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Martin Jury · Romana Rauter ·
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Shaping Tomorrow Today – SDGs from multiple perspectives



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Ausrichtung und Zielsetzung Innerhalb der derzeit dominierenden gesellschaftlichen Entwicklungen wird der Stellenwert der individuellen Handlungsfähigkeit der sozialen Akteure in den Vordergrund gerückt. Schlagworte wie „Wissensgesellschaft“ oder „Civil Society“ weisen auf die zentrale Bedeutung von Lern- und Bildungsprozessen für die politische, ökonomische und kulturelle Entwicklung hin. Diese Entwicklung schlägt entsprechend auf die einzelnen Biografien durch. Mit dem in dieser Reihe entfalteten Programm der Lernweltforschung werden diesbezüglich die hier eingelagerten Vielschichtigkeiten und Eigenwilligkeiten, die überraschenden Umgestaltungen und Suchbewegungen von Subjekten in Lern- und Bildungsprojekten untersucht. Die hier sichtbar werdenden eigensinnigen Aneignungsprozesse werden innerhalb der je konkreten Situationen und Strukturen analysiert. Lernwelten werden dabei zumindest in einer doppelten Bedeutung sichtbar: Sie sind Rahmen und Rahmungen zugleich, Blick und Gegenblick, in denen Erfahrungen (im Rückgriff auf ein System von Regeln) bewertet, als Bestandteile der sozialen Welt durch subjektive Bedeutungszuweisung (re-)konstruiert werden, und in denen auch das „Aneignungssystem“ selbst und der Prozess der Erfahrungsaufschichtung zur Disposition stehen.

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Foreword

Shaping Tomorrow Today—The Faculty of Environmental, Regional and Educational Sciences

What is and can a “faculty” represent today in the differentiated everyday scientific life of a university beyond an organisational structure for research and teaching tasks? What is the answer to the structure of science specified therein and what “message” does it give to the researchers, teachers, and students involved in it? And how is this idea linked to relevant problems of our society, to the dynamics of the scientific community, to the development of young scientists, or to the interests of students? How can the interaction between the “scientific subjects” and the researchers be supported? Which standards and benchmarks are used to evaluate scientific achievements and burdens, and with which consequences? All of these (and many more) are questions about the self-image of a form of organisation of science: the faculty. In order to answer these questions, debates on strategy are certainly necessary, whose standardised goals and competitive procedures are fundamentally needed, but, in my opinion, even more important for this seems to be patience and the trust in the people working here. Also, sufficient resources, lively freedom, the renunciation of prohibitions on thinking and the support of even risky projects are most likely to enable those forms of self-reflection in science that are characterised by a responsibility to society and robust wisdom.

The URBI (Environmental, Regional and Educational Sciences) faculty, founded in October 2007, brings together the four branches of Education Sciences, Sports Sciences, Geography, and Environmental Systems Sciences—and tries to support the demand for its approximately 6000 students, six institutes and two scientific centres. As can be seen in the mission statement, in dealing with social challenges, the focus is on a critical examination of one's own scientific practice in relation to the explanatory and transformative knowledge acquired here. The fact that this can be done successfully has been clearly demonstrated in

recent years by the development of the faculty—in teaching and in research. Nevertheless, it is always appropriate to reflect carefully on the tasks and possibilities of the faculty as a living organism to define further developments and the advantages of such an organisational form.

The science-specific aspect is probably the most common one because it fundamentally defines the work at universities. At the same time, however, science takes place in a social and life-world space that also influences the most stringent hierarchy of scale levels. How colleagues experience each other in their concrete everyday work, which forms of exchange with co-researchers and co-learners are dominant, determines to a great extent how the “freedom of science” can be combined with the aspiration for freedom for everyone. Now, the idea of a “free science” that follows only its own epistemic rules is an ancient one, but this freedom of science must always be formulated in a concrete and present way. Although the historically grown consensus that scientific actors, their tasks, and (self-controlled) mechanisms in research and teaching are generally familiar to the public, is still alive. Complaints from the scientific community about excessive economisation through New Public Management control models or a withdrawal from the perspective of “*Bildung durch Wissenschaft*” [education through science] to a pure competence-driven system are also clearly evident. All these elements have a great impact on the “identification of success” of scientific outcomes. Integrated into the university-wide performance and quality assurance systems, the URBI faculty is committed to a philosophy that only the most possible freedom, personal liability, and independence of responsible employees within low-level hierarchies can create quality as an expression of creative solutions to problems. For this reason, it is essential for a faculty management to empower the personal autonomy of all colleagues. Scientific action (besides the subject-specific elements) also has a lot to do with social intelligence, with ideas of self-efficacy, and the creative power to produce (internationally) presentable results. Only the daily noticeable scope for decision making of the individuals, within socially responsible autonomy, can determine science as “a problem-solving community”. The variously developed joint projects and goals must therefore be secured on a voluntary basis within the framework of equal participation. A faculty in this sense can be described as a specific form of an “Allmende”. An “Allmende” describes a kind of “common property”, where the “neighbours” collectively cultivate this field. To use this term to characterise an organisational form such as a faculty emphasises that there is no clear separation between the individual branches of science because every form of creating and communicating knowledge is based on conceptualisations and its communication. This “core business” of scientific and critical thinking emphasises—beyond any discipline-specific boundaries—the

creation of analytical tools that allow every scientist and all interested persons to name, to see, and to understand something that only thereby becomes visible and communicable. On the one hand, each faculty remains a specific mixture of theories, methodologies, and methods that prove their potential in the disciplines. On the other hand, however, there is also the chance to “generate” something that is connectable for all, something that could never be achieved by central planning or by simply gathering the strengths of the individuals. Such a concept of an “All-mende”, of the commons, goes far beyond the idea of a “homo oeconomicus” and leads straight into the direction of a dynamic form of a “scientific community”.

The papers presented here try to illustrate such a common process and to create a framework for it within the faculty. The intention of this collection is grouped around the idea that a way out of today's political, economic, cultural, social, and ecological crises can only be found by learning processes. Political-technical strategies affect too rarely and systematically the everyday behaviour of people. The dominant social and environmental developments cannot therefore be managed without increasing the individual capacity of social actors. Learning and educational processes play an essential role because life depends regionally and globally on the fact that unavoidable learning requirements can no longer be denied.

The topics addressed in this book currently play an important role at the URBI faculty. For the future it will be necessary to bring these complex questions more into joint research, communication, and development tasks without changing existing structures at the institutes. The main aim is to develop the “branding” of the URBI faculty at the university. Key questions for this are: *Which social forms and narratives support people in learning in order to deal with cumulative risks? How can the current social transformations be converted into concrete scenarios of action so that it becomes clear who is how concerned in the processes? What kind of scientifically oriented “storytelling” can make these transformations and their diverse motivations for action more understandable? How can the relationship between real visible problems and the opening of possibilities be established without immediately falling into the continuous strategies of risk shifting through pseudo-national behaviour in the sense of a “Floriani principle” or through apocalyptic “... Aufregungsschäden im Sinne einer ökologischen Tugenddiktatur” (excitement damage in the sense of an ecological virtue dictatorship) (Luhmann 1986, p. 21)? How do people learn to interpret the epidemical, technical, and scientific risk expertise in a challenging way and how do they transform global hazards into regional and life-world contexts? How can social skills support empowerment processes and how can scientific expertise be used to establish substantial connections between the various fields of knowledge and relevant references to individual and social life?*

In a first step, this publication should help to improve the interaction between the individual research groups and make the points of common interest more visible. Subsequently, it should be discussed which formats can broaden the exchanges at the faculty and which thematic guidelines can facilitate concrete references. At the same time, it could also be considered how such a systematic approach to connect our topics can also be used to integrate these interdisciplinary views into the teaching processes to allow students to be more interested in research. To answer the questions asked at the beginning of this article, the major asset of this faculty, for me, is to create a space for as many people (students, teachers, and researchers) as possible, in which they can develop their different potentials in the sense of “Bildung durch Wissenschaft”. This can only be successful, if scientists are also prepared to be aware of the world problems that surround them, of economic and political events, and their commitment to social responsibility. How this can be realised is clearly shown in the following articles written by members of the faculty of Environmental, Regional and Educational Sciences. I would like to thank all URBI staff for their engagement in these activities!

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Contents

Introductory Overview	1
Philipp Assinger and Sandra Hummel	
Sustainability Challenges in Cities, Communities, and Regions	
The Challenge of Providing Information About Regional Climate Change	15
Douglas Maraun	
Littering in Municipal Public Places: The Role of Personal Factors and Intentions	47
Julia Neumann and Thomas Brudermann	
Everyday Disasters in Everyday Lives—Rethinking SDG 11.5 in Times of Multiple Crises.	73
Nicolas Schlitz, Andrea Jany, Rivka Saltiel and Anke Ströver	
Correlates of Active Commuting in Austrian Adults: Does Personality Matter?	89
Matteo C. Sattler, Tanja Färber, Katharina Traußnig, Gottfried Köberl, Christoph Paier, Pavel Dietz and Mireille N. M. van Poppel	
Sustainability Learning in Schools and Other Educational Institutions	
How Closing Small Schools in Rural Regions Affects Community Life	119
Filippina Risopoulou-Pichler, Judith Pizzera and Bärbel Hausberger	

Reaching the ‘Hard to Reach’: Implementing “Education for All” by Participative Action Research and Students’ Voices	141
Edvina Bešić, Lisa Paleczek, Julia Ladenstein and Barbara Gasteiger-Klicpera	
Addressing Teacher Shortages to Achieve Inclusive and Equitable Education for All: Policies for the Supply of and Demand for Qualified Teachers in Austria and South Africa	161
Vasileios Symeonidis and Irma Eloff	
Urban Disparities in Inclusive and Sustainable School Cultures in Graz, Austria	185
Melina Tinnacher, Heike Wendt and Nora Luschin-Ebengreuth	
Learning for Democratic Sustainability in Migration Societies? Aspects of Citizenship Education in Urban Contexts	215
Annette Sprung, Brigitte Kukovetz and Petra Wlasak	
Interdisciplinary Practical Trainings as a Contribution of Higher Education to Raising Sustainability Awareness Among the Public	235
Ulrike Gelbmann and Christian Pirker	
Actors for Learning and Implementing Sustainability	
Social Work Organisations as Sustainable Actors: Characteristics and Perspectives of Ecologically Oriented Work Integration Social Enterprises	259
Maria Anastasiadis	
Sustainability Aspects and Educational Relevance on Social Media Influencers for Children and Adolescents	281
Lisa Mittischeck and Ines Waldner	
Social Inclusion and Competence Acquisition Through Volunteering with Disadvantaged Children, Adolescents, and Families	301
Elias Schaden	
Digitalisation at Workplaces: Challenges, Contextual Factors and Innovation Potentials	327
Sabine Klinger, Romana Rauter and Susanne Sackl-Sharif	
Re-/Searching for “A Better Life for Everyone”: Overcoming Habits and Exploring New Behaviours and Solutions for Crises and Problems by Using Participatory Dramatic Research Methods	355
Michael Wrentschur	

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Introductory Overview

Philipp Assinger  and Sandra Hummel 

A World of Multi-Dimensional Crises

At the time of writing this introduction during late summer and fall of 2021, major parts of the world were in crisis mode. The COVID-19 pandemic was at the beginning of its fourth wave spreading in most parts of the world and putting pressure on health care systems while further contributing to increasing unemployment, inequality and poverty around the world; unprecedented forest fires caused by heat and arson were raging in the South of Europe, Russia, Africa, South America and Australia; thunder storms and heavy rain hit Germany, Austria and China taking away homes from dozens of families; warmonger regimes in countries like Afghanistan were seizing power, oppressing civilians and making migration a heavily-discussed topic in Europe and countries in the Middle-East and Asia.

There are certainly more events which currently characterise the world. If we take a step back and abstract from this snapshot of single events and contextualize them, we can say that there are several long ranging developments and complex issues confronting the global community as well as regional and local communities with significant challenges. To name just a few of them: climate change, demographic change and migration, globalisation and regionalisation, political governance and democracy, social divides and inclusion/exclusion, digitalisa-

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tion and work, education and lifelong learning. These developments and issues are largely interdependent, defining the existing circumstances of crises as multi-dimensional. To address these multi-dimensional crises, the *Sustainable Development Goals* (SDGs) were defined by the *United Nations* (UN) and have been promoted for implementation world-wide. The SDGs themselves, and measures attaining to the intention of the SDGs, mark the starting point and define the framework of this edited volume.

The Sustainable Development Goals

The international community has addressed global challenges such as those mentioned above on numerous occasions throughout the last fifty years. For instance, in 1972, the *Stockholm Declaration* by the UN, the first to raise awareness for environmental issues, and the well-known *Club of Rome* publication *The Limits to Growth* set a direction, which was continued a decade later in the so-called *Brundtland Report*. This report contained the first definition of “sustainable development” as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987).

Thirteen years later, in 2000, the *Millennium Development Goals* (MDGs) were adopted by the UN Member States. While the MDGs achieved considerable success, it is argued repeatedly that they failed to capture the interconnections between the areas of ecological, economic and social sustainability that are commonly implied when talking about sustainable development (Independent Group of Scientists, 2019, p. 3).

In 2012, at the *United Nations Conference on Sustainable Development*, the UN Member States decided to define new priorities to spur up action towards a more sustainable world. On September 25, 2015, at the *United Nations General Assembly*, a Resolution entitled *Transforming our world: the 2030 Agenda for Sustainable Development* (United Nations General Assembly, 2015) was finally adopted and came into effect on January 1, 2016. The resolution presented seventeen *Sustainable Development Goals* (see Fig. 1) with 169 sub-targets intended to guide political decisions over a period of fifteen years until 2030.

To overcome the “thematic silos” (Independent Group of Scientists, 2019, p. 3), that were considered the weak spot of the MDGs, it was stated that the SDGs “are integrated and indivisible, global in nature and universally applicable, taking into account different national realities, capacities and levels of development and respecting national policies and priorities.” Moreover, to further stimulate

	No poverty	End poverty in all its forms everywhere		Reduced inequalities	Reduce inequality within and among countries
	Zero hunger	End hunger, achieve food security and improved nutrition and promote sustainable agriculture		Sustainable cities and communities	Make cities and human settlements inclusive, safe, resilient and sustainable
	Good health and well-being	Ensure healthy lives and promote well-being for all at all ages		Responsible consumption and production	Ensure sustainable consumption and production patterns
	Quality education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all		Climate action	Take urgent action to combat climate change and its impacts
	Gender equality	Achieve gender equality and empower all women and girls		Life below water	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
	Clean water and sanitation	Ensure availability and sustainable management of water and sanitation for all		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
	Affordable and clean energy	Ensure access to affordable, reliable, sustainable and modern energy for all		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
	Decent work and economic growth	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all		Partnerships for the goals	Strengthen the means of implementation and revitalize the global partnership for sustainable development
	Industry, innovation and infrastructure	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation			

Fig. 1 Overview of the 17 Sustainable Development Goals

political implementation, it was agreed that “targets are defined as aspirational and global, with each government setting its own national targets guided by the global level of ambition but taking into account national circumstances.” (United Nations General Assembly, 2015, p. 13).

Both, the Austrian national government and the regional government of Styria have both adopted their own measures in order to contribute to the SDGs.¹ To get an overview of national and regional initiatives, a report by the *Klimabündnis Österreich* includes several best-practice examples at the municipal or regional

¹ For Styria e.g. <https://www.nachhaltigkeit.steiermark.at/>

level for each of the 17 SDGs.² In addition to the political initiatives, a significant effort is made by civil society initiatives trying to raise awareness and implement concrete projects, for instance in the area of sustainable lifestyle. A very successful example from Graz is the *Verein Nachhaltig in Graz*.³

What has been criticised by social scientists about the approach taken in strategies for sustainable development, such as in the case of the SDGs, is the often too narrow focus on political decisions and political programmes. While political decisions and programmes are without a doubt of great importance, the cultural aspects of sustainable development, those activities and behaviours, which are situated in the everyday life of the people, are actually at the heart of what enables or inhibits progress. John Clammer, a sociologist involved in cultural anthropology and development sociology, holds that “all specific dimensions of sustainable practice (...) have deeply cultural characteristics since all require behavioral [sic] changes and involve re-orientations of notions of self-relationships, daily lifestyle decisions, travel patterns, and such obviously cultural processes (...)” (Clammer, 2016, p. 6).

From the standpoint of universities with their threefold mission of research, teaching and public knowledge transfer, the view on culture, behaviour and daily lifestyle helps to reconceptualize sustainable development in a way that puts individual learning, educational intentions but also institutional arrangements at the center of attention. Education and learning, institutionalised and formalised in schools, universities or adult education centres, as well as occurring in the workplace, in third-sector projects or in civil society initiatives can be understood essentially as a social practice “in which the production, transformation, and change in the identities of persons, knowledgeable skill in practice, and communities of practice are realized [sic] in the lived-in world of engagement in everyday activity” (Lave & Wenger, 1991, p. 47).

Sustainable Development and Universities in Austria

Universities are powerful actors on the path to a sustainable society. They have multiple functions as research and educational institutions including those as knowledge creators and multipliers, consumers and producers of resources,

² See: <https://www.klimabuendnis.at/sdg-broschuere-lokal-gemeistert>

³ See: <https://nachhaltig-in-graz.at/>

employers and role-model institutions, or actors with a significant regional impact (Zimmermann & Risopoulos-Pichler, 2016). To contribute towards sustainable development, universities actively promote inter- and transdisciplinary as well as system-oriented and transformative approaches to research and teaching so that the multi-dimensional character of sustainability issues can be addressed. Universities in Austria have taken up the responsibility to contribute to a knowledge base and systematically analyze and develop solutions to economic, social and ecological problems. Section 1 of the *Austrian Universities Act 2002*, which was reaffirmed in 2020 in the *Manifest for Sustainability* of the *Universities Austria*, calls for universities to hold themselves responsible for their actions towards society and the environment.

For instance, building on the *Austrian Universities Act*, universities have joined together to form the *Alliance for Sustainable Universities* in a commitment towards a comprehensive, global and intergenerational understanding of sustainable development. Sustainability is considered one of the basic ethical concerns of universities and encompasses in this conceptualisation ecological, social, economic and cultural dimensions, the latter making a significant contribution to the networking and integration of the other three.⁴

The University of Graz operates a sustainability policy, which provides guidelines not only for research and teaching but also in relation to organizational areas such as waste and sanitary management, renewable resources, mobility of staff and students, or communication and cooperation with students and with partners outside the university.⁵ We must not forget that, after all, a university that wants to change society to the better, might also think “beyond sustainability” as a matter that lies outside the university, as the philosopher of higher education Ronald Barnett put it (2018, pp. 42–55). Discussing the university as an ethical institution in a self-conscious and self-reflective way is, thus, as important as the provision of solutions to societal problems since it reminds us that universities are themselves part of and intertwined in the multi-dimensional crises.

⁴See the Memorandum of Understanding of the Alliance for Sustainable Universities: http://nachhaltigeuniversitaeten.at/wp-content/uploads/2020/12/Memorandum-of-Understanding-der-Allianz-inkl.-NH-Verstaendnis_2020_Final.pdf

⁵See the Sustainability Guidelines of the University of Graz: Umweltleitlinien – EMAS: Umweltmanagement an der Universität Graz (uni-graz.at).

The Faculty of Environmental, Regional and Educational Sciences and the Aim of This Edited Volume

In 2007, the *Faculty of Environmental, Regional and Educational Sciences* (German: Umwelt- Regional- und Bildungswissenschaften, URBI) was established at the University of Graz. This interdisciplinary faculty has brought together the branches of Educational Science, of Geography, of Sports Science, and of Environmental Systems Science including several research centres like the Centre for the Professionalization of Early Childhood Education, the Centre for Sustainable Social Transformation, the Regional Center for Didactics of Geography and Economics, the Wegener Centre for Climate Research, the Center for Digital Teaching and Learning or the Center for Teaching Competence. The URBI faculty has projected its work on an overarching approach, in which scientific analyses and the development of practice-oriented solutions complement each other in the analysis of problematic social issues.⁶

Considering the complexity emerging from such multi-dimensional crises as sketched out in the beginning, it seems rather obvious that unidimensional research approaches and hierarchical technocratic strategies are bound to fall short since they can hardly account for the multitude of intertwined issues. Also, as was mentioned, people, their behaviour and their habits are at the source of many problems. Therefore, it seems imperative to take people, their multifaceted nature and the necessary learning and educational processes into account when intending to create sustainable solutions and move towards a better life for everyone. The broad thematic agenda and the variety of scientific approaches represented at the URBI faculty amount to a spectrum which offers a unique view on today's – political, economic, cultural, social and ecological – multi-dimensional crises, their interplay, and on possible solutions manifesting in institutional, educational, learning, and knowledge transfer arrangements.

A first joint project, collecting contributions from members of all URBI institutions, was published in 2010 under the title *Interdisziplinarität. Wissenschaft im Wandel* [Interdisciplinarity. Science in Transformation] (Lenz, 2010). The intention at that time was to show the potential of interdisciplinarity in research, teaching and administration. Ten years later, in early 2020, a group of researchers from all URBI institutions came together to discuss a further joint publication.

⁶ See the Mission Statement of the URBI faculty: Mission Statement – Faculty of Environmental, Regional and Educational Sciences (uni-graz.at).

The group formed the URBI editorial board and agreed to devise a concept using the SDGs as a starting point for a joint investigation of the commonalities of the various thematic, theoretical, and methodological approaches represented at the faculty. It was intended to lay grounds for common projects and interdisciplinary approaches that could possibly be pursued in the future. The following guiding questions were, thus, defined and communicated to the faculty staff as a thematic framework for submissions to this edited volume:

- Which kinds of measures (e.g., political, educational, administrative, civil society) can support and facilitate broader individual participation in democratic practise and economic development for sustainable societies?
- What could be the contribution of public institutions and private organisations of all kinds (e.g., national, regional, municipal governments and administration, NGO's/NPO's, industrial organisations, voluntary associations) to manage multi-dimensional crises?
- Which topical issues (e.g., climate change, human rights, digitisation, consumption, sustainable economies) and which form of knowledge, skills and competencies are to be promoted in the discourse concerning sustainable development?
- What kind of research and teaching methodologies (e.g., participatory research, service learning) could better involve critical stakeholders and are suitable from the perspective of research/teaching quality and stakeholder needs?

The aim of the book is to foster and promote a shared understanding of research at the faculty, including among the faculty leaders, the research and teaching staff as well as the students and the partner institutions. This edited volume is therefore addressed to a broad academic and non-academic audience. Contributions are explicitly interdisciplinary and multi-methodological, and discuss issues of interest to readers with a background in the natural and social sciences as well as in the humanities and in educational science. This edited volume is particularly intended for students enrolled in the URBI faculty and taking courses in the faculty's compulsory introductory module. Students are introduced to a variety of topics, research approaches, methodologies and theories incorporated in field of environmental, regional and educational sciences and worked on in profound way during the various Bachelor and Master Programs. As for the research community, the edited volume is intended to serve researchers of all disciplines con-

cerned with a broad perspective on sustainable development, perhaps leading to cooperative projects in the future.

How this Volume was Organized

To account for the scientific quality of the contributions and to assure that the contributions meet criteria of good scientific practice, the editorial board decided to have all contributions went through a double-blind review process. This review process consisted of two stages: In the first stage (completed in June 2020), URBI faculty staff was invited to submit extended abstracts (max. 2 pages) addressing the four broad research questions. The submissions were reviewed by all members of the editorial board. Authors, then, received feedback and authors who provided abstract that met the submission criteria were invited to prepare a full chapter.

In the second stage, full chapters were reviewed anonymously by at least two members of the editorial board (completed in October 2021). Given the inter- and multidisciplinary nature of the project, the review process not only focused on methodological soundness and compliance with scientific standards in the respective discipline(s), but also on readability from the perspective of a broader audience. Therefore, one reviewer from the same discipline as the author(s) of a chapter was selected to assess the disciplinary perspective of the contribution, while the other reviewer was from a different discipline focusing on the aspects of readability and intelligibility.

The editorial board received a great variety of contributions. This variety, however, presented us with the challenge of clustering the contributions in way that is coherent with and adequate to the thematic framework and guiding questions of this edited volume. Finally, we decided on three broad thematic clusters. The clusters are: (A) sustainability challenges in cities, communities and regions, (B) sustainability learning in schools and other educational institutions, and (C) actors for learning and implementing sustainability.

A short notice concerning the visual presentation of the edited volume and the contributions: The icons of the seventeen SDGs are placed at the cover page of each thematic cluster whereby all SDGs addressed in the contributions of each cluster are colored while those not addressed are grey. The same was applied in a smaller version to the first page of each contribution to make the reader immediately aware of the SDGs referred to in the contribution.

A. Sustainability Challenges in Cities, Communities and Regions

The volume opens with a chapter by Douglas Maraun. He discusses the challenges arising from the provision of information concerning regional climate change to users such as decision makers, engineers, companies, NGO's or farmers. Successful climate action depends on the collaboration among scientists, and between scientists producing evidence and users who make the decisions. As Maraun emphasizes, such collaboration needs to be sustained across the whole process of research and implementation of evidence-based measures.

Littering, that means misplacing solid waste in public spaces, is a problem of global scale. Peoples' intentions to avoid littering at municipal public places are addressed by Julia Neumann and Thomas Brudermann. Reporting results from a quantitative survey conducted in Frankfurt am Main, the authors explore what role personal factors play for such intentions to avoid littering. Results are provided to support municipalities in dealing with littering-behavior so that its negative impacts could be reduced.

The active commuting behavior of the population is of great importance for mobility and health policies. Encouraging people to cycle or walk positively affects individual health and the environment. But is there a relationship between personality traits and the commuting behavior? This question is addressed by Matteo Sattler and colleagues, who use a multivariable model to analyze how strong a predictor of commuting behavior personality traits actually are.

A critical perspective onto the goal of reducing the number of people affected by disasters is presented by Nicolas Schlitz, Andrea Jany, Rivka Saltiel and Anke Strüver. This chapter picks up on the interrelations between the Covid-Pandemic and the crisis regarding private care work. Arguing that the Covid-Pandemic has further aggravated the privatization of reproductive work and the commodification of care work, the authors suggest reconceptualizing basic categories of the Sustainable Development Goals.

Learning for democratic sustainability in migration societies is the topic by Brigitte Kukovetz, Annette Sprung and Petra Wlasak. The authors explore how *Active Citizenship Education* and *Education for Sustainable Development* can contribute to participation and civic engagement in urban communities among both, people shortly arrived in the city and those, who have lived there for many years. In addition to that, the authors critically reflect on the concept of civic learning as raised in the Sustainable Development Goals.

B. Sustainability Learning in Schools and Other Educational Institutions

Filippina Risopoulos-Pichler, Judith Pizzera and Bärbel Hausberger present results from a study, which applied a mixed-methods research design to inquire what consequences the closing of schools in small rural municipalities in the south-west of Styria had on the quality of community life and on the well-being of the children commuting to schools away from their home. The authors make a strong case for the importance of schools as centers of community building in rural areas.

Based on estimations that globally around 69 million teachers need to be recruited within the next ten years to guarantee quality education, Vasileios Symeonidis and Irma Eloff explore how national policies in South Africa and in Austria address this massive teacher shortage. Positive developments in both cases are according to the authors somewhat outweighed by the fact that policies are narrowly focused on national solutions. The tendency to concentrate on the provision of teachers rather than on a comprehensive reconceptualization of education is also addressed critically.

Edvina Bešić, Lisa Paleczek, Julia Ladenstein and Barbara Gasteiger-Klicpera introduce the „Inclusive Inquiry”. This approach brings together primary school teachers and students in a cooperative and participative research process to support the creation of inclusive school lessons. Data on the “Inclusive Inquiry” collected through 18 focus group interviews with 72 primary-school students was analyzed to learn about how students perceived the cooperatively created lessons and how their ideas and wishes were considered by the teachers in the lesson planning process.

The research presented by Melina Tinnacher, Heike Wendt and Nora Luschin-Ebengreuth looked at school websites and how activities concerning diversity, inclusion and sustainability are made visible on the websites. While in general, activities reported on the websites are few, the research still allows for substantive conclusions concerning the promotion of diversity, inclusion and sustainability in the everyday school life as well as concerning future research on the public communication of schools’ activities.

Ulrike Gelbmann and Christian Pirker ask how universities can raise awareness for sustainability issues among the general public. *Interdisciplinary Practical Trainings* as a method of service learning are presented for student training and for raising awareness among the public within a cooperative framework. Based on data gathered in the Master’s Program Global Studies, Gelbmann and Pirker highlight the importance of an inter- and transdisciplinary approach used to address real world problems within higher education didactics.

C. Actors for Learning and Implementing Sustainability

Within Austrian labor market measures, an underestimated contribution is made by *Ecologically Oriented Work Integration Social Enterprises* (ECO-WISE). They not only give people at risk of permanent labor market exclusion a meaningful work and support their social integration but they often operate in business areas of ecological relevance such as waste management, organic food production or recycling and repairing of consumer goods. Within this context, Maria Anastasiadis discusses the relation between social work, which is a core activity within ECO-WISE, and the achievement of the Sustainable Development Goals.

Another area that is often underrepresented in the scientific discourse is that of voluntary work. Elias Schaden explores the potential of formal volunteering in youth and welfare organizations and how it relates to the social inclusion of disadvantaged shares of the population on the one hand and to competence acquisition of volunteers and beneficiaries on the other hand. Based on a study conducted in Graz, Stuttgart and Rosenheim, Schaden points out avenues for further research and for pragmatic action on the macro-, meso- and micro-level of the social welfare system.

The digitalization of the workplace in for-profit and non-profit organizations is at the center of the chapter by Sabine Klinger, Romana Rauter and Susanne Sackl-Sharif. Executives and employees' perspectives were inquired by the means of quantitative and qualitative research methods to learn more about what determines the usage of digital media and technologies in the workplace and what needs to be done to successfully implement digital technology in workplace settings.

Social media influencer have become a global phenomenon with an astonishing presence as marketing multipliers. Lisa Mitischek and Ines Waldner take this phenomenon as the starting point for asking how influencers affect the reality of young people's lives in terms of nutrition and consumer literacy, and which challenges arise from this with regard to intersectional media didactics. Preliminary results from a project involving school-children and teachers as well as university students and lectures are summarized to answer this question.

In the final contribution, Michael Wrentschur recounts methodological principles and examples from dramatic research projects in the areas of life in cities, poverty and social inequality, climate protection and sustainable production and consumption. Dramatic research methodology, such as applied within *Forum Theatre* projects, is presented as an option to participatory research involving and supporting people directly affected by social problems to acquire knowledge and creative skills needed for a "good life".

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Sustainability Challenges in Cities, Communities, and Regions





The Challenge of Providing Information About Regional Climate Change

Douglas Maraun

Introduction

It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred (IPCC, 2021). Because of the inertia of the climate system, these changes will continue over the next decades. Global warming beyond 2050 will strongly depend on future anthropogenic greenhouse gas emissions (IPCC, 2021).

The impacts of climate change are mostly felt at the regional scale. Trends towards higher mean temperatures have already emerged from internal climate variations, precipitation trends in many regions. Many wet regions have experienced wetting, many dry regions a drying (Gutiérrez et al., 2021). Also extreme events have changed and will continue to change (Seneviratne et al., 2021). These range from large-scale events such as the 2003 European heat wave or the 2018 European drought, to local rainfall extremes, which in turn may trigger flash floods or landslides. Climate change poses future risks for ecosystems and many societal and economic sectors such as agriculture and forestry, transport, productivity and human health.

The impacts of climate change are particularly strong in the global south, which is both vulnerable and exposed to strong climatic changes. For instance,

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