

**Leibniz  
Association  
Conference on**



# **Sustainable Development Goals**

**14th  
September  
2018**

**Conference  
Summary**



**Haus der Leibniz-Gemeinschaft  
Chausseestr. 111  
10115 Berlin**

## RATIONALE OF THE CONFERENCE

With the launch of the United Nations Sustainable Development Goals in 2015, the world community has set the agenda for tackling the world's most pressing challenges, including ending poverty and ensuring prosperity for the growing world population while respecting planetary boundaries. The research community contributes to the agenda by reflecting on the concept of sustainable development, by improving the evidence base of the complex processes and challenges to be addressed, and by playing a critical role in building the individual, organizational and institutional capacities for working globally towards SDG fulfillment. But how do researchers translate grand societal challenges into research agendas? What are the implications for the conduct of research in responsible science to acknowledge the complexity of problems when searching for contributions to societal transformation? How do researchers cooperate across disciplines and how do they engage with civil society and policy sectors to co-create the knowledge required for transformative actions towards sustainable development? The particular objectives of this conference were to present and discuss key findings from basic and applied research that are relevant for solutions towards specific SDGs and the nexus between them.

## SCIENTIFIC COMMITTEE:

Elke Seefried, Institute of Contemporary History (IfZ, Sektion A)

Rainer Danielzyk, Academy for Spatial Research and Planning (ARL, Sektion B)

Bernhard Müller, Leibniz Institute of Ecological Urban and Regional Development (IOER, Sektion B)

Katharina Helming, Leibniz Centre for Agricultural Landscape Research (ZALF, Sektion E)

Anna-Katharina Hornidge, Leibniz Centre for Tropical Marine Research (ZMT, Sektion E)

Christian Cyron, Leibniz Institute of Plant Biochemistry (IPB, VA)

## ORGANISING TEAM:

Matthias Premke-Kraus, Axel Rückemann, Marlen Sommer

## AGENDA:

*Opening Plenary:* (Moderation: Terry Martin, Deutsche Welle)

*Welcoming Speech:* Matthias Kleiner, President Leibniz Association

*Keynote:* Klaus Töpfer, former executive Director United Nations Environment

*Keynote:* Ottmar Edenhofer, designated Director PIK

*Panel Discussion:* Matthias Kleiner, Klaus Töpfer, Ottmar Edenhofer, Katharina Helming

## PARALLEL SESSIONS:

- Sustainable food systems from agriculture and aquaculture (SDG 2)
- Improving Global Health with accessible medical technologies (SDG 3)
- Global change – global health (SDG 3)
- Inclusive quality education (SDG 4)
- Sustainable phosphorus management along a gradient from land to sea (SDG 6 & 12)
- Social inequalities, coastal megacities and environmental crises (SDG 10)
- Sustainable Cities and Communities – inclusive and resilient (SDG 11)
- On the significance of biodiversity for the achievement of a sustainable world (SDG 13 & 15)
- Histories of Sustainability – what is sustainable development?  
Past and present perspectives Sustainability Management

## CONCLUDING SUMMARY:

The conference attracted about **200 participants**, about half of which representing a total of **40 Leibniz-Institutes** across all five Leibniz Sections. The other participants came from universities, non-university research organizations, research funding bodies and research policy units across the country. The participation was as interdisciplinary as were the conference topics and scientific sessions. A total of 9 out of the 17 UN Agenda 2030 Sustainable Development Goals (SDGs) were addressed in 10 scientific sessions, which were organized by **Leibniz Research Alliances (6)**, **Leibniz Networks and Working Groups (2)**, **Leibniz Science Campus (1)**, and **Leibniz Competition (1)**. Such Leibniz cooperation formats proved capable of leveraging the critical mass of interdisciplinary expertise towards research for SDGs and the linkages between them. This cooperation demonstrated the successful integration of scientific excellence with societal relevance, a key prerequisite for exploiting research to solving grand societal challenges, as stated by Matthias Kleiner, president of the Leibniz Association, in his opening remarks. In spite of the rich variety of scientific questions addressed in the ten sessions, some common key messages evolved. These include the need for a systemic approach to research for sustainable development and for addressing the critical role of interactions and trade-offs between the SDGs. In many cases, key problems and also possible solutions for achieving SDGs are far better known than the means for their implementation. The notion of transformative research is addressing this phenomenon. The scientific committee, session chairs and session organizers articulated their interest for follow-up activities with regard to research for sustainable development.

# Sustainable food systems from agriculture and aquaculture

Organised by: **Leibniz Research Alliance**  
**„Sustainable Food Production and Healthy Nutrition“**  
Chair: **Frank Ewert (ZALF)**

Achieving global food security represents an enormous challenge for socio-ecological systems across scales and locations. Agriculture and aquaculture have to contribute to transformative food systems, which can adapt to future shifts and disruptions and which substantially integrate productivity, environmental integrity and social justice. This session shed light on latest research about sustainable production and food systems approaches. Presentations covered a wide range of food system aspects across locations and sectors. It became clear that separate approaches to food production and consumption or to food from agriculture and from aquaculture are not appropriate to cover the complex aspects of food security. Rather, a food systems approach needs to be taken that sheds light on the entire value chain and food life cycles. In this context, minimizing trade-offs between SDGs and in particular between food security (SDG 2), climate action (SDG 13) and environmental integrity (SFG 15) are paramount. The lively discussion among participants pointed to a relatively clear picture suggesting that the problems and even also the potential solutions are often known and well described, while the knowledge about the implementation of possible solutions is the key barrier to sustainable development. This echoes a general critique to the otherwise well accepted agenda 2030 and its SDGs, that goals are nicely defined but little guidance is provided as to how the pathway to its implementation can be pursued and how trade-offs can be mitigated. For sustainable food system approaches, key actions need to be identified and implemented to support the transformation including the wise utilization of new technologies.

## Improving global health with accessible medical technologies

Organised by: **Leibniz Research Alliance “Leibniz Health Technologies”**

Chair: **Jürgen Popp (IPHT)**

One focus of the session was on fast, accurate and affordable diagnostics as a basis for more efficient therapies. An industry partner presented a recently introduced solution for mobile, molecular HIV diagnostics. This on-site test to determine the viral load of the patient enables the follow-up of AIDS therapies even in poorer, structurally weak regions. In addition to improving health and well-being, maintaining the ability to work and the general availability of health care also contributes to combating poverty (SDG 1) and inequality (SDG 10).

The importance of improved diagnostics was also demonstrated using the example of photonic diagnostics for bacterial infections: light-based methods that determine bacteria and their antibiotic resistance in hours instead of days were presented by the Leibniz Institute for Photonic Technology. This approach could reduce the excessive use of antibiotics through a more targeted therapy. A new process developed by the Leibniz Institute for Plasma Research and Technology uses plasma-treated water for hand disinfection. The procedure could represent a cost-effective alternative for use in crisis areas and thus raise hygienic standards.

A cross-disciplinary collaboration for improved diagnostics in chronic lung diseases such as asthma and COPD, which are on the rise worldwide, was demonstrated in the session using the EXASENS platform as an example. A total of nine Leibniz Institutes are working together on a system for the early detection of acute exacerbations. The technological focus will be on trends such as parallel testing, miniaturized procedures and networked digital services, which should make it possible to provide health solutions on site and outside established healthcare infrastructures.

The Leibniz Health Technologies Research Alliance will also continue to consider cross-sectional topics such as user acceptance or the social and economic consequences of new technologies. Close and globally networked cooperation (SDG 17) between research and clinical medicine and industry is an important prerequisite for achieving the SDGs.

## Global change – global health

Organised by: **Leibniz Research Alliance “Infections’ 21”**

Chair: **Barbara Amon (ATB, Potsdam), Ulrich Schaible (FZB)**

The presentations in this session covered the alarmingly increasing challenge to public health by infectious agents resistant to antimicrobial drugs, with a focus on tuberculosis as one of the prime bacterial infections worldwide with contributions by T. Eckmanns, (Robert-Koch-Institute, Berlin) and U. Schaible (Forschungszentrum Borstel). To further widen our view on global microbial health effects, we included the global microbiome as well as the essential importance of agriculture for Global Health concepts with presentations by G. Berg (Institute of Environmental Biotechnology, Graz) and B. Amon (Leibniz Institute for Agricultural Engineering and Bioeconomy). These challenges require multidisciplinary collaborations between health, environmental and agricultural disciplines. Consequently, the Leibniz Research Alliance INFECTIONS’21 will focus on global conditions for the evolution of antimicrobial resistance in the context of local microbiomes, of agriculture and animal husbandry, and environmental transmission facilitators as well as on counteracting strategies such as antibiotic stewardship beyond the clinical field. The LRA’s interdisciplinary approach requires inclusion of expertise in health economics and urban development.

We identified the following key research topics and future challenges

1. Globally, underprivileged populations are predominantly affected by infectious diseases including those by pathogens resistant to anti-microbial drugs. Therefore, global health strategies need to include fighting poverty and social injustice with high priority.
2. To eliminate one of the most important infectious diseases, tuberculosis, the triad of i) individualized antibiotic combined with host-directed therapies guided by fast resistance tests and biomarkers, ii) molecular surveillance and iii) innovative vaccines, requires additional interdisciplinary approaches to annihilate risk factors such as poverty, malnutrition, smoking and comorbidities.
3. Beyond the microbes settling in and on the human body, the global microbiome from animals, plants, and the environment can also influence human health.
4. Current agricultural practices have a range of adverse effects on Global Health (e.g. anti-microbial resistances air, soil and water quality, climate, biodiversity). Agriculture is currently at the cusp of immense new opportunities in digital, technological and data science progress. A multidisciplinary research concept for agricultural systems for future global health concepts was presented that integrates progress in efficiencies at process level and optimisation at the system level.

## Inclusive quality education

Organised by: **Leibniz Education Research Network**

Chairs: **Monika Jungbauer-Gans (DZHW)**

The fourth sustainable development goal is dealing with inclusive and equitable quality education and to promote lifelong learning opportunities. Education is an important means for achieving other sustainable development goals such as reducing poverty and inequalities, promoting employability, but also disseminating knowledge about science and nature. In the session the means for implementing inclusive education have been discussed. An empirical study using data from the “Trends in student achievement” study were used to show that students with special needs show higher achievements in regular schools, whereas they have lower learning motivation than students with special needs in special education schools. An international comparative study investigated facilitators and barriers to inclusive education. The global norm of inclusive education diffuses widely through awareness-raising policies, but the development of inclusion is largely path dependent in the countries and shows only incremental change. Facilitating factors include collaboration and networking in schools and community. Summarizing research and policy of sustainability in education, it can be concluded that they focus mainly at students with special needs. Therefore, education research should also include other dimensions like ethnicity and gender and thus investigate intersections of dimensions of inequality. How sustainability can be promoted in higher education was addressed in the third paper. Under the device “unlearning unsustainability” a didactic approach was presented aiming at building sustainability into all aspects of university teaching and learning. Students are future change agents. Therefore, learning objective, content and methods of teaching/learning should include ideas and conceptions of sustainability.



# Sustainable phosphorus management along a gradient from land to sea: challenges for science

Organised by: **Leibniz ScienceCampus "Phosphorus Research Rostock"**

Chair: **Ulrich Bathmann (IOW)**

The session addressed research topics stemming from the two interrelated key challenges of phosphorus resources: the availability of high quality and exploitable P resources on the one hand, and sustainable utilization of P resources on the other hand. There is an increasing scarcity of world P resources and this scarcity is aggravated by the contamination of P resources with heavy metals, in particular as Cadmium and Uranium. Since trade of P resources is global, efficient governance of P resource utilization requires an international approach, e.g. managed through UN agencies. The efficient and sustainable utilization of P resources for crop fertilization is not only necessary because of resource scarcity but also to avoid phosphorus leaching from soil into surface and subsurface water bodies thereby creating eutrophication and degradation processes of biodiversity and habitats. Modelling of phosphorus stocks and flows is a suitable method for the identification and respective implementation of resource saving options. However, while good physical models are available, important biological processes are less well formalised in quantitative models. This is a key research gap. A second gap lies in the integrated and interdisciplinary approach to P research and management. A joint effort of natural and socio-economic perspectives is required to support the transition from linear to circular utilization of phosphorus resources, which includes the development of new fertilizers from waste resources and the improved phosphorus management along the gradient from land (stable resources) to sea (mobile resources). For this land-sea nexus, the Baltic Sea Action Plan can be seen as a role model of efficient P governance implementation at multinational level.



## Social inequalities, coastal megacities and environmental crises

**Organised by: Leibniz Research Alliance “Crises in a Globalised World”**

**Chairs: Achim Schlüter (ZMT), Stefan Kroll (HSFK)**

The starting point of the panel “Social inequalities, coastal megacities and environmental crisis” was the observation that social inequalities exacerbate the negative consequences of environmental change. The crisis-character of environmental change is by no means only, but inter alia related to the fact that the actors concerned lack the resources to react adequately to such a situation. The presentations included anthropological case studies on coastal megacities in India and South East Asia as well as an economic analysis on climate risks and agriculture and a political science analysis on the prospects and challenges for reducing social inequalities in Latin America. Especially the case studies underlined, that the local understanding of social inequalities is highly context-sensitive. As a consequence, instruments and mechanisms used to reduce inequalities must be adapted to these contexts. A successful strategy aimed at sustainably reducing inequality should therefore take local institutions into account as well as political discourses and global normative expectations. Furthermore, the link between questions of social inequality and environmental risks illustrates that understanding and dealing with environmental crises requires close cooperation between the social sciences and the natural sciences, as practiced in the Leibniz Research Alliance “Crises in a Globalised World”. On the basis of these observations, the panelists were asked during the discussion to elaborate on their respective crisis concepts. While the term crisis usually describes a situation that is characterized by an extraordinary pressure to take immediate action, it also became clear that there are diverse regional understandings of crisis and crisis management. This debate reflected also research questions, which are addressed in the context of one of our ongoing projects and which investigates “Cultures of Crisis” in diverse regional and issue related contexts. Altogether, the presentations and the discussion well illustrated one of the key observations, which was made by Ottmar Edenhofer (PIK) in his keynote speech at the beginning of the conference, namely that the successful implementation of the SDGs is based on a combined understanding of “facts and values”.

## Sustainable cities and communities – inclusive and resilient

Organised by: **Leibniz Network 5R-Raum (Space)**

Chairs: **Rainer Danielzyk (ARL), Bernhard Müller (IÖR)**

### *Background*

According to the UN Secretary-General's Report on „Progress towards the Sustainable Development Goals“, about 4 billion people or 54 per cent of the world's population lived in cities in 2015, and it is expected that this number will increase to 5 billion by 2030. Rapid urbanisation has brought enormous challenges, and it is believed that integrated urban policies as well as better urban planning and management are needed to make the world's urban spaces more inclusive and resilient. Also research plays an important role to cities and communities becoming more sustainable.

### *Description of the session*

On this background the session took a critical look at the intentions of the SDGs, especially SDG 11, which are related to cities and communities, the state of their application and future requirements on the global and national levels. Five speakers were invited to share their results of national and international studies with the audience on how to make cities and communities more sustainable. They were to demonstrate how it is possible to translate grand societal challenges into research agendas, how to bring about societal transformation, how they cooperate across disciplines, and how they engage with civil society and policy sectors to co-create the knowledge required for transformative actions towards sustainable development. After the five short scientific input presentations intensive discussions with the speakers on five separate tables about their topics and the questions took place.

### *Topics*

The following topics were presented and discussed:

- Sustainability transitions as a challenge for cities and communities (Markus Egermann, IÖR)
- Sustainable cities and the limitations of land management policies (Barbara Warner, ARL)
- Energy consumption and integrated sustainable development (Olivia Kummel, ILS)
- Bulgarian working migrants at a crossroad in Munich. Performative urban migration politics and the question of social sustainability (Madlen Pilz, IfL)
- Inclusive cities and sustainable urbanisation – discussions in Europe and China (Paulina Schiappacasse, TU Dresden, Dresden Leibniz Graduate School)

### *Major results*

Three major results of the discussion shall be mentioned here:

1. Sustainability trap: With regard to the “sustainability turn” in urban and regional development we can observe a certain path dependency which makes it difficult to follow this turn in practice. Stakeholders, e.g., municipal and state as well as private sector institutions are

often locked in to their own history and experiences which they have made so far. This makes it difficult for them to change prevailing regimes of behaviour and action, i.e. to behave or act in a more sustainable way. This has repercussions on how to solve or not to solve spatial, e.g., land use conflicts, and how to plan or fail to plan, e.g., with regard to exerting better land use control. As a result we can observe “declaratory policies” and a “sustainability trap”: stakeholders declare to follow sustainability approaches; however, stringent policies with respective monitoring systems fail to be set up.

2. Transformative capacity: As it is obviously difficult to get out of this trap it is timely to look at the role of other stakeholders, especially of the civil society. Experience shows, that it may play an important role in pursuing sustainability oriented activities. However, its role depends to a high degree on their empowerment and readiness to engage. For example, the question is what happens if respective initiatives are weak or non-existent, e.g., in hierarchy dominated systems with strong party or government control.

In general, the concept of “transformative capacity” (Wolfram 2015) may help as an analytical tool in urban and regional development studies. Issues of governance, i.e. the interplay between different stakeholder groups (state, private sector, civil society) on different scales and administrative levels become especially crucial but also the other components of the concept are to be taken into account.

Living labs: These considerations have a strong impact on research agendas and how research in this field should be conducted in the future. First, more comparative analysis seems to be crucial, e.g., between cities and between different stakeholder groups within national contexts as well as between different (planning) cultures and planning regimes within the framework of the international debate.

Moreover, more testing grounds and urban/regional living labs are needed. They may allow to gain more experience regarding transformative capacity and its role in sustainability oriented urban and regional development. And they also can lead to more joint learning experiences among different stakeholder groups.

All this makes research more complex and difficult. Transdisciplinary sustainability oriented urban and regional research in the sense of a “quadruple helix” cooperation between academia, state and municipal actors, private sector institutions and the civil society does not come by itself. It may take some time until cooperation partners understand the different logics of actors from the other sectors. Transaction costs are usually rather high.

Thus, this fact has to be more prominently taken into consideration by policy makers in the research policy sector, and it has to be more obviously reflected by future budgets provided for sustainability oriented research projects in the field of urban and regional development.

## On the significance of biodiversity for the achievement of a sustainable world

Organised by: **Leibniz Research Alliance "Biodiversity"**

Chair: **Kirsten Thonicke (PIK)**

The session bridged natural and social sciences, putting research on the supporting role of biodiversity for carbon sequestration in tropical forests (invited talk by Dr. Masha van der Sande, USA/NL) into context of a socio-scientific review on nature and society's codependency (invited talk by Dr. Cristina de la Vega-Leinert, Uni Greifswald). Biodiverse forests have a high carbon storage capacity and are very productive, a pre-requisite to protect life on land and its sustainable use.

Three teaser talks from the postdocs of the SustainCBW (Towards a future sustainable world where climate, biodiversity, natural resources and human well-being are safeguarded) project provided detailed input into the quantification of trade-offs and synergies between Aichi biodiversity targets and agricultural land-use in the SDG context. 1) Data clustering shows first results were biodiversity and human well-being are positively correlated, incl. other combinations (presentation of Dr. Kirsten Thonicke, on behalf of Dr. Diana Sietz, PIK, Potsdam). 2) To allow alleviation of the pressure on biodiversity, social inequalities also need to be considered and analysed (presentation by PD Dr. Jens Jetzkowitz, MfN, Berlin). Where social inequality is pronounced, pressure on natural resources, and thus biodiversity loss, is also high. The challenge is to develop a conceptual framework that describes the narratives of different actors which range from local communities to international institutions. However, our knowledge on the synergies and trade-offs between SDG and Aichi biodiversity targets and the description of the relationship between biodiversity and social inequality is still very limited. This branch of Sustain CBW aims at improving this knowledge base. 3) Knowledge gaps differ widely between geographic regions and processes investigated (presentation by Dr. Anke Frank, ZFMK, Bonn). Thus, the identification of key knowledge gaps addressing biodiversity threats is only feasible at regional scales. Even in regions with species-occurrence data available, determinants of species distribution and abundance as well as on spatial dynamics of populations are often not or not well understood. However, to better understand the effects of different types of agriculture and of social inequalities on biodiversity, knowledge on species' population ecology is essential to identify determining factors and make predictions about their long-term persistence.

The discussion with all session attendees then revealed that biodiversity and climate are core planetary boundaries with other planetary boundaries being co-dependent. The conceptual framework to describe the relationship between biodiversity and social inequality should be populated with examples and extended to reflect on power structure, and be possibly extended by a cultural dimension to also reflect on the living and working perspectives of the different actors. The session concluded: In order to alleviate pressure on biodiversity, we also need to work on the dichotomy of nature and society, i.e. re-connect people to nature.

# Histories of sustainabilities — what is sustainable development? Past and present perspectives

Organised by: **Institute of Contemporary History**

Chair: **Elke Seefried (IfZ)**

The session explored the contemporary history of sustainable development discourses and practices and discussed possible reasons why the concept became so influential in politics, social movements and the economy. First, we traced the contemporary history of “sustainable development” back to the 1970s, and noted that many of the questions discussed in the morning session of the conference had already been mentioned in the 1970s’ and 1980s’ debates. We agreed that the discourse on sustainable development derived in the 1970s from the perception that environmental and developmental issues are closely interrelated in a genuinely global perspective.

Secondly, we explored the performative dimension of sustainability. We discussed how the concept became visualized and “iconized”. We concluded that the very vagueness of the concept and its meanings has helped render it so popular in politics and company policy. However, this does not mean that politicians and companies have merely been “greenwashing” the issues raised. On the contrary, they have worked at devising and promoting real environmental protection and social responsibility policies.

Thirdly, however, we clearly agreed that sustainable development concepts have always been shaped by inner contradictions and conflicting interests. It is everywhere highly difficult to balance environmental, economic and social goals. But the North-South divide, in particular, has proved to be the core question for sustainable development discourses and practices. Here, both camps have their own vested interests. There is no easy answer to this divergence, and, precisely for this reason, we need to intensify our efforts to tackle the world’s most pressing challenges, striving to ensure prosperity for the growing world population while respecting the limits of our planet’s resources.

Special session

# Sustainability management

Organised by: **Leibniz Working Group Sustainability**

Chair: **Christiane Cyron (IPB)**

Research plays a decisive role in shaping sustainable development. This societal responsibility for sustainability is connected to both, the thematic focus of research and how research itself is executed.

This session focused on the enabling environment for research: the organisations where research takes place. Achieving excellence in research requires a productive exchange of interests with a variety of stakeholders and the material and natural environment, such as research equipment, IT systems, facilities and outdoor facilities. We addressed the question of how these exchange processes could be regulated within the context of the SDGs.

The starting point of the session was the LeNa "Guideline for Sustainability Management in Non-university Research Institutions". The guideline was developed in a joint project of Fraunhofer, the Helmholtz Association and the Leibniz Association, funded by the BMBF.

We showed how aspects of sustainability could be systematically integrated into an organisation's management process. Special emphasis was put on the criteria for research in social responsibility, e.g. transdisciplinarity, user orientation or ethics. However, changing existing research and management routines towards sustainability is not easily implemented. Therefore, we investigated the role of various approaches of change management and sustainability reporting as instruments to support organisations' move to sustainability.

Overall, the session's participants considered the involvement of important stakeholders, especially all employees, particularly important in the process towards sustainability. To take responsibility, general and target group-specific training is required on a regular basis.