

Factsheet 6

Research for the transformation of the cities towards sustainability

In its report 'Humanity on the move: Unlocking the transformative power of cities' (2016), the WBGU examines the transformation of cities towards sustainability. Research has a key role to play in this context, for urban transformation is a societal learning and search process. To give this societal process orientation, the WBGU has developed a 'normative compass' comprising three dimensions: (1) *sustaining the natural life-support systems*, (2) *inclusion*, as an expression of a people-oriented urban development, and (3) *Eigenart* (a German word meaning 'character'), as a framework for dealing with socio-cultural diversity and regional, specific development dynamics.

Overview of the WBGU's recommendations

- › *Strengthen basic research on urban transformation: set up a 'Max Planck Institute for Urban Transformation'.*
- › *Establish new infrastructures for the collection, monitoring and use of data-based, quantitative and qualitative social, political and economic information and indicators.*
- › *New forms of agenda setting: institutional and participatory management of national and international agenda setting for new research programmes – with the involvement of key actors in society.*
- › *Capacity development and exchange of knowledge for transdisciplinary research: increased funding for transdisciplinary research, particularly in developing countries and emerging economies, e.g. to also provide local scientific support for urban transformation processes.*
- › *'50 urban real-world laboratories for 50 years': create interconnected research centres at the city and regional levels to support the transformation of the cities towards sustainability.*

Understanding and shaping transformative urbanization processes: demands on research

In addition to generating knowledge through basic research and verifying theories and concepts, research for global sustainable urbanization should also aim to support a transformation towards sustainable, liveable cities by generating application-oriented research findings and developing implementation strategies.

The WBGU has drawn up a list of proposed criteria for researchers and research-funding institutions (Tab. 1). The aim is to ensure that research on sustainable urbanization generates not only scientific knowledge, but also fresh, targeted impetus for the urban transformation towards sustainability.

Table 1

List of criteria for the analysis of research funding: a proposal for research and research-funding institutions.

Field of analysis	Requirements	Criteria
Goals	Sustainable urban development in the context of sustaining the natural life-support systems, inclusion and <i>Eigenart</i>	Reflection of interactions between one's own research subject and other dimensions of the normative compass (made up of the natural life-support systems, inclusion and <i>Eigenart</i>), as well as potential conflicts of objectives
Structure	Societal relevance and problem orientation	Research topics also oriented towards the requirements of political decision-makers and society; solution-oriented, innovation-oriented applied research
	Interdisciplinarity	Close cooperation between the engineering, natural, cultural and social sciences
	Transdisciplinarity	Problem-related; cooperation with stakeholders (also co-design and co-production of knowledge processes)
	Openness to reflexive research	Learning, reflexive research and flexible funding programmes, also in the international context
	Openness to experimentation	Model projects, innovative methods, e.g. urban labs and real-world laboratories
	Time frame	Adequate time frame, i.e. also more medium-term, long-term and adequate time periods
	International scope	Intensify international cooperation on urban transformation research, especially networking of/with emerging economies and developing countries
	Recombination of knowledge	Targeted research; combining existing knowledge with knowledge creation with regard to the opportunities for innovation
Results and effects	Technological and social innovations	Generation of sustainable alternatives to existing technologies and social practices; reinforcing a solution orientation
	Conditions for the diffusion of innovations	Consideration of global diffusion and acceptance, and of national or international framework conditions
	Political strategies	Development and discussion of possible political measures to improve diffusion conditions and/or implement transformation
	Capacity development	Development of capacity at the individual and institutional levels, structure formation
	Implementation	Long-term implementation and consolidation of research findings and innovations

The urban transformation towards sustainability: important lines of research

Taking into account the three dimensions of the normative compass proposed by the WBGU – sustaining the natural life-support systems, inclusion and *Eigenart* – there is a need for research primarily in the following fields:

Research has already been focusing increasingly on environmental pollution in cities, on climate-change mitigation and on adaptation to climate change in the last few years. Nevertheless, with regard to *sustaining the natural life-support systems*, there is a lack of consistent and comparable data on urban emissions and urban material flows. The study of ecosystems and ecosystem services in cities also requires further research.

As regards *substantive, economic and political inclusion* in urban societies, although research findings and conceptual approaches are available in certain specific areas, the lack of data availability – especially on societal subgroups – makes comparisons difficult both within and between cities. Furthermore, there is a lack of sys-

tematic and long-term studies in most emerging economies and developing countries. The extreme and increasing socio-economic inequality within cities represents a growing problem. Research is needed on how different population groups can be incorporated into political processes, integrated into urban economies, and supplied with adequate substantive resources. Financing models for inclusive and equitable urban development are an important research desideratum.

In order to have a transformative effect, research must take into account the local urban contexts with their specific, evolved identities, local factors and creativity potential. Here, the role of research is to attain a profound understanding of the local phenomena, processes and actors that constitute the *Eigenart* of a city, and to develop mechanisms for achieving a locally customized urban transformation towards sustainability, and for transferring knowledge to other cities beyond 'rigid blueprints'. Creating or improving urban quality of

life is strongly linked to local urban environments and specific socio-cultural lifestyles. This important field of research should make greater use of qualitative methods in order to broaden research into urban meeting places that generate social interaction, cohesion, creativity and innovation.

Ultimately, because of the many links, synergies and emergences of urban systems, all three normative dimensions must be included in the study of urban transformation processes (holistic, systemic perspective). Yet there has been insufficient research into the complexity of urban systems and into complex urban structures, processes and actors up to now.

The WBGU sees a specific need for research on *transformative action fields*, i.e. the areas of urban development with the greatest potential leverage effects for the urban transformation towards sustainability. This includes, in particular, research on the following three transformative action fields: (1) transformative land-use management, (2) materials and material flows, and (3) urban health. It will be important to bear in mind

the transferability of contextualized knowledge and the scalability of research results. In addition, there is a great need for research into *governance* in cities (also in informal contexts, specifically in developing countries and emerging economies), on governance in city systems at the global and national level, and on the role of cities in a multi-level form of governance. Comparative studies are important here – on cities that function in many different ways, on instruments, structures and actor networks in different political, socio-cultural, legal and economic contexts. Furthermore, negotiation processes – e.g. between actors with a formal position and those operating informally – play an important role in understanding transformative processes. It is also essential to study how cities can be better integrated into polycentric responsibility architectures based on their increasingly important role in global governance.

The WBGU has identified several systemic challenges in the German research landscape (Box 1), which are also of great relevance internationally for the learning process.

Box 1

Challenges of inter- and transdisciplinary urban research in Germany

The implementation of inter- and transdisciplinary research projects on the subject of the city has, up to now, come up against several limitations in Germany which should be given greater consideration in future research:

- › The inter- and transdisciplinarity of urban research is not adequately taken into account in the current funding and scientific structures (incentive systems, career opportunities, project periods). The predominant, mostly sectoral approach does not do justice to the complexity of cities.
- › International research on cities and urbanization as global challenges must be stepped up. In addition to intensified cooperation within industrialized countries, more cooperation is needed with developing countries and emerging economies, as well as South-South collaborations, in order to gather and exchange relevant and context-specific knowledge.
- › Scientifically sound recommendations are needed. The urgency of the need for action often stands in contrast to the long-term orientation of research. The different time frames make it difficult to deliver scientific findings quickly enough for practical application.
- › Given the current financial conditions in research funding, it is difficult to establish a partnership among equals with international actors. Furthermore, cooperation with international research partners needs a long period of confidence-building over a number of years, and this requires longer-term projects.
- › All federal government programmes with an urban focus should be obliged to incorporate sustainability into their remit across the board, without it becoming degraded to an empty word or phrase.

'50 real-world laboratories for 50 years'

In order to support urban societies in shaping urban development, more attention should be paid to generating, providing and applying regional urban knowledge. The WBGU therefore recommends setting up and continuously supporting research centres at the urban and regional level. The proposal for '50 global urban real-world laboratories for 50 years' champions the idea of networking and internationalization: 50 urban real-world laboratories should be created worldwide to increase

knowledge of transformation processes in an urban context, exchange this knowledge, and make it internationally available. The international network structure makes it possible to learn from each other about city-related issues across continents, countries and cities, while the transdisciplinary development of real-world laboratories helps to embed the implementation of the new knowledge and modified practices in society.

International networking of urbanization research

The urban transformation towards sustainability is a global challenge. Accordingly, scientists should engage in more international cooperation. In the WBGU's view, a global exchange of knowledge initiated by networking the results of basic research and experience would generate added value. Knowledge of the necessary conditions

for the success of an urban transformation towards sustainability generated by basic research and the 50 individual real-world laboratories could be compared with the findings of other research initiatives, making it possible to draw conclusions that can be generalized.

Box 2

Successful cooperation between urban research and urban practice: globalize the Leipzig Charter

The Leipzig Charter on Sustainable European Cities adopted by the EU member states in 2007 is a positive example of close cooperation between research and practice. The Charter's findings and recommendations are primarily based on scientific background papers and specialist expert reports on relevant urban issues. The Leipzig Charter contains many ele-

ments that are supported by the WBGU. It calls for research to strengthen integrated urban-development policy, inter alia by creating and securing "attractive, user-oriented public spaces and [...] a high standard in terms of the living environment", to modernize the infrastructure networks and increase energy efficiency, as well as on active innovation and education policy. Furthermore, deprived neighbourhoods should be promoted in the overall city context, e.g. by means of urban upgrading strategies, strengthening the local economy, active education and training policies, and efficient and affordable city transport.

The way forward: participatory agenda setting

Basic research on the urban transformation towards sustainability should be coupled more closely with application practice; there should be an intense dialogue between them (Box 2). This is a prerequisite for supporting suitable urban transformation processes. The WBGU therefore recommends funding not only intensive basic research on urban sustainability, but also applied practical research with the involvement of key actors (co-design and co-production). Funding institutions should therefore periodically invite academics and practitioners for open rounds of discussion and use the results to develop joint funding programmes. Various criteria should be met in this context:

- › *Inclusiveness:* Invitations should be extended to all relevant public institutions, ministries and universities, as well as independent research institutions. Attention should be paid to ensuring the participation of a wide range of different government departments and scientific disciplines. City administrations, business and civil-society actors should be included in the process of developing new research programmes if the research sponsors want the research not only to deliver basic findings, but also to have a transformative effect.

- › *Transparency and binding commitment:* Decisions on specific research programmes and research policies are the responsibility of the funding institutions and democratically legitimized bodies. Opportunities for contributing and exerting influence should be transparent, be announced in advance, and imply mandatory implementation.
- › *Regularity:* The development of research programmes on urban transformation should be repeated regularly. This also involves processing the findings and experiences generated in previous processes, tenders and projects.
- › *Creativity and charring methods:* Innovative agenda setting with a wide range of different actors from different disciplines and contexts requires a low-threshold, open, unbiased and undogmatic mixture of charring methods. It is advisable for such multi-stakeholder dialogues to be supported by external and independent experts.

German Advisory Council on Global Change (WBGU)

The German Advisory Council on Global Change (WBGU) is an independent scientific advisory body set up by the German government. The WBGU provides policy-makers with recommendations for action and research. Its flagship report 'Humanity on the move: Unlocking the transformative power of cities' can be downloaded from the WBGU website.

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