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Research for *Sustainable Development Goals*

Introduction

The 2030 Agenda *with its 17* Sustainable Development Goals (SDGs) *marks a breakthrough towards more sustainable development at global, regional, national and local levels. At the same time, it fundamentally challenges societies at all levels to reorient and innovatively steer development pathways towards the set goals. This thematic focus on research for* SDGs *reflects and illustrates some of the challenges faced by science and research supporting the transformations required in view of achieving the* SDGs.

Urs Wiesmann, Océane Dayer (Guest Editors)

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Sustainable development is a normative concept aiming at inner- and intergenerational justice by choosing development pathways that guarantee the well-being of all humankind without trespassing planetary boundaries. For more than 30 years, the concept has been prominently represented in political, economic, societal and scientific debates and partial action. But due to the nebulous notion of the term, it has tended to degenerate to a buzzword that could be used at will, thereby causing fatigue in broad circles. A breakthrough has now been marked by the broad-based and inclusive negotiation process that has concretised the normative dimension of sustainable development through formulating the *Sustainable Development Goals (SDGs)*. Together with the subsequent and undisputed approval of the *2030 Agenda* by the UN General Assembly in 2015, this normative concept has finally become concrete enough to guide sustainability transformations and hold actors and nations accountable.

Figure 1 illustrates this breakthrough by positioning the *SDGs* in social and material spheres and by indicating that the systemic interplay and outcomes of governance, technology, economy and society have to be measured against the norms set in the *SDGs*. With a simple traffic light colour code it further qualitatively illustrates the current sustainability outcome for the example of Switzerland, indicating that Switzerland is strongly challenged to improve in particular its outcome in those *SDGs* relating to nature and natural resources, without endangering the gains achieved in relation to many of the other goals.

Departing from this one can also indicate where research for the *SDGs* is required: 1. by providing comparative indicators and assessments on the degree of achievement of each goal over time and space, and to feed these into societal debates, 2. to link its predominantly systemic perspective with the normative dimension of the *SDGs* in order to identify processes and dynamics in socio-ecological systems that endanger or promote each *goal,* 3. to study and evaluate trade-offs and co-benefits between the *SDGs* depending on different development pathways and sustainability measures, 4. in collaboration with other societal actors to contribute to innovative measures, structures and solutions for achieving the goals without negative trade-offs, 5. to critically reflect sustainable development and the *SDGs* in view of the negotiations in the post *2030 Agenda* era, and 6. to be a supportive and reliable partner in all societal sustainability efforts in line with *SDG 17* on partnerships.

The contributions in this thematic focus deal with various aspects of these six general thrusts, and can be grouped into four clusters of issues. According to the UN, the individual nations are the contextual reference of the *2030 Agenda*. ***Kulonen et al. (pp. 90–94)*** take up the question of contextuality and argue by means of the example of mountain regions that countries and administrative units have to be supplemented by socio-ecological units as reference for assessing and achieving *SDGs*. ***Bansard et al. (pp. 112–118)*** address contextuality by illustrating successful approaches with reference to *SDG 11,* sustainable cities, pointing to the challenge of scale.

Research is still required to unravel processes and dynamics driving the degree of achieving *SDGs* context-specifically. ***Hagedorn and Wilts (pp. 119–125)*** give the example of food-waste prevention in Germany, show its links to income levels, and argue that rebound effects reduce the potential of ecological gains. ***Matheis and Herzig (pp. 126–134)*** focus on food value chains in the global South and show that their promotion leads to trade-offs

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between *SDGs*, which can be counterbalanced by interorganisational learning.

Justice is an underpinning concept of sustainable development and deserves critical reflection and attention in all research for *SDGs*. ***Mölders (pp. 95–99)*** presents an in-depth analysis of *SDG*-related debates on gender equality. She concludes that gender equality is not only an *SDG* itself and a cross-cutting perspective, but that gender approaches present substantial critical and visionary perspectives, for example, in alternatives to the prevailing growth-oriented economic rationalities. ***Spijkers (pp. 135–142)*** addresses issues of justice on a legal level by focussing on the role of international water laws for sustainable freshwater management. He shows that linking these laws with the extralegal compliance mechanism of the *SDGs* can produce positive synergies in reaching freshwater-related goals.

The main cluster of contributions in this thematic focus (and also two thematically related articles in the *Communications* section) deals with the role and approaches of research and science in view of the above-mentioned complex thrusts and related challenges. ***Stötter et al. (pp. 163–165, Communications)*** illustrate how the research landscape in Austria organises its research and collaboration, aiming at identifying responsible institutions for each *SDG*. ***Gratzer et al. (pp. 100–105)*** identify a significant potential for life sciences universities to address *SDGs*, whereby they can only contribute to a profound shift in societies if the university system itself undergoes transformation, in particular in relation to a new balance between cooperation and competition. ***Ejderyan et al. (pp. 160–162, Communications)*** reflect the role of social sciences and humanities in transformative research for sustainable development, and among others point to the crucial role of deconstruction and critical reconstruction in co-productive processes. ***Saric et al. (pp. 143–150)*** highlight the importance of transnational research partnerships and identify the potential of partnerships in creating shared knowledge and capacities in transdisciplinary and transformative research. Finally, ***Oberlack et al. (pp. 106–111)*** introduce the concept of theories of change as processes and tools to unravel mental representations and theoretical assumptions in transdisciplinary and transformative research endeavours. They argue that applying theories of change significantly strengthen the relevance, reflexivity, learning ability, and effectiveness of research for sustainable development.

In sum, the contributions in this thematic issue illustrate that considerable progress has been made in concretising research for *SDGs* and in implementing the required thrusts. However, the manifold reflections presented on the role and approaches of research and science for sustainable development point to the huge challenges ahead. In view of the urgency of the *2030 Agenda* there are some doubts as to whether traditional university structures and reference systems will be able to face up to these challenges. But as ***Messerli (pp. 76–77)*** implies, the broad societal and political consensus represented in the negotiated *SDGs* also provides a significant window of opportunity to reorient research and science in view of their relevance and responsibility for a more sustainable future.

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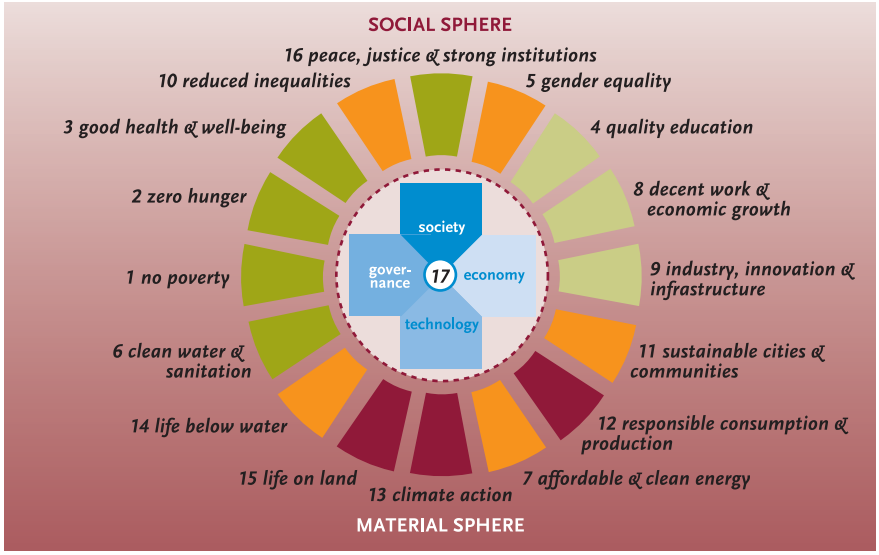

FIGURE 1: *Sustainable Development Goals (SDGs)* as normative orientation for human action and the systemic interplay between society, governance, economy and technology. The simple traffic light colour code (red to green) qualitatively indicate the current state of *SDGs* for Switzerland.