

Megacities – A Crucial Factor for a Globally Sustainable Development

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Urbanisation has represented one of the central phenomena of global development especially since World War 2. The development of *megacities* and *global cities* plays a special role due to its speed, its extent and its worldwide impacts. While megacities are defined by their population size, which varies between five, eight and ten millions in the research discussion, global cities are characterised by their function as influential nodes in the global economic, financial and political network. These cities are the forces driving global change and it is here where its impacts accumulate. In this respect, these cities are “offenders” and “victims” of (potentially) crisis-laden and risky phenomena of global change at the same time.

Still, megacities have various features that offer considerable potential for improving man’s conditions of living. Among such features are the size and the concentration of people of various origins. Other features are the concentration of finance capital and of significant institutions which make them nodes in global networks of economic, political and cultural development. Hence, they are places of economic progress, of innovation and of an efficient supply of goods, services and vital infrastructures. At the same time, they

hold major social and ecological risks that affect both their own functioning and global, national and regional development processes. In this chances-risks ambivalence, megacities are assigned central importance for the implementation of a globally sustainable development.

The well-being of the people in metropolises and their efficient management of natural resources based on sustainability principles, in particular in the context of urban infrastructures (energy, transportation, waste, water and wastewater), depend decisively on the use and management of certain technologies and techniques. For this reason, the assessment of primary and secondary impacts of used or potentially available technologies plays a key role in the development of strategies for increased sustainability in these agglomerations.

To eliminate the numerous, still existing knowledge and action deficits, an independent international field of research has emerged in the past years in which a number of topics is studied under various regional and disciplinary aspects. Research focuses on the formation of megacities and their role in regional, national and global development processes. On the other hand, the large variety of

specific problems is analysed and appropriate means to solve or mitigate them are being sought.

Presently, three research initiatives in this field are being pursued in Germany: The programme of the Federal Ministry of Education and Research (BMBF) "Megacities of Tomorrow/Future Megacities", the programme of the German Research Foundation (DFG) "Megacities – Megachallenge, Informal Dynamics of Global Change" and the research initiative of the Helmholtz Association (HGF) "Risk Habitat Megacity". These three initiatives and their individual projects concentrate on a wide variety of topics and regions, but they all deal with factors that are crucial to the development of megacities and future trends, the aim being to develop tangible implementation-oriented approaches to solve existing problems.

The focus presented in this issue has two major objectives: Megacities shall be described in terms of specific characteristics, central problems regarding their role in processes of global change, and in terms of their relevance for a globally sustainable development. In addition, a survey of current research activities in Germany shall be given.

The first part of this issue includes two contributions comprising a general description and an assessment of the global phenomenon of megacities. *Axel Borsdorf* and *Martin Coy* from the Geographical Institute of the University of Innsbruck analyse the relationship between megacities and global change. Global change is understood comprehensively as "causal relationships and various interactions among the worldwide effective changes of natural and social systems". The megacities are assigned the role of both settings ("victims") and drivers ("offenders") of change. The authors take Latin America as an example and describe the striking feature of structural change in the cities of Latin America, namely the transformation process from the bipolar (i.e. a city separated into a "poor" and a "rich" part) to the "fragmented city". This new type of urban devel-

opment is characterised by a more differentiated pattern of poor and rich "cells". Urban structural change is seen in the context of an extensive transformation process which started in the 1970s and which is characterised by a substantial openness for globalisation processes and a wide-ranging privatisation of public services. The increasingly emerging "*barríos cerrados*" and "*ciudades valladas*", i.e. gated residential areas mainly for the middle and upper classes, but sometimes also for poorer groups of the population, are described as "countermodel to the traditional city" due to major separation and ghettoisation tendencies, because important urban functions (such as free accessibility of public space and public institutions) are considerably restricted in these areas.

In their article "Urban Revolution as Catastrophe or Solution? Governance of Megacities in the Global South" *Rüdiger Korff* and *Eberhard Rothfuß* from the Philosophical Faculty of the University of Passau emphasise the function of megacities as centers of innovation and problem solutions, which, in their opinion, has been neglected by previous research. With regard to the role of megacities in sustainable development and the "urban revolution" which is required in this process, the authors underline the outstanding role of urban self-organisation. In contrast to the previous technology- and expert-based urbanisation model characterised by obvious limits of control, planning and integration and considered a major cause of the existing problems by the authors, the article mainly focuses on a changed understanding of governance. It is based on an improved communication between citizens and administration, on consensus orientation, multiculturalism and an increased integration of the citizens' expertise in decision processes. Based on the example of two cities (Bangkok, Thailand and Salvador de Bahia, Brazil) the authors outline the necessity to take into account the various cultural or institutional contexts of individual cities in such strategy changes and to consider the equally relevant role of the poorest slum quarters for the

success of such a self-organised, consensus-based urban development management.

The second part of this issue concentrates on the role of megacities as places of the concentration of finance capital and corporate headquarters as nodes in global networks of economic and political development and on the partly considerable management problems that result from the size, complexity and informal structures encountered. In his contribution “Megacities in the Geography of Global Economic Governance”, *Christof Parnreiter* from the Geographical Institute of the University of Hamburg underlines that the megacities of the South have so far not played any major role in global financial markets – measured in respect to stock exchange capitalisation and stock trading – or as centres of worldwide enterprise networks. Apart from the four global centres of New York, Tokyo, London and Paris, only Shanghai, Beijing, Mumbai and Sao Paulo (the only representative from Latin America) are playing a role worth mentioning in the countries of the South, if economic power is taken as a criterion. This and the role of, for instance, Frankfurt or Zurich as non-megacities in the financial sector, show that “megacity” must not be synonymous to “global city”. The author shows that some Latin American megacities, in particular Mexico City, figure on the map of global economic power as locations of stock trading and corporate headquarters. On this basis, it is critically reflected that the metropolises of Latin America are given a type of “bridgehead function” of the North, which results in the drain of financial and human capital from the South and, hence, in a further aggravation of the globally unequal development.

In his contribution “Megacities in Latin America: Informality and Insecurity as Key Problems of Governance and Regulation”, *Günter Mertins* from the Geographical Institute of the University of Marburg first describes the problem of defining “informality”. Based on his analysis of informal structures in industry and settlement activi-

ties in Latin America, he comes to the conclusion that informal processes have to be considered reality in Latin America due to long-lasting ignorance and tolerance and due to their important safety net function that ensures survival. The resulting lack of manageability of megacities by classical formal structures is aggravated by the “violencia moderna”, i.e. organised crime on a grand scale, which has been constantly increasing since the 1980s. It has given rise to power centres of criminal organisations in the megacities largely separated from public law and authorities and commanded by “microlocal” warlords. Interactions between informal privatisation of public tasks and informal relationships of the upper class (e.g. defraudation of tax), on the one hand, and the smooth transition from economic and social decline to criminal informal activities (e.g. drug trafficking) and participation in informal criminal and mafia-like organisations and informal politics with corruption, toleration of violence and exemption from punishment of offenders, on the other hand, have not yet been studied thoroughly and are not yet understood. In this respect, one of the decisive questions is the extent to which the interaction of informal actors and activities promotes or inhibits the implementation of “good governance” and what a more favourable form of interaction would be like in detail.

The third part of this issue gives a survey of the research programmes on megacities which have been started in Germany. Two projects are presented in detail.

In his contribution “Megacities: Challenge for International and Transdisciplinary Research”, *Eckart Ehlers* from the Geographical Institute of the University of Bonn gives a short survey of the three research initiatives that are currently being pursued in Germany in this field: The BMBF programme “Megacities of Tomorrow/Future Megacities” with ten individual projects, the DFG programme “Megacities – Megachallenge. Informal Dynamics of Global Change” with ten research

groups, and the HGF research initiative “Risk Habitat Megacity”. In *Ehlers’* opinion, these projects as a whole are leading the way in international megacity research. According to the author, this is due to the fact that fundamental research and practical reference are coupled on the basis of an equal partnership between foreign and German scientists and interdisciplinary and transdisciplinary work. Connected with this, *Ehlers* demands a permanent exchange of experience for all projects, the establishment of a joint database, and the committed visibility of the programme initiatives not only at (disciplinary) scientific events, but also at events of political character (e.g. UN-HABITAT, World Urban Forum, World Bank).

In their article, *Jürgen Kopfmüller* and *Helmut Lehn* (of the Institute for Technology Assessment and Systems Analysis of Karlsruhe Institute of Technology) and *Henning Nuissl*, *Kerstin Krellenberg*, and *Dirk Heinrichs* (of the Helmholtz Centre for Environmental Research, Leipzig), present the objectives, the conceptual approach and selected first results of the research initiative of “Risk Habitat Megacity” launched by the German Helmholtz Association of National Research Centres (HGF). They outline the conceptual and analytical architecture of the project which is based on a systematic application of the sustainability, risk and governance concept to various megacity-typical problems and fields of application. The authors illustrate the working group’s cross-cutting use of sustainability indicators and scenarios. Using the fields of “water” and “socio-spatial differentiation” as examples, major research questions covered by the project and the methodological approaches are highlighted.

In their contribution “The oasis as a megacity: Urumqi’s fast urbanisation in a semiarid environment”, *Katharina Fricke*, *Thomas Sterr*, *Olaf Bubenzer* and *Bernhard Eitel* from the Geographical Institute of the University of Heidelberg describe typical problems of large and growing agglomerations with respect to the supply of natural goods (in this case water) and the disposal or management of the undesired products (in this case wastewater). These problems are exemplified by the City of Urumqi, the capital of the Xinjiang Uygur Autonomous Region of the People’s Republic of China. Given its location between the partially glaciated Tianshan Mountains to the south and the Gurbantünggüt Desert to the north, Urumqi is certainly located in an ecologically sensitive environment. At present, the existing renewable water resources are substantially overused. Additional water sources can be acquired solely by means of long-distance transportation or by using non-renewable water sources. Similar to other megacities, persistent population growth coupled with improved living standard and climate change impacts will aggravate already existing gaps between water supply and demand.

The contributions in this issue can be traced back to a publication in the German Journal „Technikfolgenabschätzung – Theorie und Praxis” in May 2009 (Vol. 18, No. 1; <http://www.itas.fzk.de/tatup/091/leko09a.pdf>). They were revised for this issue in different depth.

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