Stakeholders may also influence the company to implement Corporate Social Responsibility (CSR) or sustainability strategies. This is the way that social activists, regulatory authorities, or Non-Government Organizations (NGOs) create positive societal and environmental change (Sulkowski et al., 2017). Some studies show, that CSR and sustainability strategies are the result of stakeholders' influence and that the companies would not implement them if they were not forced to do so (Campbell, 2007).

Companies must remember, that stakeholders cooperate around values and therefore they must negotiate to create mutual interests. Sustainability must be among their most important values if they are to cooperate with a company pursuing sustainable development. Establishing shared sustainability goals is therefore based on the unique sustainability interests of individual stakeholders (Hörisch et al., 2014).

The framework for planning and assessing quality engagement by UN DESA and UNITAR, consisting of four characteristics: purposeful, inclusive, transformative, and proactive engagement, was developed for this chapter with three additional characteristics: meaningful, growth-oriented, and measurable. The original framework helps to confirm which of these areas is fulfilled and

conducted properly, but for sustainability-oriented companies willing to create quality engagement among stakeholders, it is crucial to ask the questions presented in Table 15.1, to better prepare the collaboration process.

Table 15.1 Planning and assessing stakeholder engagement

<i>Engagement characteristics:</i>	<i>Questions to be asked:</i>
Purposeful	Why are we engaging? What are our priority issues? How to plan and allocate resources? How to divide responsibilities? Who should be engaged?
Inclusive	How to effectively create stakeholder maps? How to analyse stakeholders' views and beliefs? How to reduce barriers disabling stakeholder participation (age, distance, abilities, connectivity, discrimination, culture bias, digital exclusion)? Which channels of engagement will be the most inclusive? How should consultation events be organised?
Transformative	Which collaboration methods create understanding across different stakeholder groups? How to encourage and recognise stakeholder contribution? Which methods will enable integrating social, economic, and environmental perspectives? How can we encourage dialogue and shared actions? Are we willing to take participatory approaches to address important changes?
Proactive	How to develop engagement planning into implementation? How can we communicate the scope of engagement? How to provide the up-to-date necessary information in an accessible way? What channels to use when consulting stakeholders on their engagement? Are we able to respond to questions and concerns promptly?
Meaningful	Do we know what our stakeholders want and expect? How to share information interestingly? How to implement a more conversational tone? Have appropriate data, indicators, and benchmarks been established?
Growth-oriented	How can we use stakeholder feedback to improve our goals, strategies, processes, and activities? How to develop stakeholder collaboration? What other stakeholder groups might be relevant for the company in the future? How is the stakeholder network changing?
Measurable	How can we measure stakeholder collaboration and engagement? How to report stakeholder collaboration and engagement? What are the key performance indicators for stakeholder collaboration?

Source: Own elaboration based on UN DESA, & UNITAR. (2020). *Stakeholder Engagement & the 2030 Agenda. A Practical Guide*. United Nations.

Morsing and Schultz (2006) identified three CSR communication strategies, that are also useful in describing stakeholder engagement strategies (Table 15.2). Practically speaking, “stakeholder information strategy” does not qualify as engagement, it signifies a one-way strategy of outward communication to stakeholders, therefore is rather perceived as a non-engagement strategy. “Stakeholder response” strategy, characterised by stakeholder responses to the organisation’s external communication, are measured and taken into account, whereas in the “stakeholder involvement” strategy organisations involve stakeholders in the process of developing the organisation’s initiatives.

Table 15.2 Sustainability communication strategies

	<i>The stakeholder information strategy</i>	<i>The stakeholder response strategy</i>	<i>The stakeholder involvement strategy</i>
Information symmetry:	Public information, free access, one-way communication	Two-way asymmetric communication	Two-way symmetric communication
Communication ideal: sensemaking and sensegiving:	Sensegiving	Sensemaking ↓ Sensegiving	Sensemaking ↕ Sensegiving – in iterative progressive processes
Stakeholders:	Request more information on corporate sustainability efforts	Must be reassured that the company is ethical, socially responsible and environment friendly	Stakeholders actively participate in the decision-making process
Level of professionalisation:	Low	Medium	High
Stakeholder role:	Support or oppose	Respond to corporate actions and give feedback	Be involved, participate and suggest corporate actions
Identification of sustainability focus:	Decided by top management, not consulted with stakeholders	Decided by top management, but stakeholder collaboration asserted via opinion polls, dialogue, networks, consultancy meetings, and partnerships.	Consulted at all stages, stakeholders’ voice is crucial.

(Continued)

Table 15.2 (Continued)

	<i>The stakeholder information strategy</i>	<i>The stakeholder response strategy</i>	<i>The stakeholder involvement strategy</i>
Strategic communication task:	Inform stakeholders about favourable decisions and actions	Demonstrate to stakeholders how the company integrates their concerns and feedback.	Invite and establish frequent, systematic dialogue with stakeholders.
Corporate stakeholder collaboration entity scope of activities:	Design an appealing message for stakeholders	Identify relevant stakeholders and make them feel they are listened to	Build relationships based on continuous involvement and improvement
Communication role:	Inform	Inform and gather feedback	Effective continuous cooperation and two-way exchange of information

Source: Own elaboration based on Morsing, M., & Schultz, M. (2006). Corporate social responsibility communication: Stakeholder information, response, and involvement strategies. *Business Ethics: A European Review*, 15, 323–338.

Sulkowski et al. (2017) suggested, that this model – to better relate to stakeholder engagement – should include one more strategy “stakeholder shaking”. This strategy would involve open communication with aligned networks built, encouraging stakeholders to become aware of and take action on pressing global concerns, proactive identification of systemic changes needed, proactive dialogue and advocacy on the part of the firm, and verification and support of the elimination of environmental harms. This strategy would allow to create sustainable value through fundamental changes in market dynamics while enabling the organisation to eliminate social and environmental harms. It could allow organisations to have a broader impact by influencing their supply chains, changing societal norms and beliefs, or working towards circularity in the economy.

For managing stakeholder interactions for sustainable development, Hörisch et al. (2014) have identified tools like education, regulation, and sustainability-based value generation. They have also recognised certain difficulties that might arise when managing stakeholder relationships for sustainability. These difficulties relate to the company’s ability to coordinate shared goals among stakeholders and to empower stakeholders to serve as environmental intermediates.

Multi-stakeholder engagement can face many challenges. This collaboration frequently struggles with differences between goals, value forms, norms and expectations of partner entities, dissimilar institutional logics (Dyer & Singh, 1998; Vurro et al., 2011), and cultural differences and misunderstandings (Berger et al.,

2004). The lack of a methodology makes it difficult to identify and evaluate all stakeholders' expectations and goals, which results in difficulties in keeping a balance between opposing values. When ensuring sustainability and generating prospects for scaling up, normative aspirations and collecting financial value may come into conflict (Bitzer & Hamann, 2015).

Companies are under criticism, that their engagement in stakeholder relations is too small and consultations with a narrow group of stakeholders are not enough for prioritisation of social, economic, and ecological issues to achieve sustainability goals (Li et al., 2012). However, many managers have noted difficulties in inspiring and involving stakeholders in the pursuit of sustainable development.

Conclusions

Sustainable development collaboration requires multiple stakeholders' engagement. Complex sustainability concerns are being faced by businesses more frequently, and the social and environmental values associated with business effectiveness are inextricably linked (Sulkowski et al., 2017).

Various groups of stakeholders, with different expectations, backgrounds, and engagement levels are difficult to manage, therefore successful planning, development, and implementation of their engagement are necessary. But first, every sustainability-oriented business must identify its core values, as well as societal and environmental impact. Only then, it can start to map its stakeholders and plan for cooperation.

There is no unique framework or model of stakeholder engagement. Numerous models were designed to help companies manage information, and how the stakeholders can create value and competitive advantage. Not much of the research on stakeholder management explains, how a certain style of stakeholder treatment and stakeholder interactions results in competitive advantage (Harrison et al., 2010). On the other hand, some research shows a positive connection between a company's financial performance and its governance, social, and environmental performance (Friede et al., 2015).

Freeman et al. (2010) underline the importance of creating stable and long-term relations with stakeholders by the companies. In the complex and dynamic environment, businesses must become more transparent and collaborative than ever before, to support their sustainable development, which will ultimately lead to survival and even growth.

References

- Bansal, P., & Song, H.-C. (2017). Similar But Not the Same: Differentiating Corporate Sustainability from Corporate Responsibility. *Academy of Management Annals*, 11(1), 105–149. <https://doi.org/10.5465/annals.2015.0095>
- Berger, I. E., Cunningham, P. H., & Drumwright, M. E. (2004). Social Alliances: Company/Nonprofit Collaboration. *California Management Review*, 47(1), 58–90. <https://doi.org/10.2307/41166287>

- Bitzer, V., & Hamann, R. (2015). The Business of Social and Environmental Innovation. In *The Business of Social and Environmental Innovation* (pp. 3–24). https://doi.org/10.1007/978-3-319-04051-6_1
- Campbell, J. L. (2007). Why Would Corporations Behave in Socially Responsible Ways? An Institutional Theory of Corporate Social Responsibility. *The Academy of Management Review*, 32, 946–967. <https://doi.org/10.2307/20159343>
- Clarkson, M. E. (1995). A Stakeholder Framework for Analyzing and Evaluating Corporate Social Performance. *Academy of Management Review*. *Academy of Management Review*, 20(1), 92–117. <https://doi.org/10.5465/amr.1995.9503271994>
- Dentoni, D., Pinkse, J., & Lubberink, R. (2020). Linking Sustainable Business Models to Socio-Ecological Resilience Through Cross-Sector Partnerships: A Complex Adaptive Systems View. *Business & Society*, 60(5), 1216–1252. <https://doi.org/10.1177/0007650320935015>
- Dyer, J. H., & Singh, H. (1998). The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage. *The Academy of Management Review*, 23(4), 660. <https://doi.org/10.2307/259056>
- Elkington, J. (1997). *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*. Capstone.
- Fobbe, L., & Hilletoft, P. (2021). The Role of Stakeholder interaction in sustainable business models. A systematic literature review. *Journal of Cleaner Production*, 327. <https://doi.org/10.1016/j.jclepro.2021.129510>
- Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Pitman Publishing.
- Freeman, R. E. (1994). The Politics of Stakeholder Theory: Some Future Directions. *Business Ethics Quarterly*, 4(4), 409–421. <https://doi.org/10.2307/3857340>
- Freeman, R. E., Harrison, J. S., & Wicks, A. C. (2007). *Managing for Stakeholders: Survival, Reputation, and Success*. Yale University Press.
- Freeman, E. R., Harrison, J. S., Wicks, A. C., Parmar, B. L., & de Colle, S. (2010). *Stakeholder Theory: The State of the Art*. Cambridge University Press.
- Freudenreich, B., Lüdeke-Freund, F., & Schaltegger, S. (2019). A Stakeholder Theory Perspective on Business Models: Value Creation for Sustainability. *Journal of Business Ethics*, 166(1), 3–18. <https://doi.org/10.1007/s10551-019-04112-z>
- Friede, G., Busch, T., & Bassen, A. (2015). ESG and Financial Performance: Aggregated Evidence from More Than 2000 Empirical Studies. *Journal of Sustainable Finance & Investment*, 5, 210–233.
- Geissdoerfer, M., Vladimirova, D., & Evans, S. (2018). Sustainable Business Model Innovation: A Review. *Journal of Cleaner Production*, 198, 401–416. <https://doi.org/10.1016/j.jclepro.2018.06.240>
- Gray, B. (1985). Conditions Facilitating Interorganizational Collaboration. *Human Relations*, 38(10), 911–936. <https://doi.org/10.1177/001872678503801001>
- Harrison, J. S., Bosse, D. A., & Phillips, R. A. (2010). Managing for Stakeholders, Stakeholder Utility Functions, and Competitive Advantage. *Strategic Management Journal*, 31(1), 58–74. <https://doi.org/10.1002/smj.801>
- Harrison, J. S., & Freeman, R. E. (1999). Stakeholders, Social Responsibility, and Performance: Empirical Evidence and Theoretical Perspectives. *Academy of Management Journal*, 42, 479–485.
- Harrison, J. S., & John, C. H. S. (1994). *Strategic Management of Organizations and Stakeholders: Concepts*. West Publishing Company. <https://books.google.pl/books?id=r1R4AAAAAAJ>

- Harrison, J. S., & Wicks, A. C. (2015). Stakeholder Theory, Value, and Firm Performance. *Business Ethics Quarterly*, 23(1), 97–124. <https://doi.org/10.5840/beq20132314>
- Hillman, A. J., & Keim, G. D. (2001). Shareholder Value, Stakeholder Management, and social Issues: What's the Bottom Line?. *Strategic Management Journal*, 22(2), 125–139. [https://doi.org/10.1002/1097-0266\(200101\)22:2<125::aid-smj150>3.0.co;2-h](https://doi.org/10.1002/1097-0266(200101)22:2<125::aid-smj150>3.0.co;2-h)
- Hörisch, J., Freeman, R. E., & Schaltegger, S. (2014). Applying Stakeholder Theory in Sustainability Management. *Organization & Environment*, 27(4), 328–346. <https://doi.org/10.1177/1086026614535786>
- Jamali, D. (2007). A Stakeholder Approach to Corporate Social Responsibility: A Fresh Perspective into Theory and Practice. *Journal of Business Ethics*, 82(1), 213–231. <https://doi.org/10.1007/s10551-007-9572-4>
- Jedynak, M., Kuźniarska A. (2019). The Expectations of Stakeholders in Socially Responsible Enterprises. *Journal of Emerging Trends in Marketing and Management*, 1(1), 220–230.
- Jensen, M. C. (2001). Value Maximization, Stakeholder Theory, and the Corporate Objective Function. *European Financial Management*, 7, 297–317.
- Jones, T. M., Wicks A., C. (1999). Convergent Stakeholder Theory. *The Academy of Management Review*, 24(2), 206–221.
- Li, T. H. Y., Ng, S. T., & Skitmore, M. (2012). Conflict or Consensus: An Investigation of Stakeholder Concerns During the Participation Process of Major Infrastructure and Construction Projects in Hong Kong. *Habitat International*, 36(2), 333–342. <https://doi.org/10.1016/j.habitatint.2011.10.012>
- Lorenc, S., & Kustra, A. (2021). Distributing Enterprise Value to Stakeholders in the Range of Sustainable Development on the Basis of the Energy Industry in Poland. *Sustainability*, 13(4). <https://doi.org/10.3390/su13042130>
- Mainardes, E. W., Alves, H., & Raposo, M. (2012). A Model for Stakeholder Classification and Stakeholder Relationships. *Management Decision*, 50(10), 1861–1879. <https://doi.org/10.1108/00251741211279648>
- Marcinkowska, M. (2011). Creating Company Value for Stakeholders. *Zeszyty Naukowe Uniwersytetu Szczecińskiego* 7, 855–869.
- Marsden, C., & Andriof, J. (1998). Towards an Understanding of Corporate Citizenship and How to Influence It. *Citizenship Studies*, 2(2), 329–352. <https://doi.org/10.1080/13621029808420686>
- Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts. *Academy of Management Review*, 22(4), 853–886.
- Morsing, M., & Schultz, M. (2006). Corporate Social Responsibility Communication Stakeholder Information Response and Involvement Strategies. *Business Ethics: A European Review*, 15(4), 323–338. <https://doi.org/10.1111/j.1467-8608.2006.00460.x>
- Nalewaik, A. (2011, 9–12 October 2011). Stakeholder Expectations Regarding Public Project Oversight. In Proceedings of the 25th IPMAWorld Congress: Project Management—Delivering the Promise, Brisbane, Australia.
- Obłój, K. (2007). *Strategia organizacji [Strategy of Organization]*. PWE.
- Phillips, R. (2003). *Stakeholder Theory & Organizational Ethics*. Berrett-Koehler Publishers.
- Schaltegger, S., Hörisch, J., & Loorbach, D. (2020). Corporate and Entrepreneurial Contributions to Sustainability Transitions. *Business Strategy and the Environment*, 29(3), 1617–1618. <https://doi.org/10.1002/bse.2454>

- Sisodia, R., Wolfe, D. B., & Sheth, J. (2007). *Firms of Endearment: How World-Class Companies Profit from Passion and Purpose*. Wharton School Publishing.
- Styk, K., & Bogacz, P. (2022). A Method for Stakeholder Mapping in Connection with the Implementation of a Development Project. *Energies*, 15(4). <https://doi.org/10.3390/en15041592>
- Sulkowski, A. J., Edwards, M., & Freeman, R. E. (2017). Shake Your Stakeholder: Firms Leading Engagement to Cocreate Sustainable Value. *Organization & Environment*, 31(3), 223–241. <https://doi.org/10.1177/1086026617722129>
- Taylor, B. (1971). The Future Development of Corporate Strategy. *Journal of Business Policy*, 2(2), 22–38.
- UN DESA, & UNITAR. (2020). *Stakeholder Engagement & the 2030 Agenda. A Practical Guide*. United Nations.
- Van Huijstee, M. M., Francken, M., & Leroy, P. (2007). Partnerships for Sustainable Development: A Review of Current Literature. *Environmental Sciences*, 4(2), 75–89. <https://doi.org/10.1080/15693430701526336>
- Vancly, F. (2004). The Triple Bottom Line and Impact Assessment: How do TBL, EIA, SIA, SEA EMS relate to each other? *Journal of Environmental Assessment Policy and Management*, 6(3), 265–288.
- Velter, M. G. E., Bitzer, V., Bocken, N. M. P., & Kemp, R. (2020). Sustainable Business Model Innovation: The Role of Boundary Work for Multi-Stakeholder Alignment. *Journal of Cleaner Production*, 247. <https://doi.org/10.1016/j.jclepro.2019.119497>
- Vurro, C., Dacin, M. T., & Perrini, F. (2011). Institutional Antecedents of Partnering for Social Change: How Institutional Logics Shape Cross-Sector Social Partnerships. *Journal of Business Ethics*, 94(S1), 39–53. <https://doi.org/10.1007/s10551-011-0778-0>
- WCED. (1987). *Report of the World Commission on Environment and Development: Our Common Future*.
- M. Jedynak, A. Kuźniarska, The Expectations of Stakeholders in Socially Responsible Enterprises, *Journal of Emerging Trends in Marketing and Management – Vol I*, No. 1/2019, pp. 220–230

16 The role of education in sustainable development

Jerzy Rosiński

Introduction

An appropriate solution for fulfilling the role of education in sustainable development seems to be educational organisations that meet the criteria of turquoise organisations (according to the typology of F. Laloux). The reasons for choosing this type of organisation are explained in the initial part of the chapter, in the next part a case study is presented indicating the steps leading to building this type of organisation.

Changes in the organisation's environment and the response to them

The transformations associated with the Fourth Industrial Revolution are not only related to digitisation and automation. As in the case of previous industrial revolutions, entire sectors of the economy may face not only a radical transformation but also a decline, while new areas of activity emerge. Does such a transformation await the education sector? It is worth “taking 2 steps back” to see a description of innovation processes around/in the background of the education sector. We analyse selected aspects related to the current shape of growth trends in the environment of the organisation (metaphorically step minus 2), then look at selected trends in education (step minus 1) to discuss organisational contexts related to education and sustainable growth.

We start with the “minus 2 step”, describing the growth processes in the organisation's environment. We consider three descriptions of the development of innovation:

- 1 the so-called S-curve, which describes an innovative development by H. Altszuller (whose origins date back to studies from the 1950s of the last century); the S-curve indicates that initially the innovative development is relatively slow (linear growth), then enters the phase of extremely rapid growth (exponential growth), and in the final phase it again slows down significantly (again linear growth)

- 2 the so-called Moore's Law, describing the development of technology by G. Moore (founder of Intel); formulated in 1969, it originally said that the number of transistors in integrated circuits would double every 18 months
- 3 the so-called Kurzweil's law of accelerated development; formulated in the 1990s of the twentieth century by R. Kurzweil (at that time Kurzweil was the chief engineer at Google), this law says that when technology [of a given industry] becomes digital, when it can be written in the code of zeros and ones, then it begins to develop at an exponential rate, and its development can be described with the help of Moore's law.

It is easier to understand the scale of the changes of the Fourth Industrial Revolution and its impact on society when we overlay the graphs on each other. Moore's law seems to describe an exponential fragment of the S-curve by H. Altszuler (see Figure 16.1). On the other hand, the digitisation of subsequent areas of social life causes them to begin to change at an exponential pace (Kurzweil's law of accelerated development), not linear. In addition, we are dealing with a kind of overlap and mutual reinforcement of coexisting, exponential increases as described. As stated by P. H. Diamandis and S. Kotler S. (2020) the pace of developmental changes increases due to the overlapping development of individual industries, e.g., the development of biotechnology is further accelerated by the development of (among others) artificial intelligence and quantum computers.

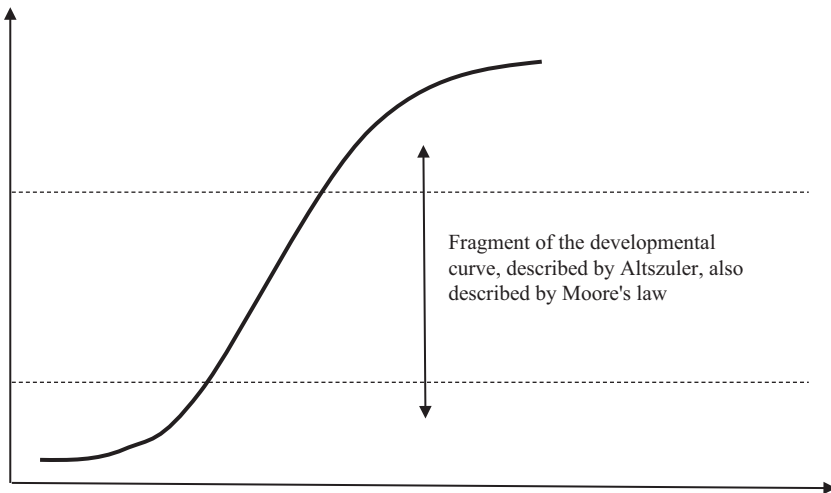


Figure 16.1 Diagram showing the common part of the S curve (by Altszuler) and Moore's model

Source: Own elaboration.

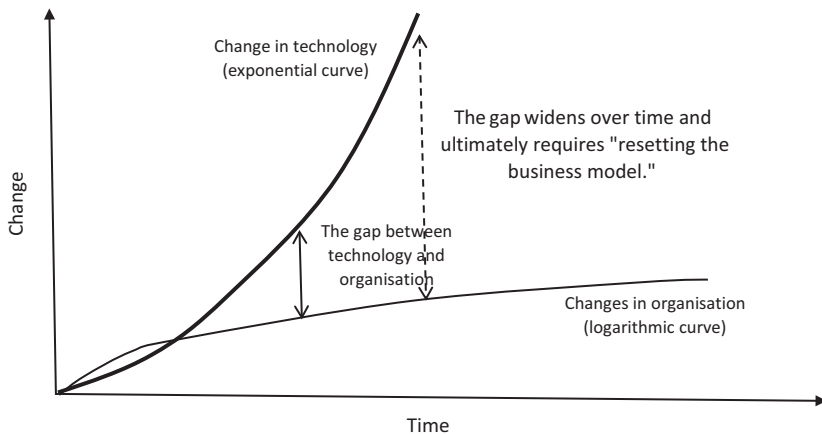


Figure 16.2 Chart describing the so-called Martec's law

Source: Own elaboration based on: Kupilas et al. (2019, p. 85).

Organisations are trying to adapt to changes in the environment caused by the development of technology. One of the models illustrating the impact of technological change on organisations and business models is the so-called Martec's law, formulated in 2013 by Scott Brinker. It states that technology is changing at an exponential (very fast) pace, but organisations are changing at a logarithmic (much slower) rate (Rosinski 2021; Kupilas Rodríguez-Montequín, Villanueva-Balsera, Álvarez-Pérez 2019; Brinker 2016). The main problem addressed in Martec's law is that "technology is changing faster than organisations can absorb the changes." (Dodd 2019)

The growing discrepancy between the development of technology and the functioning of the organisation is a driving force for companies to change. Market participants essentially adopt two strategies that are also reflected in the transformation of business models: evolutionary and revolutionary. Some companies adopt an evolutionary strategy, trying to minimise the discrepancies that arise. Often, the decision on the evolutionary strategy is associated with the occurrence of a critical event in the organisation – this event becomes the reason for the decision to change (Brinker 2020).

Most often, companies try to adapt agile management or lean management practices to increase the efficiency of the organisation (Brinker 2016b). In the short term, this solution has the desired effect but does not guarantee long-term effectiveness (see Figure 16.3).

The second strategy of action, which is a reaction to the same divergence of technology and the functioning of the organisation, can be described as revolutionary (Brinker 2016a; Brinker, McLellan 2014). The revolutionary strategy in

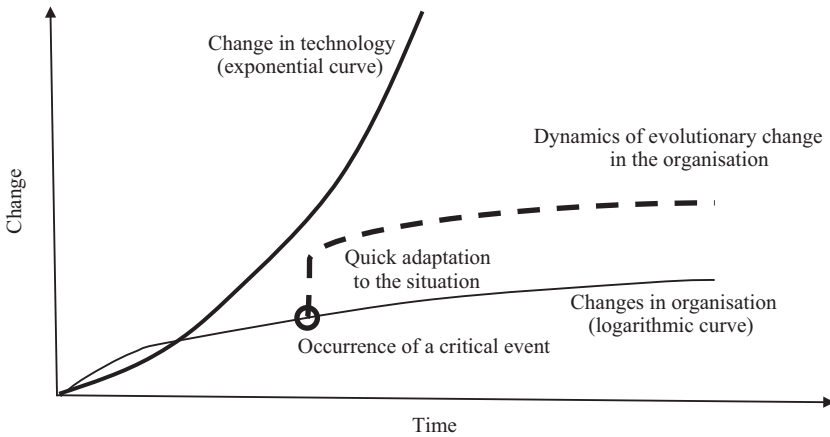


Figure 16.3 An organisation's evolutionary strategy to minimise the gap between technology and organisational functionality

Source: Own elaboration based on: Brinker (2016, pp. 235–236).

the face of technological change had been noted for years much before Martec's model was created because it appeared in a kind of summary of the changes of the third industrial revolution (Christensen, Raynor 2003). However, it seems that it is only with the development of the transformations of the Fourth Industrial Revolution that we started dealing with its popularisation in the context of the development of technology and organisational challenges associated with it.

In the revolutionary strategy (Figure 16.4) we are dealing with a fundamental change in the model of functioning of the organisation, and not merely with the improvement of the existing one (as in the evolutionary strategy). The assumption is not so much a "slightly more efficient" or "more flexible" system, but a completely new way of functioning of the organisation. The transformation of organisations affects the digitisation of technology but does not stop there (as it can happen in the evolutionary approach). Technological modification is the first step, followed by changes in the approach to collecting, analysing and interpreting data, changes in the culture of the organisation and the expected competences of employees. The way the company conducts individual operations is also changing (Chamorro-Premuzic 2021).

Thus, we get a completely new way of functioning of the organisation (Figure 16.5). It can, of course, be more effective and flexible, but it is primarily qualitatively (though not only quantitatively) different from the previous one.

These evolutionary and revolutionary reactions to the discrepancy between the level of technology and the way the organisation functions are reflected in the ways of shaping business models in the second decade of the 21st century. In

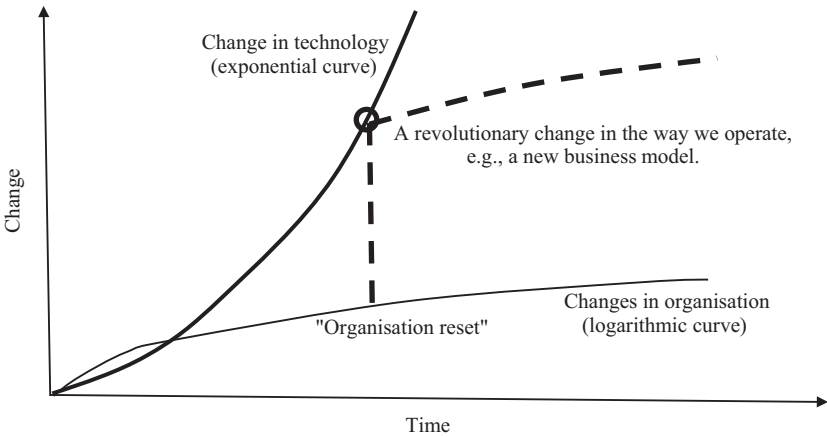


Figure 16.4 A revolutionary organisational strategy to minimise the gap between technology and organisational functioning.

Source: Own elaboration based on: Brinker, McLellan (2016).

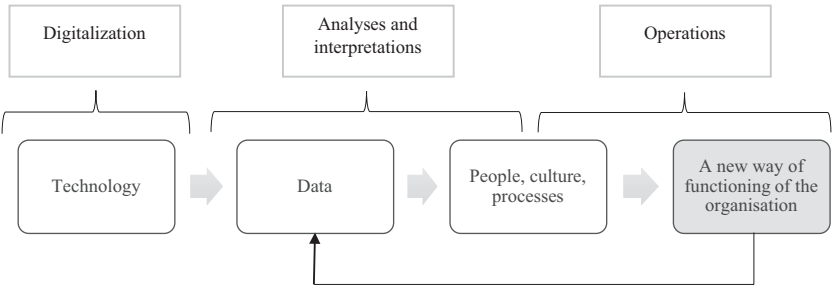


Figure 16.5 Stages of digital transformation leading to a data-centric organisation

Source: Own study based on: Chamorro-Premuzic (2021)

the course of the fourth industrial revolution, we observe transformations of both the overall logic of the business model and its constituent elements.

We observe primarily two solutions (Figure 16.6):

- 1 modification of existing models and adaptation to the changing environment of the organisation (analogous to the evolutionary approach)
- 2 construction of completely new models, resulting from the realities of functioning in the fourth industrial revolution (analogous to the revolutionary approach)

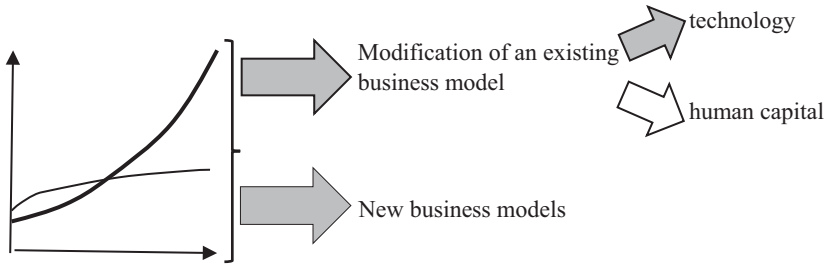


Figure 16.6 Targeting the organisation's response to the processes of transformation of the digital economy

Source: Own study.

The shape of the organisation dealing with education and growth responding to changes in the environment

In the previous part of the text, we took a kind of “take 2 steps back” approach to see a description of the innovation processes around/in the background of the education sector. By describing the environment of the organisation, we have taken a step forward, there is one more step back – thus one step forward to be in the right place and time of our narrative. This step is a reflection on the education sector. Due to the requirements of the text, I would like to put the spotlight on only particular fragments, specific opposites, indicating their significant role:

- 1 learning ceases to take place in organisations, it becomes a lifestyle:
 - earlier, when talking about education, we often talked about formal education (school, higher studies, certification of professional skills);
 - currently, we understand learning as lifelong learning (pointing to the concepts of lifelong learning or growth mindset), which is caused in a way by the need to change professions in the course of life related to the length of professional activity and the pace of changes in the environment
- 2 learning ceases to be related to the development of competences in the institution, it is associated with an active network of contacts
 - earlier, when talking about education, we associated it with a specific place: a school, a workshop, a centre or a training room
 - currently we understand it as the development of competences in relation to the social environment by acquiring not only knowledge, skills, and experience but also more primary forms such as habits of behaviour (Milkman 2022; Duhigg 2019).

Having shared this reflection, we find ourselves in a way “here and now”, so let us return to the problem defined in the title, which is: The role of education in

sustainable development. In other words: how can we talk about (sustainable) growth, education and the organisational context?

For reflection on this topic, it will be helpful to use a model: Reinventing Organisations Map, based on Frederic Laloux's book *Reinventing Organizations*, however (in the opinion of E. Szabolcs and M. Karoly), it goes beyond the breakthroughs mentioned in Laloux's study. For the purposes of this text, we used the 2.2. version of the map as published by its authors in April 2017 [<http://www.reinvorgmap.com>].

The theory of the functioning of particular "coloured" (Laloux 2016, p. 34), organisations describes the types of "whole" organisations, but these models relate to organisational processes, structures, and cultures. Therefore, it is difficult to state that a particular organisation is 100% "orange" or "green". Referring only to processes, we can analyse, for example, recruitment, establishment of objectives, development of a budget, resource management or personnel development and declare the advantage of the processes of a given type ("colour"). The operationalisation of understanding an organisation as a "network filled with processes of different colours" (Laloux 2016, p. 34) leads to the use of an organisation description model proposed by E. Szabolcs and M. Karoly from the Hungarian consultancy firm Circle43.

The transfer of the F. Laloux model (and its description in the separate context of the model of E. Szabolcs and M. Karoly) to the field of educational organisation took place in a separate text (Rosiński 2018). The same text (Rosiński 2018) explains the research methodology of the applied qualitative research: participant observation and partially categorised interview (Sztumski 2005) and the application of their results to the model of E. Szabolcs and M. Karoly.

The primary school in Będkowiec, described in the 2018 text (Rosiński 2018) and in the current text, may be an example, as an educational organisation, of a turquoise-type organisation. Thus, it does not belong to the typical solutions found in the education market, where amber organisations (free public schools) - dominate in the public sector; orange organisations (private schools with high tuition fees) - in the commercial sector, green organisations (schools run by associations, low tuition fees) - in the non-governmental sector. At the same time, the presented example of a turquoise-type educational organisation integrates certain solutions of each of the above (amber; orange; teal), being a school of each of the three dominant types during its development. Hence, the case study of the school in Będkowiec is so attractive.

Description of organisation

The organisation analysed is a public school in Będkowiec; it is run by a parents' association, based on a managerial model. The school is directly managed by the principal (matters related to pedagogical supervision and curriculum requirements imposed by the state) and the school manager (administrative matters related to the functioning of the school). The whole operation of the school is

supervised by the chairperson of the parents' association (recruitment, and dismissal of staff, approval of expenses, and salaries). Teachers are guaranteed career advancement opportunities under the same regulations that apply to other public schools.

As a public educational institution, the school does not charge any tuition fees and relies on an education subsidy from the state, which is based on the number of pupils attending the school, and voluntary donations to the association. There are approximately 80 pupils in grades 0 to 8, with no more than 14 pupils per class. In the same building, the school also runs three kindergarten groups of 20 children each.

While Będkowice has had a school for over 100 years, it has occupied its present building since the 1970s. An important event in the organisation's history was its acquisition by the parents' association from the commune in the year 2012. As a consequence of this change, only the building and its equipment remained, while the teaching staff and management were completely replaced. In 2012 the school had 28 pupils; at present (2022) about 140 children attend the school.

Results, discussion, reinterpretation of 2018 results

Based on participant observation and interviews, it was possible to identify unique phases in the functioning of the organisation:

Phase 1. (see Figure 16.7) "Just to survive and show others it was possible".

The phase is dominated by processes typical of amber organisations (pedagogical supervision requirements); there are many "red" processes (quick, authoritarian decisions characteristic of crises rather than the "violence-based" functioning of red organisations).

It should be noted that from the beginning of the organisation's existence, its leadership style (see the leadership style dimension) has been perceived as a means of empowering employees and has had a situational character (although the interviewees were not familiar with the concept of empowerment, their descriptions indicated that managers adapted to the situation of an employee or team).

Another important element was the shaping of the organisation's relationships with its internal and external customers (see dimensions: attitude during contact; stakeholder relationship). The interviewees emphasised the unique nature of the relationships within the team (friendliness and the shared working atmosphere from the very beginning of the organisation's functioning in its new shape) as well as partner relationships with the stakeholders (parents, sponsors, and local authorities). The managers mentioned also the primacy of a certain idealistic vision ("A school for our children", "A school where we would like to spend time ourselves") accompanied by a lack of an operational strategy (see work attitude dimension: vision – idealistic culture over strategy).

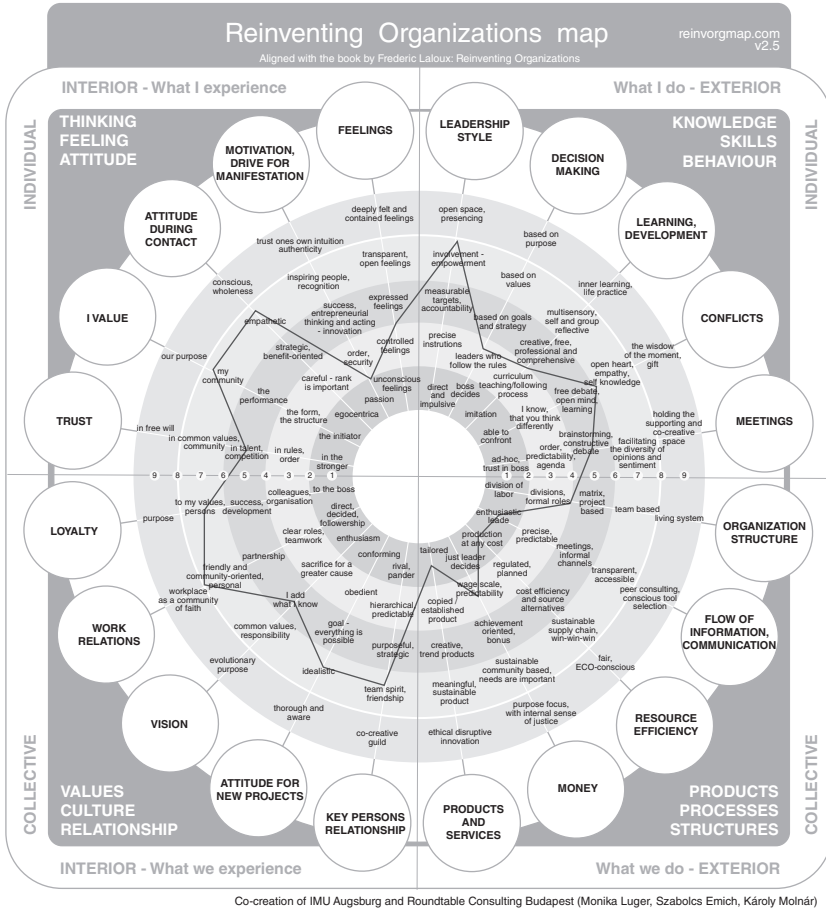


Figure 16.7 Phase 1 in the functioning of the organisation described using the categories of the Reinventing Organisations Map version 2.5

Source: <http://www.reinvorgmap.com>; access: 23.02.2023.

A completely new team of teachers recruited from among people with no professional experience was building a work climate characterised by friendliness and orientation towards community, cooperation and mutual support (see the dimension of work climate). It can be assumed that this was due to the absence of any previous negative work habits, a strong internal motivation to survive a difficult period (see dimensions: inner motive and drive for manifestation) and the modelling of behaviour used by the managers (leadership style, attitudes towards the organisation's stakeholders presented not so much in declarations as in everyday situations in the workplace).

Therefore, it can be concluded that in this phase of the organisation's functioning, we were dealing with distinct seeds of a "green organisation" in terms of leadership, attitudes towards work, relations within the organisation, and relations with the organisational environment.

Interpreting the situation in phase 1, we can metaphorically state that despite the predominance of "amber" and even "red phenomena", "green processes" became, as it were, the "leaven" for the organisation's development towards "evolutionary turquoise".

Phase 2. (see Figure 16.8) "Common work is a value".

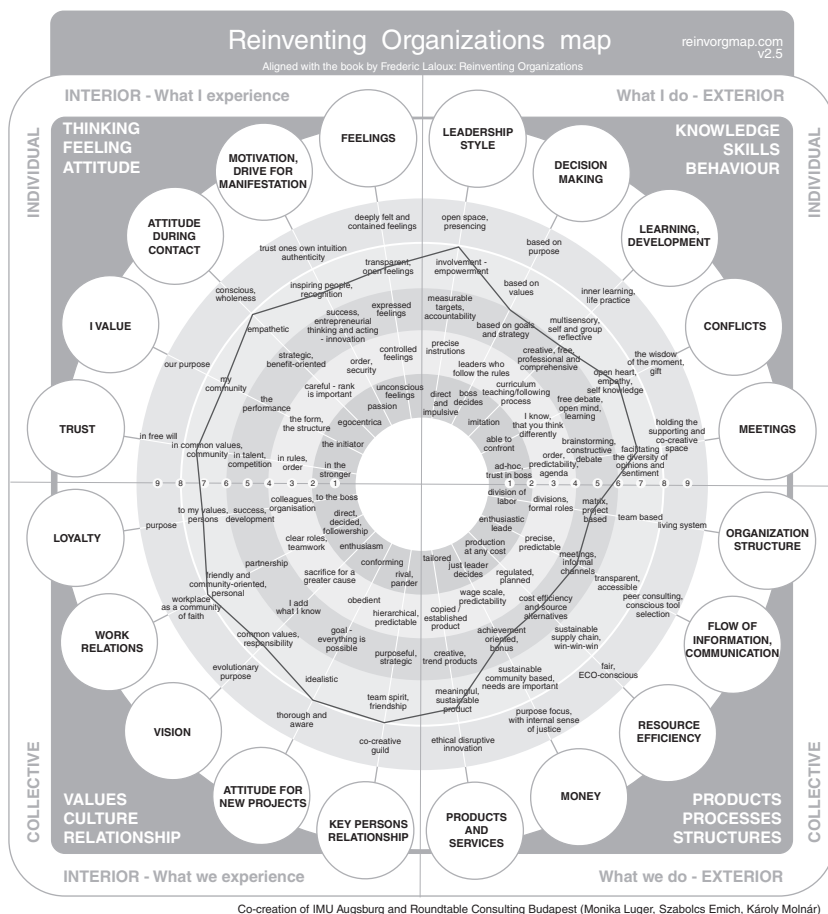


Figure 16.8 Phase 2 in the functioning of the organisation described using the categories of the Reinventing Organisations Map version 2.5

Source: <http://www.reinvorgmap.com>; access: 23.03.2023.

In this phase, what was symptomatic was the appearance of a considerable number of “green” processes with the simultaneous increase in the efficiency of managing amber processes (necessitated by the requirements related to pedagogical supervision and the organisation’s status of a public educational institution) as well as orange processes (connected with acquiring additional resources for the association running the school).

In phase 2 there appear elements of green organisations mentioned by F. Laloux (2015a, pp. 45–48; 2016, pp. 38–39) which are important for building evolutionary turquoise organisations in the future:

1 Empowerment

It can be assumed that on the basis of the previously existing mutual support and empowerment-oriented management style, changes aimed at “being inspired” begin to appear in employees’ attitudes (see dimensions: inner motive, drive for manifestation).

Alongside these changes, a new way of thinking about employee remuneration is developing (see salary dimension) - employees (through their representative) gain full access and decision-making power regarding school expenses; it can therefore be said that there is a participative orientation towards remuneration. On the one hand, the employees participate in decision-making regarding financial matters and, on the other hand, they control the school’s expenditure. Hence, it becomes clear to them whether pay rises are feasible or not and what the available funds are spent on.

- 2 An organisational culture based on shared values and inspiring goals
- 3 Values become an important element in decision-making (see dimensions: decision-making, loyalty); this is evident not only and not so much in formally declared values, as in the recruitment, selection, promotion and career path development processes of employees.

The work climate is becoming an important value for employees (see work climate dimension): one employee aptly summed it up by saying that “our workplace is like being on vacation”.

Another element that is changing is the employees’ self-awareness (see dimension: consciousness of self); on the one hand, this influences their professional development in this organisation (the school employed people with no previous experience) and, on the other hand, we can talk about the influence of the organisation itself (through management styles and behavioural modelling by managers).

4 The perspective of all interest groups

The partnership with stakeholders (see dimension: stakeholders’ relationship) involves not only teachers (joint decision-making) and parents (awareness of needs, managing expectations); the institution’s stakeholders are also its sponsors (through their children they often become customers of the school’s educational services) and local authorities (through positive

feedback from parents addressed to local authorities, the perception of the school changes for the better). Despite the growing number of children, pupils are also partners all along. At the beginning of the school, when there were only twelve students, it was possible to implement the “extended family” model in relations with them, at the development stage, which is the subject of this analysis; this is done through the behavioural modelling exercised by the management (shaping attitudes of teachers) and careful recruitment and selection of candidates for teaching positions (candidates’ initial attitudes).

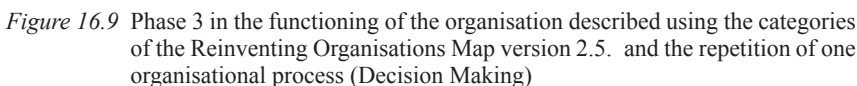
Furthermore, taking into consideration the elements mentioned by F. Laloux (2015a, pp. 59–66; 2016, pp. 38–39) as important for the building of evolutionary turquoise organisations, the following elements appear in phase 2:

- 1 “Values/an internal sense of rightness as a compass”: Those managing the school are guided by very similar values in their own lives.
- 2 “Overcoming ego fears”: Because of their life experience, they are able to look at themselves from a distance; during the early years of the school, the management team built mutual relationships based on trust and, consequently, they tend to build similar trust-based relations with other people.
- 3 “Relying on one’s strengths”: reflecting the shift from “the paradigm of not having to the paradigm of strengths” was reflected
- 4 “Longing for completeness”: We do not come across such lofty phrases as implied by F. Laloux (2016, p. 39), however, for the managers, the school becomes a way of life, a place which consciously “creates culture for the community”.

Phase 3. (see Figure 16.9) “An accidental, unnoticeable breakthrough”.

The turquoise process, a pioneer for the organisation was linked to a standard (as in ‘amber’ organisations) annual obligation. However, the process itself and its end result went very much beyond the scope of amber, orange or green organisations. Because the analysed school had been operating as a ‘green’ organisation for about a year (as described in phase 2), it was doing things that were important to itself and for ‘our children’. It turned out that the permanent (‘amber’) obligation to organise a school excursion had become a unique milestone in its development: “the excursion of our dreams”. As in the turquoise organisation, everyone with an interest in the outcome of the venture was involved in the decision-making process about and organisation of ‘the excursion of our dreams’. This means that the decision-making process involved the children, their parents, teachers, managers and sponsors. Thanks to the active involvement of all parties in the decision-making process, the end result exceeded their original expectations and was observed with great attention by other schools and neighbouring communities.

Phase 3 results appear to stem directly from phase 2, in which the school as an organisation became saturated with processes of a “green” nature. The



Source: <http://www.reinvorgmap.com>; access: 23.03.2023.

following year resulted in the spontaneous launch of subsequent “turquoise” processes.

It seems, therefore, that one of the ways to achieve a “turquoise transformation in the organisation” is to launch a single process at the teal level; process abrasion for two to three years (see Figure 16.9). Other processes begin to “rise” to a higher level (teal); some will remain at lower levels, which is consistent with the Laloux model.

Phase 4. (see Figure 16.10) “The ship on course towards the turquoise islands”.

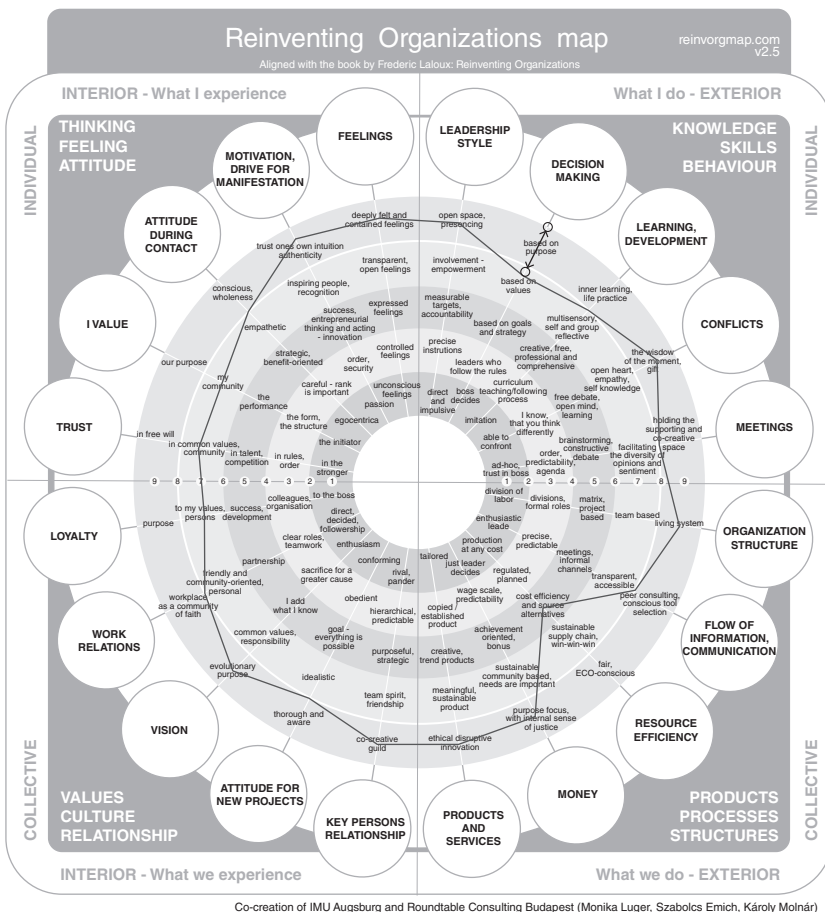


Figure 16.10 Phase 4 in the functioning of the organisation described using the categories of the Reinventing Organisations Map version 2.5

Source: <http://www.reinvorgmap.com>; access: 23.02.2023.

While the first turquoise process was, as it were, the result of a coincidence or “a critical mass of the green processes taking place in the organisation”, subsequent turquoise processes were a process of increasing their number based on the initiative of employees.

The employees themselves proposed innovative teaching methods and an innovative system of motivating pupils to exceed their own limitations. Such initiatives occurred simultaneously with the transformation of the organisation itself (see Figure 16.4). There emerged such phenomena characteristic of turquoise organisations as:

- 1 Self-governance: there was a fluid structure (formally, there are three teams and managers – a requirement for a school as an amber organisation); however, from a functional point of view, what we are witnessing is fluid movement between systems, shifting responsibilities, collective knowledge creation.
- 2 Completeness: working for the organisation allows one to discover who one is and to develop oneself; those working for the school share their passions with the pupils (as this is described by Laloux (2016, p. 55) “they shed their masks of *the professional I*”
- 3 Evolutionary purposefulness: changes in the organisation’s environment (changes in the system of education, modifications in the grant amount) make it difficult for the employees to “listen to themselves and understand which way the organisation is naturally heading” (Laloux 2016, p. 55).

It is worth having a closer look at Phases 3 and 4 because they can indicate a model of a “step-by-step” process of consciously shaping a turquoise organisation. It appears that the factors which facilitated the appearance of a turquoise process are as follows:

- A considerable degree of saturation of the organisation with processes at the level of “pluralistic green”.
- After achieving a certain “green critical mass”, generating a turquoise process, “the turquoise snowball starts rolling downhill”.
- As in competence development systems, repeating at least one turquoise process becomes a development priority and triggers the development of other areas towards evolutionary turquoise (as in competence development systems, once we learn communication skills, we will very likely develop competences in such areas as giving presentations, conducting negotiations, assertiveness or teamwork).

Additionally, besides phase 3 and phase 4, it seems that the important role was played by organisational leadership oriented towards a situational approach to management aimed at employee empowerment. Hence, despite the school’s

initial difficult economic position, the organisational processes changed from amber or even red ones towards a “green organisation”.

Conclusions

An appropriate solution for fulfilling the role of education in sustainable development seems to be educational organisations that meet the criteria of turquoise organisations according to the typology of F. Laloux. The steps leading to building this type of organisation could be

- the creation of “a critical mass for green organisational processes”,
- the appearance and repetition of a single turquoise process as a developmental priority,
- the emergence of subsequent turquoise processes as a result of the existence of a single turquoise process consistently implemented in the organisation

Obviously, it is necessary to keep in mind the organisation’s limitations (a primary school), size (originally it was a relatively small organisation) as well as the specificity of the public sector as a management environment.

References

- Brinker, S. *Bending Martec’s Law: 2020 has taught us we’re more agile than we thought*, August 28, 2020. <https://customerthink.com/bending-martecs-law-2020-has-taught-us-were-more-agile-than-we-thought/> dostęp 06.10.2022
- Brinker, S. *Martec’s Law: the greatest management challenge of the 21st century*, Nov 2016a, <https://chiefmartec.com/2016/11/martecs-law-great-management-challenge-21st-century/> dostęp 05.10.2022
- Brinker, S. *Hacking marketing: Agile practices to make marketing smarter, faster, and more innovative*, Wiley & Sons Inc., Hoboken, NJ, 2016b.
- Brinker, S., McLellan, L. the rise of the chief marketing technologist, *Harvard Business Review*, July–August 2014.
- Chamorro-Premuzic, T. The essential components of digital transformation, *Harvard Business Review*, November 23, 2021.
- Christensen, C. M., Raynor, M. E. *The innovator’s solution: creating and sustaining successful growth*, Harvard Business School Press, Boston, MA, 2003.
- Diamandis, P. H., Kotler, S. *Future is faster than you think*, Simon & Schuster, New York, 2020.
- Dodd, D. *Why it’s so hard for companies to change*, October 1, 2019. <https://customerthink.com/why-its-so-hard-for-companies-to-change/> dostęp 05.10.2022
- Duhigg, Ch. *The power of habit: Why we do what we do, and how to change*, Random House Publishing Group, New York, 2019.
- Kupilas, K. J., Rodríguez-Montequín, V., Villanueva-Balsera, J., Álvarez-Pérez, C., *Industria 4.0 and digital maturity*, in: Zahera-Pérez M. (ed.) *Industria 4.0 y la Dirección e Ingeniería de Proyectos*, Universidad de Cádiz, Cadiz, 2019, pp. 66–103.
- Laloux, F. (2014), *Reinventing organizations*, Nelson Parker, Brussels, 2014.

- Laloux, F., *Pracować inaczej*, Wydawnictwo Studio EMKA, Warszawa, 2015a.
- Laloux, F., *The future of management is teal, strategy+business digital*, Autumn 2015b, Columbia Business School, digital version at: <https://www.strategy-business.com/article/00344?gko=10921>, access: 02.03.2018.
- Laloux, F., *Reinventing organizations: An illustrated invitation to join the conversation on next-stage organizations*. Nelson Parker, Millis MA, 2016.
- Milkman, M. *How to change*. Penguin Books, London, 2022.
- Rosiński, J., Creating an evolutionary teal organization on a step-by-step basis: a case study, *Przedsiębiorczość i Zarządzanie*, 2018 vol. 19, Emerging challenges in modern management no. 6, cz. 1, pp. 243–256.
- Rosinski, J., Beyond excellence in the automotive industry in industry 4.0?: lessons learned from the creative business sector, in: Voigt, K.-I., Müller J. M. (eds.) *Digital business models in industrial ecosystems: Lessons learned from industry 4.0 across Europe*, Springer, Cham 2021, pp. 217–234.
- Sztumski, J., *Wstęp do metod i technik badań społecznych*, 6th ed., Śląsk Wydawnictwo Naukowe, Katowice, 2005.

17 The role of innovation in sustainable development

Magdalena M. Stuss

Introduction

The issue of sustainable development, as indicated by numerous scientific studies (see: previous chapters) have become important for the stakeholders of organisations, also in areas of the economy where the need for innovation is indicated as a key determinant (Damanpour & Schneider, 2006; Varadarajan, 2017; Al-Baghdadi et al., 2021). So far, only some previous studies on sustainability have looked at the relevant relationship between sustainability and innovation (Qi et al., 2010; Boons & Lüdeke-Freund, 2013). Sustainability factors such as reducing the carbon footprint, poverty alleviation, fair distribution, waste reduction and transparency and related business strategies – understood as clean technology, vision of sustainability, pollution prevention and product management – can accelerate the creation of sustainable value for companies by implementing innovations (Evans et al., 2017).

A historical contribution to the building of the concept of innovativeness was made by J. Schumpeter, whose work was devoted to clarifying and emphasising the role of innovation and entrepreneurship. J. Schumpeter pointed to five cases of innovation as follows (Schumpeter, 1960):

- The implementation of new products that consumers had not been familiar with prior to this, or a new type of product.
- The introduction of a new production method, which has not yet been practically tested in a given industry.
- The opening of a new market, i.e. a market where a certain type of industry in a given country had not previously entered, regardless of whether this market existed before or not.
- The acquisition of a new source of raw materials or semi-finished products, regardless of whether the source already existed or whether it had to be created.
- Conducting a new organisation of some industry, e.g., creating or breaking a monopoly.

Innovation, according to J. Schumpeter, signifies the implementation of new solutions into practice, while the subject of his considerations was primarily technical innovations, as well as their impact on the economy. Any dissemination of innovations constitutes a separate type of change, referred to imitation (Makiela & Stuss, 2018, p. 29).

In the contemporary perception of the notion of “innovativeness”, there is the ability to implement new solutions (new products, new types of activities, new technologies, new entities and institutions, new forms of organisation and management) in all spheres of social and economic life. Innovation is the process of transforming existing capabilities into new ideas and introducing them into practical application (Makiela & Stuss, 2018, pp. 28–32). A different approach to the problematic issue of innovations was presented in the Oslo Manual, in which innovation is assumed to be the implementation of a new or significantly improved product (goods or services) or a process, a new marketing method, or a new organisational method in economic practice, workplace organisation or relations with the environment. Such a general definition of innovations is justified by the fact that it covers a wide range of possible innovations (*Podręcznik Oslo. Zasady Gromadzenia i Interpretacji Danych Dotyczących Innowacji*, 2008). It should be mentioned that the scope of the notion of “innovation” changes in subsequent editions of the manual and the current assumption is that the minimum requirement for the existence of innovation is for the product, process, marketing method or organisational method is new (or significantly improved) for the company. This includes products, processes and methods which a particular company was the first to create, and also those that were adopted from other companies or entities (*Oslo Manual 2018*, 2018). S.D. Anthony describes the evolution of innovation as a transition of the subject of innovation from the individual innovator to enterprises, and the transition of the object of innovation from technological innovation to an innovative business model (BM) (Anthony, 2012). The common feature of innovations is the fact that they were implemented and launched to the market. New processes, marketing methods, or organisational methods are implemented when their actual use in the company’s operations begins. This signifies that innovative activity is the entirety of scientific, technical, organisational, financial and commercial activities that lead to the implementation of innovations. Innovative activity also includes research and development (R&D) activities, which are not directly associated with the creation of a specific innovation (Makiela & Stuss, 2018, p. 32).

Innovativeness in BMs may be found in a new business activity, a new combination of activities (structure), or a change in the entity conducting a given activity. Novelty as a measure of the innovativeness of a system of activities may be expressed by means of the new transaction structure, transaction content, or new participants or customer constraints and the creation of exit barriers related to a change of supplier (loyalty program, dominant design, trust, customisation),

as well as network externalities, complementary goods that increase the value of the product and the dependency between components, particularly the effect of synergy and the economies of scale (Loučanová et al., 2022).

The ability to innovate in the field of sustainable development represents a necessary business acumen, regardless of whether it is associated with small and incremental steps, or radical innovations (Evans et al., 2017). Innovation is emerging as a potential mechanism for integrating sustainability into business (Schaltegger et al., 2012; Schaltegger & Wagner, 2011). However, there is a lack of clarity, conceptual consensus and consistency in the use of these terms: BM, BM Innovation (BMI) and Sustainable BM (SBM) (Magretta, 2002; Osterwalder & Pigneur, 2010; Boons & Lüdeke-Freund, 2013). This chapter aims to organise the aforementioned concepts and attempt to characterise, classify and define their boundaries.

Business model innovation

Sustainable innovativeness has for some time been acknowledged to be a key determinant of business and societal change, as well as the answer to the increasing complexity of the environment in which businesses operate. Despite considerable interest in the drivers of sustainable innovation at the level of enterprises, there is little knowledge about the role of sustainable activities in the innovative models and the performance of innovation-focused enterprises (Al-Baghdadi et al., 2021).

A. Osterwalder and Y. Pigneur described the BM as the fundamental principle of creating, maintaining and exchanging value – the BM should be dynamic due to the constantly changing environment (Osterwalder & Pigneur, 2010). BMI was initially defined as the process of discovering fundamentally new BMs in an existing business (Markides, 2006), thereby modifying or modernising the existing business logic of how value is created and captured (Foss & Saebi, 2017). Nevertheless, the most frequently quoted definition of the BMI by N. Bocken et al., states that “changes in the way the organisation and its value-network create, deliver value and capture value /.../ or change their value propositions”. Such a statement moves value towards the focal point of interest as the crucial element, which not only constitutes the innovativeness of a BM but will also determine a company’s performance and profit (Mielcarek & Piekarczyk, 2022). BMI deals with a new way to do business aimed at prosperity in a dynamic environment through the reconceptualisation of the underlying logic behind the value creation, capture and delivery (Richardson, 2008; Teece, 2010).

The phenomenon of BMI, due to the development and utilisation of new technology, is more relevant and complex than ever before (Mielcarek & Piekarczyk, 2022). Firms increasingly need to innovate by modifying their BM by initiating changes, improvements and replacements in various organisational elements (Mitchell & Coles, 2003).

Furthermore, scholars have used BMI as a strategic tool or unit of analysis to study how firms can overcome the competitive threat of a specific industry, such as the creative and cultural industry (i.e., Lantano, Petruzzelli, & Panniello, 2022) or the tourism and hospitality industry (Presenza et al., 2019).

BMI should be the result of modernising the BM (in which the current BM is progressively improved) or the result of generating and designing a BM (where no BM previously existed) (Berends et al., 2016). Although each path is very different in terms of its challenges, both paths require entrepreneurs to understand and decide how the organisation's current system of operations needs to be changed and how this contributes to the creation and acquisition of value (Amit & Zott, 2020). According to C. Christensen, companies can achieve BMI by adopting a technology push and incorporating a technological breakthrough which, in effect, would make them the first movers in the industry (Christensen, 1997). However, some research projects show that BMI is not always beneficial (Halecker et al., 2014).

It is relevant to understand these elements to facilitate the analysis of organisational processes and planning of transformation from one BM to another and to increase the firm's resilience and the probability of success (Geissdoerfer et al., 2018). Sosna et al. identify two generic phases organisations go through to innovate their BMs: exploration and exploitation. In the exploration phase, the organisation aims to understand what BM design would address the strategic challenges (such as changing customer demands, increased competition, or emergent technologies) through a trial-and-error process. In the exploitation phase, the BM is implemented, its performance is measured, and if proven to be valuable, it is scaled (Sosna et al., 2010).

Frankenberger et al. propose a finer-grained iterative BMI process with four phases (Frankenberger et al., 2013):

- initiation – which involves analysing and understanding the ecosystem's needs and identifying important stakeholders,
- ideation – which concerns generating potential new (draft) BM designs,
- integration – which aims to establish a viable and complete BM design, concretising its structure, business logic, and resources needed,
- implementation – which ensures that the selected BM design can be put into practice and is supported through its organisational processes.

However, the most famous one is the classification provided by M. Geissdoerfer et al. which identifies four types of BMI – start-up, transformation, diversification and acquisition (Geissdoerfer et al., 2018), and also by S. Cavalcante, P. Kesting and J. Ulhoi which describes creation, extension, revision and termination (Cavalcante et al., 2011).

An important issue as regards the use of resources in BMI is the scope of new technologies. BMI requires time, partly due to the fact that the preparation of a

BM is more dependent on the context rather than the management of technology (Teece, 2010). The adaptation of new technologies offers an opportunity for BM renewal, but a profound change in the BM also disrupts previous configurations of resources and can diminish a company's performance (Sosna et al., 2010; Mielcarek & Piekarczyk, 2022).

Sustainable business model innovation

In recent years, a new form of BMI has emerged by incorporating the sustainability concept into the firm's goals and processes. We define sustainable business model innovation (SBMI) as a change in how a firm operates to create a positive impact or reduce the negative consequences for the environment and society (Ferlito & Faraci, 2022). The evolution of the approach to SBMI is presented in Figure 17.1.

SBMI builds on the traditional BMI but applies it to a more expanded context. The basic idea is first to test the company's current BM for sustainability against a broader temporal, societal, and spatial context so that its vulnerability to externalities, its sustainability limits, and its potential to create new environmental and societal value all become apparent. Secondly, it explores BMIs by applying a combination of modular "transformations" to address limits and leverage potentials. Subsequently, it connects BMIs back to the core drivers of business advantage and financial performance to assess how they can deliver both value and sustainability. New models are piloted and tuned to seize an advantage in the market, and also with investors and stakeholders, as well as to understand what changes are needed in the business ecosystem or at the industry level to create the right context for success (Young & Reeves, 2020).

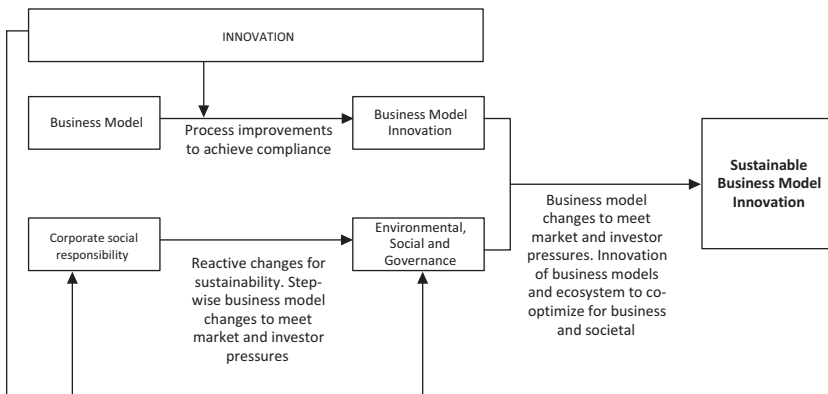


Figure 17.1 The evolution of the approach to SBMI

Source: Own analysis based on literature research included in the references

SBMI involves changes in how a company does business to address societal and environmental challenges and has gained increasing attention in the last two decades as a means of sustainable development. To reach its sustainability potential, SBMI necessitates engagement with external stakeholders to develop multi-stakeholder value propositions and value capture mechanisms, making these external stakeholders fundamentally part of a (future) functioning BM. SBMI therefore structurally transcends the organisational boundaries of the firm and requires a redesign and re-alignment of the organisational boundaries of the respective organisations involved (Velter et al., 2021).

On the other hand, N. Bocken et al. define SBMI as “innovations that create significant positive and/or significantly reduce negative impact on the environment and/or society, through changes in the way the organisation and its value network creates, delivers and captures value (i.e. create economic value), or change their value proposition” (Bocken et al., 2014). They propose a categorisation of SBM archetypes, according to the main type of BMI: technological, social and organisation-oriented innovation, according to the nature of the dominant innovation. Firms can select one or more archetypes in developing their SBMs, and at the same time also combine different archetypes (Tiscini et al., 2020).

The SBMI considers the value creation in the activities carried out and their delivery as eco-social benefits balanced among all the players. In other words, it may include changing energy inputs in the industry using renewable energies, such as the sun and the wind, or modifying the way products reach the market in terms of transportation (Ferlito & Faraci, 2022). SBMI is characterised by the following (Young & Reeves, 2020):

- the incorporation of sustainable principles or goals into the existing value proposition,
- the extension of the value creation concept from economic value to shared value (Porter & Kramer, 2011),
- the consideration of non-financial interests in the decision-making process,
- managers who act as sustainability leaders to promote a new mindset within the whole organisation (Stubbs & Cocklin, 2008).

As opposed to M. Velter et al., SBMI frames boundary work as the activity of exploring, negotiating, and re-aligning organisational boundaries around new value propositions (Velter et al., 2021).

Type of SBMI

Model of R. Ferlito and R. Faraci

Based on the new framework for an SBMI process, they proposed a multidimensional vision of SBMI. The framework suggests starting the analysis from the value proposition section that is made up not only by describing new sustainable

value, such as existing tools but also by explaining the governance. This is followed by the value creation and delivery system related to resources, assets, processes and position in the value network relative to customers, competitors, collaborators and all stakeholders.

Following the framework's logic, we must consider how the value is created and distributed. The final area of our framework focuses mainly on the firm's results and their measurement. The second step concerns transparency, which is often associated with the amount of information an organisation is willing to disclose. Transparency cannot exist without ethical action such as the presence of an ethical code and an ethical audit. The last element necessary to consider is governance since leading the transformation to a more SBM must be a constant topic on the Board of Directors' agenda (Ferlito & Faraci, 2022).

Model of D. Young and M. Gerard

The core practice for SBMI is an iterative innovation cycle. With each round, the company gains scale, experience, and market presence for its initiative; these reinforce both the business advantage and the environmental and societal benefits generated (Young & Gerard, 2021):

- Step 1. Expand the Business Canvas – develop a rich understanding of the broader stakeholder ecosystem in which the company operates and of the environmental and societal issues and trends that might affect this ecosystem. As part of this diagnosis, it is necessary to explore the potential impact of ecosystem dynamics and other issues on the BM. This will facilitate the identification of a range of business vulnerabilities and opportunities tied to environmental and societal issues.
- Step 2. Innovate for a Resilient BM – transform the BM, or imagine an entirely new one, so that you can seize these opportunities. In this second step, it is necessary to innovate and develop new aspects of that new BM. It should ideate a new BM to integrate and reinforce both business advantage and environmental and societal benefits.
- Step 3. Link to Drivers of Value and Competitive Advantage – test, iterate, and refine the BM ideas or concepts (from the second step) to ensure that they will yield the environmental and societal benefits intended, and that the benefits will translate into value and advantage for the company. A business with weak profit margins cannot invest in innovation to amplify and scale environmental and societal benefits.
- Step 4. Scale the Initiative – the full potential value of SBMI is achieved only when the new BM is brought to scale: engaging people in the company, across the supply chain, in the company's networks, and in its ecosystems to expand impact and advantage.

Model of D. Young and M. Reeves

Strategy and sustainability are jointly considered and become mutually reinforcing, in which reporting gives way to action, and a company-centric approach gives way to a multilevel approach and new models of competition and sustainable value creation. The idea builds on M. Porter's concept of shared value, but it unites sustainability and strategy efforts in a common methodology and process, both at the enterprise level and at higher levels (Young & Reeves, 2020).

A model as a cycle which enables resilience, durability, and value creation through changing business, societal, and investor contexts has the following characteristics (Young & Reeves, 2020):

- It scales effectively without diminishing returns or increasing the risk of failure.
- It increases differentiation and competitiveness.
- It reduces the potential for commoditisation.
- It creates an environmental and societal surplus.
- It remains durable against emerging socio-environmental trends.
- It exhibits network effects that accumulate value and reshape value chains.
- It harnesses or reshapes business ecosystems for advantage and sustainability.
- It increases returns to shareholders and net positives to stakeholders in the environmental and societal dimensions.
- It stimulates the purpose of the company in ways that propel engagement and affinity for employees, customers, investors, and other stakeholders.

Model of E. Al-Baghdadi et al.

BMI has a direct relationship with sustainable innovations orientation (SIO) and management accounting control systems (MACS), as well as the fact that MACS have a direct relationship with SIO.

In addition, company and industry-related factors were proposed as the sustainable innovation orientation drivers, while sustainable product and process innovation and some measures of corporate performance were proposed as the outcomes of a sustainable innovation orientation. The mediating role of MACS and SIO in the relationship between BMI and sustainable innovation outcomes (corporate performance) was also hypothesised and it was contended that the innovation of a BM by manufacturing companies can lead to a sustainable outcome. The MACS and sustainable innovation orientation were found to mediate the relationship between BM sustainability and environmental performance, and also the relationship between BM sustainability and employee performance (Al-Baghdadi et al., 2021).

Summary – implementation

Like any type of innovation, BMI is a way of changing and expanding the ability of businesses to operate more effectively and efficiently. By focusing on proposing and creating value, BMI has become a major tool for developing new and

changing existing forms of organisational value creation. The emerging field of research and practice in the area of SBMs has adopted this approach to understand and develop new forms of value creation that offer novel value propositions to customers and all other stakeholders, and that enable companies to maintain the value of expected financial performance, while maintaining and even regenerating social and natural capital.

The implementation process should start by thinking over the concept of S. Anthony, who described the evolution of innovation as the transition of the entity of innovation from the individual innovator to enterprises and the transition of the object of innovation from technological innovation to BMI (Anthony, 2012). To further draw on the research of F. Lüdeke-Freund, they found the case of an SBMI of 45 patterns with the potential to create ecological, social, and economic value. These were arranged in 11 pattern groups (Lüdeke-Freund & Froese, 2020): “Pricing & revenue”, “Financing”, “Eco-design”, “Closing-the-loop”, “Supply chain”, “Giving”, “Access provision”, “Social mission”, “Service & performance”, “Cooperative”, “Community platform”.

SBMI should be implemented by translating sustainability strategies into practical action plans for value-creating enterprises. In doing so, SBMI improves a company’s ability to create, maintain or recreate natural, social and economic capital across organisational boundaries. This is realised by changing the value for customers and all other stakeholders and/or how value is created, delivered and extracted.

References

- Al-Baghdadi, E. N., Alrub, A. A., & Rjoub, H. (2021). Sustainable business model and corporate performance: The mediating role of sustainable orientation and management accounting control in the United Arab Emirates. *Sustainability*, 13(16), 8947. <https://doi.org/10.3390/su13168947>
- Amit, R., & Zott, C. (2020). *Business model innovation strategy: Transformational concepts and tools for entrepreneurial leaders*. John Wiley & Sons.
- Anthony, S. D. (2012). The new corporate garage. *Harvard Business Review*, 90, 44–53.
- Berends, H., Smits, A., Reymen, I., & Podoyntsina, K. (2016). Learning while (re)configuring: Business model innovation processes in established firms. *Strategic Organization*, 14(3), 181–219. <https://doi.org/10.1177/1476127016632758>
- Bocken, N. M. P., Short, S. W., Rana, P., & Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, 65, 42–56. <https://doi.org/10.1016/j.jclepro.2013.11.039>
- Boons, F., & Lüdeke-Freund, F. (2013). Business models for sustainable innovation: State-of-the-art and steps towards a research agenda. *Journal of Cleaner Production*, 45, 9–19. <https://doi.org/10.1016/j.jclepro.2012.07.007>
- Cavalcante, S., Kesting, P., & Ulhøi, J. (2011). Paper 2: Business model dynamics and innovation: (Re)establishing the missing linkages. *Management Decision*, 49, 1327–1342. <https://doi.org/10.1108/00251741111163142>
- Christensen, C. M. (1997). *The innovator’s dilemma: When new technologies cause great firms to fail*. Harvard Business School Press.

- Damanpour, F., & Schneider, M. (2006). Phases of the adoption of innovation in organizations: Effects of environment, organization and top managers1. *British Journal of Management*, 17(3), 215–236. <https://doi.org/10.1111/j.1467-8551.2006.00498.x>
- Evans, S., Vladimirova, D., Holgado, M., Van Fossen, K., Yang, M., Silva, E. A., & Barlow, C. Y. (2017). Business model innovation for sustainability: Towards a unified perspective for creation of sustainable business models. *Business Strategy and the Environment*, 26(5), 597–608. <https://doi.org/10.1002/bse.1939>
- Ferlito, R., & Faraci, R. (2022). Business model innovation for sustainability: A new framework. *Innovation & Management Review*, 19(3), 222–236. <https://doi.org/10.1108/INMR-07-2021-0125>
- Foss, N. J., & Saebi, T. (2017). Fifteen years of research on business model innovation. *Journal of Management*, 43(1), 200–227. <https://doi.org/10.1177/0149206316675927>
- Frankenberger, K., Weiblen, T., Csik, M., & Gassmann, O. (2013). The 4I-framework of business model innovation: A structured view on process phases and challenges. *International Journal of Product Development*, 18, 249–273. <https://doi.org/10.1504/IJPD.2013.055012>
- Geissdoerfer, M., Vladimirova, D., & Evans, S. (2018). Sustainable business model innovation: A review. *Journal of Cleaner Production*, 198. <https://doi.org/10.1016/j.jclepro.2018.06.240>
- Halecker, B., Bickmann, R., & Hölzle, K. (2014). *Failed business model innovation – A theoretical and practical illumination on a feared phenomenon* (June 4, 2014). R&D Management Conference 2014 - Management of Applied R&D: Connecting high value Solutions with future markets in Stuttgart, Germany on 03-06 June 2014, Available at SSRN: <https://ssrn.com/abstract=2449211>.
- Loučanová, E., Olšiaková, M., & Štofková, J. (2022). Open business model of eco-innovation for sustainability development: Implications for the open-innovation dynamics of Slovakia. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(2), 98. <https://doi.org/10.3390/joitmc8020098>
- Lüdeke-Freund, F., & Froese, T. (2020). *Unlocking sustainable business model innovation for a post-crisis economy*.
- Magretta, J. (2002). Why business models matter. *Harvard Business Review*, 80(5), 86–92.
- Makiela, Z. J., & Stuss, M. M. (Eds.). (2018). *Przedsiębiorczość i zarządzanie innowacjami Wiedza, technologia, konkurencja, przedsiębiorstwo*. Wydawnictwo C.H.Beck.
- Markides, C. (2006). Disruptive innovation: In need of better theory. *Journal of Product Innovation Management*, 23(1), 19–25.
- Mielcarek, P., & Piekarczyk, A. (2022). Determinants of business model innovation transformation – Research results. *European Research Studies*, 25(2), 235–248.
- Mitchell, D., & Coles, C. (2003). The ultimate competitive advantage of continuing business model innovation. *Journal of Business Strategy*, 24(5), 15–21.
- Oslo Manual 2018. (2018). OECD. <https://doi.org/10.1787/9789264304604-en>
- Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: A handbook for visionaries, game changers, and challengers*. Wiley.
- Podręcznik Oslo. Zasady gromadzenia i interpretacji danych dotyczących innowacji. (2008).

- Porter, M., & Kramer, M. (2011). The big idea: Creating shared value. How to reinvent capitalism—and unleash a wave of innovation and growth. *Harvard Business Review*, 89, 62–77.
- Qi, G. Y., Shen, L. Y., Zeng, S. X., & Jorge, O. J. (2010). The drivers for contractors' green innovation: An industry perspective. *Journal of Cleaner Production*, 18(14), 1358–1365. <https://doi.org/10.1016/j.jclepro.2010.04.017>
- Richardson, J. (2008). The business model: An integrative framework for strategy execution. *Strategic Change*, 17(5–6), 133–144.
- Schaltegger, S., Lüdeke-Freund, F., & Hansen, E. (2012). Business cases for sustainability and the role of business model innovation. *International Journal of Innovation and Sustainable Development*, 6(2), 95–119.
- Schaltegger, S., & Wagner, M. (2011). Sustainable entrepreneurship and sustainability innovation: Categories and interactions. *Business Strategy and the Environment*, 20(4), 222–237.
- Schumpeter, J. (1960). *Teoria rozwoju gospodarczego*. PWN.
- Sosna, M., Treviño-Rodríguez, R. N., & Velamuri, S. R. (2010). Business model innovation through trial-and-error learning: The naturhouse case. *Long Range Planning*, 43, 383–407. <https://doi.org/10.1016/j.lrp.2010.02.003>
- Stubbs, W., & Cocklin, C. (2008). Conceptualizing a “Sustainability Business Model.” *Organization & Environment*, 21, 103–127. <https://doi.org/10.1177/1086026608318042>
- Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning*, 43(2–3), 172–194. <https://doi.org/10.1016/j.lrp.2009.07.003>
- Tiscini, R., Testarmata, S., Ciaburri, M., & Ferrari, E. (2020). The blockchain as a sustainable business model innovation. *Management Decision, ahead-of-p*. <https://doi.org/10.1108/MD-09-2019-1281>
- Varadarajan, R. (2017). Innovating for sustainability: A framework for sustainable innovations and a model of sustainable innovations orientation. *Journal of the Academy of Marketing Science*, 45(1), 14–36. <https://doi.org/10.1007/s11747-015-0461-6>
- Velter, M., Bitzer, V., Bocken, N., & Kemp, R. (2021). Boundary work for collaborative sustainable business model innovation. *The Journey of a Dutch SME*, 36–66. <https://doi.org/10.5278/jbm.v9i4.6267>
- Young, D., & Gerard, M. (2021). *Four steps to sustainable business model innovation*. <https://www.bcg.com/pl-pl/publications/2021/four-strategies-for-sustainable-business-model-innovation>
- Young, D., & Reeves, M. (2020). *The quest for sustainable business model innovation*. <https://www.bcg.com/pl-pl/publications/2020/quest-sustainable-business-model-innovation>

18 Reporting on sustainable development

Małgorzata Kutera

Introduction

The concept of sustainable development of the economy and society was also reflected in the corporate reporting system. Currently, a growing group of stakeholders needs information about the activities of entities related to corporate social responsibility. The activity of enterprises in this area is perceived as an element of building the company's value in the long run. Investors, creditors, employees, contractors and the broadly understood community, or local and state authorities, analyse non-financial information related to the organisational culture and the impact of business entities on their environment. They are used to make various decisions: investing funds in a given company, discontinuing cooperation due to negative actions of an individual, consumer boycotts and pressure from non-governmental organisations. Many companies see an opportunity to gain a competitive advantage and increase their attractiveness in the market, including through broad information on initiatives related to sustainable development. The data contained in non-financial reports is, therefore, a valuable source for assessing the development potential of an enterprise. However, the practice so far in this area is very diverse. Selected entities present concise information as part of the annual management report, others prepare extensive separate reports presenting sustainability issues, and yet others combine financial and non-financial data by publishing integrated reports. This obviously has a negative impact on the possibility of a reliable comparison of the activities of entities by various stakeholders. This is mainly due to the lack of unified and commonly used reporting standards. This problem has already been identified, and intensive work is currently underway to harmonise the rules in this area. Bearing in mind the above, the purpose of this chapter is to present the current non-financial reporting systems and the directions for future changes. The analysis will be based mainly on global and international legal acts, as well as reports presenting the current scale of non-financial reporting.

A pivotal moment in the context of non-financial reporting was the introduction of Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of

non-financial and diversity information by certain large companies and groups. The regulation came into force with regard to reports prepared for the financial year beginning after 01/01/2017. For the first time, this document included the obligation to disclose information on sustainable development by the most significant economic entities throughout the EU. It does not mean, however, that such reporting did not occur before. The companies presented data in this area but on a completely voluntary basis (Singhania & Saini, 2021; Breijer & Orij, 2022). The aim of the directive was, therefore, to ensure the transparency, consistency and comparability of non-financial information provided by entities from EU countries. It should be noted, however, that the provisions of the directive are still not mandatory, do not impose a rigid form of reporting and allow the application of the “comply or explain” rule (Aureli, Magnaghi & Salvatori, 2019). This means that all companies covered by the Directive must disclose non-financial information or clearly indicate why they have not.

According to the provisions of Directive 2014/95/EU, the reporting obligation applies to public interest entities (i.e., listed companies, banks, insurance companies, selected investment funds and pension funds), which at the end of a given financial year and in a previous financial year met the following criteria:

- the average annual employment was higher than 500 people and
- the entity recorded more than EUR 20 million of the balance sheet total or more than EUR 40 million of net revenues from the sale of goods and products.

The directive identifies some thematic areas of reporting, which are presented in Figure 18.1. Each entity should briefly explain the business model and then describe the policies, results, principal risks and key performance indicators (KPIs)

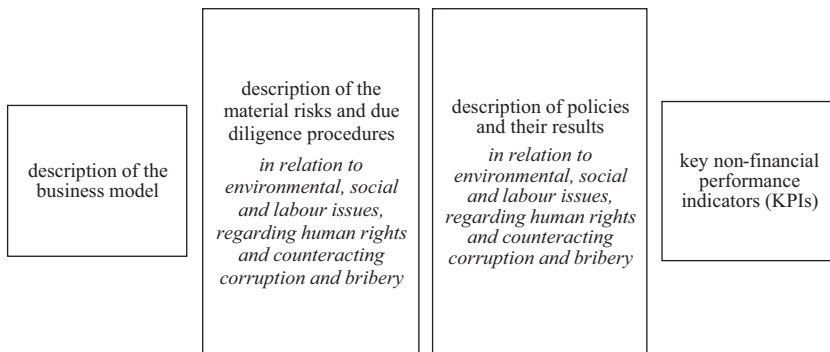


Figure 18.1 Main areas of non-financial reporting in accordance with Directive 2014/95/EU

Source: Own study

in four primary areas: environment, social responsibility and employees, human rights, anti-corruption and anti-bribery.

The directive also presents the broader context of these descriptions. With regard to environmental issues, disclosures regarding the current and anticipated impact of the company's operations on the environment and on health and safety, the use of renewable or non-renewable energy, greenhouse gas emissions, water consumption and air pollution are of particular importance. In the field of social and labour matters, data on various activities undertaken to ensure gender equality, implementation of basic conventions related to the organisation of work, working conditions, social dialogue, respect for employees' right to information and expression, respect for trade union rights, health and safety at work and dialogue with local communities or actions taken to protect and develop these communities. Information on preventing human rights violations or the instruments in place to fight corruption and bribery is also important.

However, several years of experience in the application of Directive 2014/95/EU have not brought the desired results. The European Commission points out that companies often do not provide all the information relevant to stakeholders in their reports. Also, the disclosures are not sufficiently reliable or comparable between companies, even within the same sector and business profile. It happens that some data is difficult to identify by readers because entities intentionally hide it. In this context, the extremely limited scope of disclosures concerning intangible assets was emphasised. Therefore, further legislative measures were taken to eliminate the irregularities mentioned above and to meet the growing information requirements on the part of stakeholders.

Intensive work on new regulations is currently underway. At the European Union level, they are mainly concerned with the implementation of three new legal acts:

- EU Taxonomy – the common name of Regulation (EU) 2020/852 of the European Parliament and of the Council of 18/06/2020 on establishing a framework to facilitate sustainable investment,
- Sustainable Finance Disclosure Regulation (SFDR) – Regulation (EU) 2019/2088 of the European Parliament and of the Council of November 27, 2019 on disclosure of information related to sustainable development in the financial services sector,
- a new Corporate Sustainability Reporting Directive (CSRD) of April 21, 2021- Directive of the European Parliament and of the Council amending Directive 2013/34/EU, Directive 2004/109/EC, Directive 2006/43/EC and Regulation (EU) No 537/2014 as regards corporate reporting on sustainability.

The EU Taxonomy is a system of unified classification of activities for sustainable development, intended to support investors in their decision-making. Regulation organises various activities of entities related to sustainable development. It also sets out criteria which, if met, mean that the activity can be considered

environmentally sustainable. According to the EU Taxonomy, an economic activity qualifies as environmentally sustainable if it contributes to the achievement of the following six objectives:

- mitigating climate change,
- adaptation to climate change,
- sustainable use and protection of water and marine resources,
- transition to a circular economy,
- pollution prevention and control,
- protection and restoration of biodiversity and ecosystems.

The EU Taxonomy applies to financial market participants to which the SFDR applies, and companies are subject to Directive 2014/95/EU, which imposes several reporting obligations on them. These obligations will fully enter into force in 2023.

Entities obliged to apply the directive will be required to disclose whether and to what extent their business activities are consistent with the assumptions of the taxonomy. Companies should determine the percentage of turnover (CA), investment (CAPEX) and expenditure (OPEX) in a given reporting year in relation to the assets or processes contributing to the environmental objectives outlined above. In turn, participants of financial markets offering “sustainable” financial products and services in the EU will be required to present to what extent their activities contribute to the achievement of the taxonomy’s objectives and what percentage of their investments is compliant with its requirements. The EU Taxonomy introduces the so-called technical screening criteria that will make it possible to determine whether a given activity makes a significant contribution to the achievement of a specific goal or harms it. Thus, entities will have to demonstrate that their activity contributes significantly to one of the six environmental objectives, does not adversely affect the achievement of the other objectives and that they comply with the minimum requirements. On this basis, companies will be able to disclose to what extent (using the “green” CA, CAPEX and OPEX indicators) their activities can be considered sustainable.

Another critical piece of legislation is the SFDR. The regulation entered into force in March 2021. It discloses information related to sustainable development in the financial services sector and places many reporting obligations on financial market participants and advisers. They mainly concern the disclosure of the approach to managing risks related to sustainable development as part of the investment activity conducted. According to this regulation, the information should cover, among other things:

- the adopted strategy of risk for sustainable development in making investment decisions,
- description of the negative impact of the investment decisions made on the factors of sustainable development.

The financial industry will therefore have to describe in detail whether the investment products it offers comply with the EU Taxonomy. This is to increase market transparency and prevent the publication of unreliable data in this field.

In April 2021, the European Commission also published a draft of a new directive on sustainability reporting (the so-called CSRD), which replaces Directive 2014/95/EU. It contributes to improving the quality of disclosed data on sustainable development and adjusting reporting to the legislative changes discussed above (including the EU Taxonomy and the SFDR). The new directive will come into force on 01/01/2024 after its adoption by member states and implementation into national legislation. As a result of the above regulations, Environmental, Social, and Governance (ESG) reporting in the EU member states has been significantly extended. The changes mainly concern four issues presented in Figure 18.2.

The new directive significantly extends the scope of entities that will be required to present non-financial reports. From 2024, the new rules will become mandatory for all companies covered by the current directive. From 2025, they will apply to large units employing over 250 people (the current threshold is 500 people). Then, from 2026, the obligation will be extended to all small and medium-sized enterprises listed on the EU stock exchanges. Only micro-enterprises listed on the stock exchange will not be subject to the obligation. It is estimated that the new obligation will apply to approximately 50,000 business entities (A4S, 2022).

The thematic scope of reporting will focus on three areas: E (Environment) – environmental factors, S (Social) – social issues, and G (Governance) – corporate governance. Individuals will have to broadly present their business models, strategies and sustainable development policies. The information is intended to explain the sustainability risk resilience, opportunities, plans to ensure the

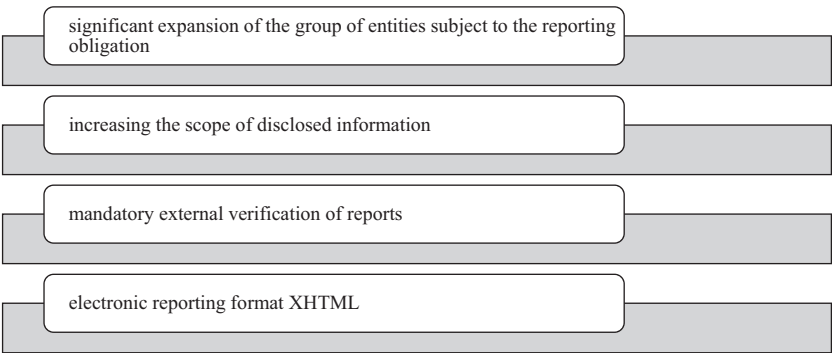


Figure 18.2 Critical directions for changes in reporting included in the CSRD

Source: Own study

entity's compliance with the transition to a sustainable economy, the consideration of stakeholders and the impact of the entity, and how sustainability is incorporated into the strategy. Disclosure will also include intangible assets related mainly to intellectual capital. All the above information is to be additionally described using specific indicators.

A fundamental change is the introduction of mandatory verification of non-financial reports by external experts. Statutory auditors will play a significant role in this, although the Directive also gives Member States the option of allowing these audits to be performed by other independent expert firms. The condition is, however, that these entities are subject to similar requirements as the auditors' environment (mainly in the scope of the principles of independence) and have similar substantive qualifications. The audit results are to be included in a separate report.

The last key change is the imposition of a strictly defined electronic format of non-financial reports. An obligation to present the disclosed information in a structured electronic XHTML format will be introduced to facilitate its presentation and comparison.

The introduction of a very clear division of content according to the ESG concept is critical in the context of changes in the thematic scope of the disclosed information. Environmental factors mainly relate to how the company's operations affect the environment and how it uses renewable and non-renewable natural resources (including the amount and type of energy used, greenhouse gas emissions, efficiency in managing natural resources, waste and the method of their disposal or the impact on the natural environment and biodiversity). Information presented in this context is to be adapted to the following objectives of the EU Taxonomy:

- climate change mitigation and adaptation to these changes,
- sustainable use of water and marine resources,
- transition to a circular economy,
- pollution prevention,
- protection and restoration of biodiversity and ecosystems.

Social issues concern how an individual's business activity affects its social environment, i.e., employees, customers, suppliers and the local community. The following issues related to employee management are significant here:

- equal opportunities (including gender equality, equal pay, training, employability and inclusion of people with disabilities),
- working conditions, wages, social dialogue, collective agreements, employee involvement, life balance, health, safety and adaptation to the working environment,
- respect for human rights, fundamental freedom rights and international standards in this area.

In turn, corporate governance is a set of applied practices for supervising the operation of an enterprise. It includes procedures, standards and controls implemented to ensure effective management, improve decision-making processes, comply with the law and consider the needs of external stakeholders. Presentation of information in this area applies to:

- the composition and role of management bodies (including sustainable development matters),
- business ethics and corporate culture,
- anti-corruption policy, political involvement, including lobbying,
- business relationships, internal control systems and risk management, also for reporting processes.

Not all ESG issues are equally important for every enterprise. Determining which information should be included in the report can be difficult (Camilleri, 2015; Darnall, Ji, Iwata & Arimura, 2022). In this regard, it is particularly important to select appropriate indicators, thanks to which the unit will be able to report the progress in the development of its activity related to sustainable development. Table 18.1 presents examples of indicators and their nature, broken down into three key ESG areas.

Table 18.1 Significant ESG reporting indicators

	<i>Name of the indicator</i>	<i>Description</i>	<i>Type</i>
Environment	Greenhouse gas emissions	The total sum of direct and indirect greenhouse gas emissions.	Quantitative
	Energy consumption	The amount of energy consumed by the organisation.	Quantitative
	The risks and benefits associated with the climate	The potential negative impact of climate change on the organisation or opportunities arising from climate change.	Qualitative
	Intensity of greenhouse gas emissions	Amount of greenhouse gas emissions per unit of economic activity.	Quantitative
	Management of emissions	Description of the process that the company has implemented to reduce greenhouse gas emissions to the atmosphere and the reduction targets set.	Qualitative
	Water consumption	The amount of water used in the enterprise.	Quantitative

(Continued)

Table 18.1 (Continued)

	<i>Name of the indicator</i>	<i>Description</i>	<i>Type</i>
Social	Water resource management	A process implemented to optimise water consumption and thus minimise the environmental impact.	Qualitative
	Impact on biodiversity	Description of the policy and actions taken to monitor and minimise the company's impact on biodiversity.	Qualitative
	Pollution and waste	Description of activities aimed at monitoring, managing and reducing waste generated in the company.	Qualitative & Quantitative
	Diversity in the supervisory organs	The degree of gender diversity of the company's management board and supervisory board.	Quantitative
	Equal pay ratio	The difference between the average salaries of men and women in the company.	Quantitative
	Employee turnover	Several instances of leaving jobs.	Quantitative
	Freedom of association and collective negotiation	Percentage of active employees covered by collective bargaining agreements.	Quantitative
	Occupational health and safety	Description of measures taken by the company to protect workers and prevent accidents in the workplace.	Qualitative
	Human rights policy	Description of the company's human rights policy.	Qualitative
	Due diligence procedures for human rights	Description of the process of identifying the risk of human rights violations and actions taken to eliminate it.	Qualitative
Governance	Structure of management bodies	Information on the experience, competencies and independence of management board members.	Qualitative

(Continued)

Table 18.1 (Continued)

<i>Name of the indicator</i>	<i>Description</i>	<i>Type</i>
Code of ethics	Description of the implemented code of ethics.	Qualitative
Anti-corruption policy	Presentation of the anti-corruption policy operating in the entity.	Qualitative
The mechanism for reporting violations	Description of the rules for reporting suspected violations.	Qualitative
Data protection policy	Presentation of data protection rules implemented in the company.	Qualitative

Source: Own study based on WSE & EBRD (2021); FEE (2011).

Another interesting aspect in the context of non-financial reporting is the introduction of the concept of double materiality, which makes it easier for enterprises to make decisions about the substantive scope of disclosures. Thus, “environmental and social materiality” and “financial materiality” are distinguished (Krasodomska & Godawska, 2021). To prepare an accurate, sustainable development report, each company should undergo a certain content selection process bearing in mind both of the above perspectives (Baumüller & Sopp, 2022). It is presented in Figure 18.3. The first step is to identify all factors related to sustainable development that could potentially affect the company and vice versa. Then, the individual selects from among them factors that are directly related to its activities and having a significant impact on people and the environment, taking into account the current and future time perspective (environmental and social materiality). At a later stage, you should already be guided by financial materiality. From the above broad set of factors, we select those that create or weaken the value of the enterprise and are, therefore financially significant. The last stage is to identify the issues the financial effects of which have already been presented in the financial statements of the entity. It is worth adding that this disclosure is completely voluntary.

The concept of identifying important issues of sustainable development for the company using double materiality has been quite well implemented in the practice of non-financial reporting. It is worth mentioning, however, that this

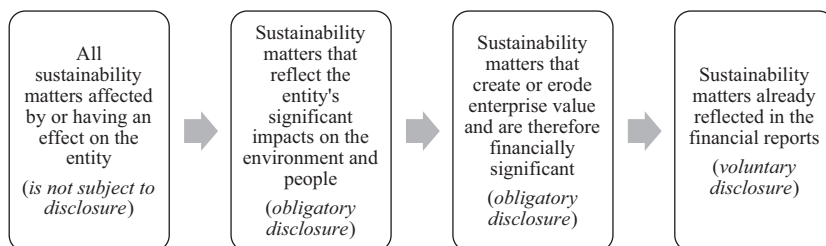


Figure 18.3 Scope of non-financial disclosures based on the double materiality concept

Source: Own study based on EFRAG (2021)

Management report element	Sustainable development report	Integrated report
<ul style="list-style-type: none"> • some of the most important non-financial topics and indicators included in the annual management report prepared with the financial statements, • emphasis only on the information relevant to the correct assessment of the company's value. 	<ul style="list-style-type: none"> • separate report presenting mainly non-financial information, • currently, companies have 6 months from the date of publication of annual reports to publish a sustainable development report, • the most frequently chosen form of reporting on a global scale, • at present, there is no clearly defined and structured form of this report. 	<ul style="list-style-type: none"> • financial and non-financial information presented in one document, • shows how the strategy and model of building the company's value affect the undertaken ESG activities and their results, • the form chosen by large and developed economic entities with an extensive model of ESG system management.

Figure 18.4 Main types of non-financial reporting

Source: Own study

process should also be supported at the legislative level. In particular, it is about preparing some general statements presenting factors important from the point of view of international or national sustainable development policy. Similar industry-specific guidelines should also be developed.

It should be strongly emphasised that currently, one of the biggest problems with sustainability reports is their complete lack of comparability. The legal regulations presented above generally focus on the substantive scope of the information presented without indicating specific methods of its disclosure. Therefore, three options for reporting issues related to sustainable development have been developed. They are shown in Figure 18.4. Enterprises include non-financial information as part of the annual management report, prepare a separate report on sustainable development, or prepare one report presenting financial and non-financial data.

Due to the lack of separate and unified standards for non-financial reporting, entities are now using various available options for disclosing this data developed by selected international organisations (Breijer & Orij, 2022). The most important institutions that created the reporting framework used so far are (A4S, 2022):

- Global Reporting Initiative (GRI) – established in 1997. It is the first organisation to develop global non-financial reporting standards, and they are now used by the largest number of companies in the world. GRI mainly relates to the preparation of separate reports on sustainable development and takes into account various groups of stakeholders. The standards present guidelines in the following areas: general, economic, environmental and social,
- International Integrated Reporting Council (IIRC) – established in 2010 and transformed in 2021 into Value Reporting Foundation (VRF) (after merger with Sustainability Accounting Standards Board (SASB)). The organisation has developed an integrated reporting framework based on six kinds of capital necessary in the process of creating enterprise value: financial, manufacturing, intellectual, human, social and natural. The guidelines mainly address investors' information needs,
- SASB – founded in 2011 and later functioning as the VRF (due to the merger with the IIRC as presented above). It has developed standards that are mainly used by US companies that also represent only the investor's perspective. They cover the following areas: the environment, social capital, human capital, business model and innovation, leadership and corporate governance,
- Climate Disclosure Standards Board (CDSB) – established in 2007. CDSB is an international consortium of businesses, and environmental non-governmental organisations (NGOs) committed to developing and adapting a global corporate reporting model to align natural and social capital with financial capital. As a result of integration processes, this organisation no longer functions,
- Carbon Disclosure Protocol (CDP) – founded in 2000. This organisation supports companies in measuring and disclosing their environmental impact. The CDP aims to disseminate environmental reporting and risk management and promote activities for a sustainable economy.

In the last two years, there have been very intense merger processes between the organisations mentioned. In November 2020, IIRC and SASB announced their decision to merge into a single organisation called the VRF. The new organisation was established in June 2021. For a short time, it developed the concept of integrated reporting and set standards for sustainable development reporting based on cooperation with GRI, CDP and CDSB. Ultimately, however, it was decided that the best solution would be the development of standards by the International Financial Reporting Standards (IFRS) Foundation, which has been harmonising, establishing and improving the financial reporting of entities on a global scale for many years. The International Sustainability Standards Board (ISSB) was created within the IFRS Foundation to guide the process of setting standards for non-financial reporting. Therefore, further integration processes took place. In January 2022, the IFRS Foundation brought into fold the CDSB, and in August 2022, the VRF. Work is currently underway to create new global standards. The first projects concerning climate-related disclosures and general sustainability-related disclosures have been developed.

It should be emphasised that at the European Union level, intensive work is also underway on the standardisation of sustainable development reporting. They are mainly run by the European Financial Reporting Advisory Group (EFRAG). Together with the new directive, the European Commission also wants to issue the European Sustainability Reporting Standards, which will be used by all companies when preparing new reports. The standards are divided into two basic groups: general guidelines for all entities obliged to present non-financial reports and sector-specific standards. In April 2022, work on 13 cross-sectional and topical standards was completed and publicly consulted. This process was completed in August 2022. Work is currently underway on sector-specific standards, which are to be submitted for public verification in February 2023. About 40 sector-specific standards are planned to be developed in total. The final adoption of the first set of general standards is expected in June 2023, and sector-specific standards in June 2024. At present, the following general standards have been developed:

- 1 Cross-sectional standards:
 - ESRS 1 General principles
 - ESRS 2 General, strategy, governance, and materiality assessment disclosure requirements
- 2 Topical standards:
 - a) Environment
 - ESRS E1 Climate change
 - ESRS E2 Pollution
 - ESRS E3 Water and marine resources
 - ESRS E4 Biodiversity and ecosystems
 - ESRS E5 Resource use and circular economy
 - b) Social
 - ESRS S1 Own workforce

- ESRS S2 Workers in the value chain
- ESRS S3 Affected communities
- ESRS S4 Consumers and end-users
- c) Governance
 - ESRS G1 Governance, risk management, and internal control
 - ESRS G2 Business conduct

In addition to the above, general guidelines have also been prepared, which will not have the rank of applicable standards but serve as auxiliaries to understand them better. These include the following Conceptual Guidelines:

- ESG 1 Double materiality
- ESG 2 Characteristics of information quality
- ESG 3 Time horizons
- ESG 4 Boundaries and levels of reporting
- ESG 5 EU and international alignment
- ESG 6 Connectivity

Currently, the most popular non-financial reporting standards are the guidelines prepared by the GRI. They are used by about 78% of enterprises belonging to the 250 largest corporations in the world (KPMG, 2022). Over the last two years, the percentage of companies basing their reporting on GRI principles has increased by over 5%, although there is a clear difference between individual regions. The standards are most popular in the Americas (75%) and least used in the Middle East and Africa (62%). It should be mentioned that the above guidelines are very extensive and detailed. The last updated full version of the standards, published in June 2022, contains 867 pages and covers the issues included in Table 18.2.

The scale of non-financial reporting in global terms is constantly increasing. A dynamic upward trend can be observed since the beginning of this century. Today, almost all of the world's largest corporations publish their sustainability data. In 2022, such information was presented by as many as 96% of entities belonging to the 250 largest global enterprises. Chinese entities are the only companies in this group that do not prepare non-financial reports. However, the situation will change, as from mid-2022, also in China, an obligation to publish data on sustainable development was introduced, mainly in environmental and social matters (KPMG, 2022). The Asia Pacific region is the clear leader in reporting, where such reports are prepared by 89% of entities belonging to the 100 largest companies in the world. The next place is taken by: Europe (82%), both Americas (74%) and the Middle East and Africa (56%). There are also countries where all the most prominent corporations disclose non-financial data – Japan, Singapore, Germany and the United States (KPMG, 2022).

It should be stated that the role of non-financial reporting is growing. The main emphasis in this matter is due to various stakeholder groups. These also include investors who expect benefits resulting from building the company's value

Table 18.2 List of global reporting initiative standards

<i>GRI number</i>	<i>Description</i>	<i>The year of publication</i>
GRI 1	Foundation	2021
GRI 2	General disclosures	2021
GRI 3	Material topics	2021
GRI 11	Oil and gas sector	2021
GRI 12	Coal sector	2022
GRI 13	Agriculture, aquaculture and fishing sectors	2022
GRI 201	Economic performance	2016
GRI 202	Market presence	2016
GRI 203	Indirect economic impacts	2016
GRI 204	Procurement practices	2016
GRI 205	Anti-corruption	2016
GRI 206	Anti-competitive behaviour	2016
GRI 207	Tax	2019
GRI 301	Materials	2016
GRI 302	Energy	2016
GRI 303	Water and effluents	2018
GRI 304	Biodiversity	2016
GRI 305	Emissions	2016
GRI 306	Effluents and waste	2016
GRI 306	Waste	2020
GRI 308	Supplier environmental assessment	2016
GRI 401	Employment	2016
GRI 402	Labour/management relations	2016
GRI 403	Occupational health and safety	2018
GRI 404	Training and education	2016
GRI 405	Diversity and equal opportunity	2016
GRI 406	Non-discrimination	2016
GRI 407	Freedom of association and collective bargaining	2016
GRI 408	Child labour	2016
GRI 409	Forced or compulsory labour	2016
GRI 410	Security practices	2016
GRI 411	Rights of indigenous peoples	2016
GRI 413	Local communities	2016
GRI 414	Supplier social assessment	2016
GRI 415	Public policy	2016
GRI 416	Customer health and safety	2016
GRI 417	Marketing and labelling	2016
GRI 418	Customer privacy	2016

Source: Own study based on GRI (2022).

in the long run. However, the legislation in force so far in the field of reporting on sustainable development has turned out to be insufficient. First of all, entities publish data on very diverse subjects and degrees of detail. In addition, there is no uniform form of reporting. The above problem has already been identified, and intensive work is currently underway to harmonise these rules both at the

global and European levels. As a result, significant changes will be made to the national non-financial reporting systems. However, this process will certainly continue for the next several years.

References

- Accounting for Sustainability A4S. (2022). *Navigating the reporting landscape*. <https://www.accountingforsustainability.org/content/dam/a4s/corporate/home/Knowledge-Hub/Guide-pdf/Navigating%20the%20Reporting%20Landscape%20V2.pdf.downloadasset.pdf>
- Aureli, S., Magnaghi, E., & Salvatori, F. (2019). The role of existing regulation and discretion in harmonizing non-financial disclosure. *Accounting in Europe*, 16(3), 290–312. doi:10.1080/17449480.2019.1637529
- Baumüller, J., & Sopp, K. (2022). Double materiality and the shift from non-financial to European sustainability reporting: Review, outlook and implications. *Journal of Applied Accounting Research*, 23(1), 8–28. doi:10.1108/JAAR-04-2021-0114
- Breijer, R., & Orij, R.P. (2022). The comparability of non-financial information: An exploration of the impact of the non-financial reporting directive (NFRD, 2014/95/EU). *Accounting in Europe*, 19(2), 332–361. doi:10.1080/17449480.2022.2065645
- Camilleri, M.A. (2015). Environmental, social and governance disclosures in Europe. *Sustainability Accounting, Management and Policy Journal*, 6(2), 224–242. doi:10.1108/SAMPJ-10-2014-0065
- Darnall, N., Ji, H., Iwata, K., & Arimura, T.H. (2022). Do ESG reporting guidelines and verifications enhance firms' information disclosure? *Corporate Social Responsibility and Environmental Management*, 29(5), 1214–1230. doi:10.1002/csr.2265
- Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0095>
- European Financial Reporting Advisory Group EFRAG. (2021). *Final Report Proposals for a Relevant and Dynamic EU Sustainability Reporting Standard setting*. https://www.efrag.org/Assets/Download?assetUrl=%2Fsites%2Fwebpublishing%2FSiteAssets%2FEFRAG%2520PTF-NFRS_MAIN_REPORT.pdf?assetUrl=%2Fsites%2Fwebpublishing%2FSiteAssets%2FEFRAG%2520PTF-NFRS_MAIN_REPORT.pdf&AspxAutoDetectCookieSupport=1
- Federation of European Accountants FEE. (2011). *Environmental, Social and Governance (ESG) indicators in annual reports. An introduction to current frameworks*. https://effas.com/wp-content/uploads/2021/09/ESG_indicators_in_annual_reports_An_introduction_to_current_frameworks_1105_Colour2652011551650.pdf
- Global Reporting Initiative GRI. (2022). *Consolidated Set of the GRI Standards*. <https://www.globalreporting.org/how-to-use-the-gri-standards/gri-standards-english-language>
- KPMG. (2022). *Big shifts, small steps. Survey of Sustainability Reporting 2022*. <https://home.kpmg/xx/en/home/insights/2022/09/survey-of-sustainability-reporting-2022.html>
- Krasodomska, J., & Godawska, J. (2021). Raportowanie informacji o zrównoważonym rozwoju – standaryzacja i harmonizacja niefinansowych ujawnień przedsiębiorstw.

- Rachunkowość*, 10. <https://rachunkowosc.com.pl/raportowanie-informacji-o-zrownowazonym-rozwoju-standaryzacja-i-harmonizacja-niefinansowych-ujawnien-przedsiębiorstw>
- Proposal for a Directive of the European Parliament and of the Council amending Directive 2013/34/EU, Directive 2004/109/EC, Directive 2006/43/EC and Regulation (EU) No 537/2014, as regards corporate sustainability reporting. <https://op.europa.eu/en/publication-detail/-/publication/3a8c6ffd-a377-11eb-9585-01aa75ed71a1/language-en/format-PDF>
- Singhania, M., & Saini, N. (2021). The institutional framework of ESG disclosures: Comparative analysis of developed and developing countries. *Journal of Sustainable Finance & Investment*. doi:10.1080/20430795.2021.1964810
- Warsaw Stock Exchange WSE, & European Bank for Reconstruction and Development EBRD. (2021). *Wytyczne do raportowania ESG. Przewodnik dla spółek notowanych na GPW*. https://www.gpw.pl/pub/GPW/ESG/Wytyczne_do_raportowania_ESG.pdf



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