

## **Megacities and Global Change in East, Southeast and South Asia**

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### **Summary**

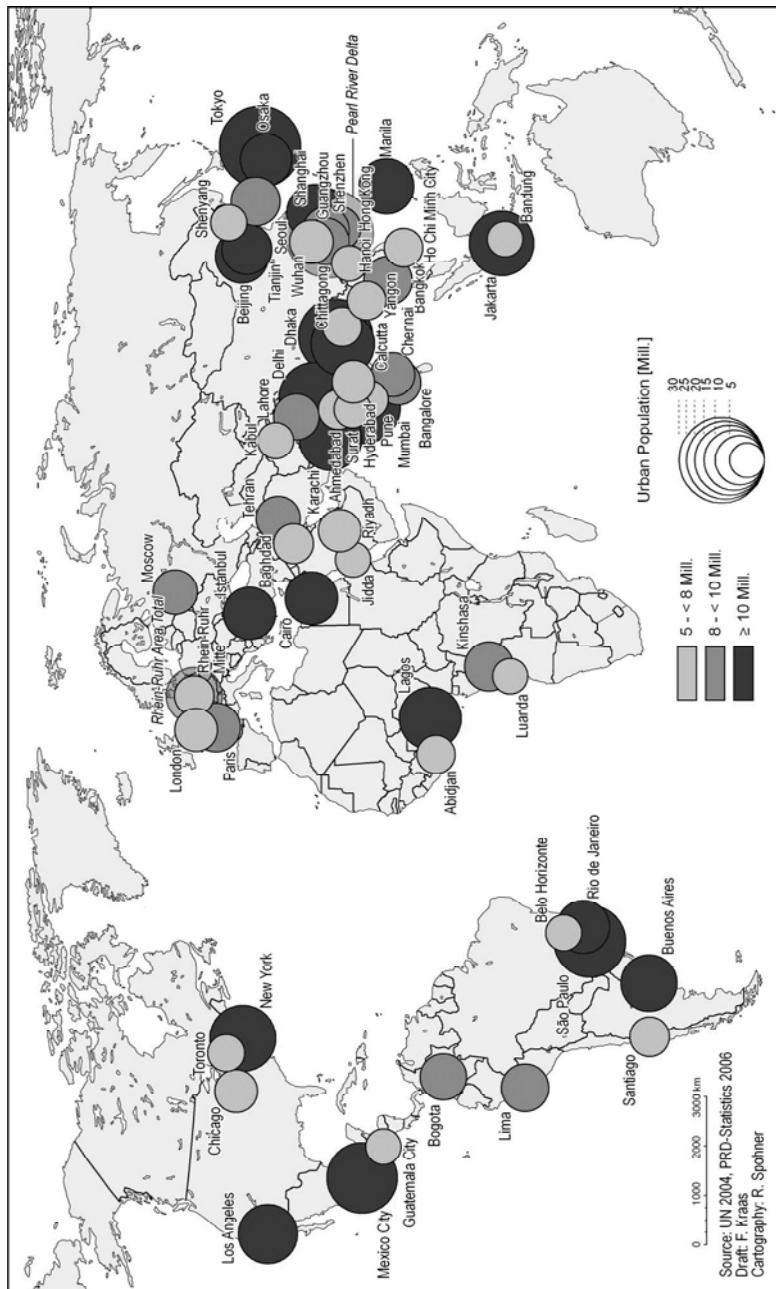
Megacities have particular significance in the world-wide process of urbanisation: In the year 2015, more than 600 million people will be living in about 60 megacities worldwide (i.e. metropolises with more than 5 million people). Under the dynamics of global change they affect global change just as profoundly as global change can affect megacities. Often, megacities are perceived mainly as burdened by disadvantages, origins and motors of multiple problems as well as agents and victims of risks. Such a view does, however, neglect – at least potential – benefits, chances and advantages of mega-urban developments. In East, Southeast and South Asia, radical spatial, demographic, social and political structural changes in (mega-)urban areas took place, associated with the economic rise of the whole region since the mid-1980s, which show remarkable differences. Furthermore, the issue of systematic risk minimisation and risk prevention and the question of growing importance of informality within megaurban areas are touched.

Keywords: urbanisation, megacities, global change

### **1      Megacities: Key elements of worldwide urbanisation**

For the first time in the history of man, more than half of the world's population will live in cities in the year 2007 (UN 2002: 1). Worldwide, the proportion of the population as a whole living in cities rose from 29.8% (1950) to 37.9% (1975) to 47.2% (2000), and it will probably increase to 57.2% in 2010 or 60.2% in 2030 (UN 2002: 4). In the industrialised countries 73% of the population was living in cities by 1990 (ca. 877 million), while in developing countries the corresponding figure was only 37%, although in absolute figures it was 1,357 million. It is assumed that the rate of urbanisation in industrialised countries will only increase slightly to 78%, i.e. 1,087 million people, while in developing countries the increase will be enormous, although it may vary from state to state. With an estimated 57% of the total population, probably more than 3,845 million people will live in cities here in 2025 (HABITAT 2001).

Fig. 1: Megacities in 2015



Megacities have particular significance in this world-wide process of urbanisation, new scales have evolved ("mass matters"): In the year 2015, more than 600 million people will be living in about 60 megacities worldwide (i.e. metropolises with more than 5 million people). More than two-thirds of the megacities are located in developing countries; their populations have increased greatly in the last three decades (UN 2002, Kraas 2003, Bronger 2004). In the next 20 years, not only the most intensive growth rate and megaurban development processes are predicted for East Asia, South Asia, and Africa but also the highest numbers of megacities will be located in parts of Asia (Fig. 1, Fig. 2).

**Fig. 2: Population growth of selected East, Southeast and South Asian megacities (1950-2015)**

	1950	1980	2000	2015
Tokyo	11 275	28 549	34 450	36 214
Osaka-Kobe	4 147	9 990	11 165	11 359
Seoul	1 021	8 283	9 917	9 215
Beijing	3 913	9 029	10 839	11 060
Chongqing	1 680	2 577	4 635	5 758
Tianjin	2 374	7 268	9 156	9 874
Wuhan	1 228	3 155	5 169	8 002
Guangzhou	1 343	3 135	3 881	3 943
Shenzhen	174	337	1 603	2 034
Manila	1 544	5 955	9 950	12 637
Jakarta	1 452	5 984	11 018	17 498
Bangkok	1 360	4 723	6 332	7 465
Dhaka	417	3 257	10 159	17 907
Calcutta	4 446	9 030	13 058	16 798
Delhi	1 390	5 558	12 441	20 946
Mumbai	2 981	8 695	16 086	22 645
Pune	592	1 642	3 655	6 130
Karachi	1 028	5 048	10 032	16 155

Source: UN 2004.

In quantitative terms, according to different authors, megacities are defined to be metropolises with a population of over 5 million (Bronger 1996), more than 8 million (UN 1987: iii, Fuchs et al. 1994: 1, 42/43, Chen/Heligman 1994) or more than 10 million inhabitants (Mertins 1992). Some authors also set a minimum level for population density (at least 2,000 persons/km<sup>2</sup>) and only include cities with a single dominant centre (Bronger 1996), whereby polycentric agglomerations – such as the

Rhine-Ruhr area in Germany, for example, with 12.8 million inhabitants – are excluded. Others include this polycentric mega-urban region (UN 2002: 116-118). Ultimately it is futile to fight over a fixed definition of megacities, as any setting of minimum/maximum values is subjective and thus open to debate. Furthermore, there are the problems of inconsistent spatial boundaries for administrative districts, as well as the reliability of up-to-date population figures given inconsistent censuses, projections and estimations. International statistics are not based on similar areas of reference, so that the figures given for the size of cities and megacities are generally not comparable. Against these considerations, a more qualitative, process-oriented perception and a more comprehensive understanding of megacities as in fact functional mega-urban regions is deemed appropriate.

Megacities are new phenomena of worldwide urbanisation processes. They are results of globalisation and are subject to global ecological, socio-economical, and political change. Reciprocally, they also dictate these changes due to their strong developmental dynamics. New are not only the up to now unknown dimensions of the quantitative enlargement, the high population concentration, infrastructure, economic power, capital, and decisions, as well as the excessive and partially self-energising acceleration of all the development processes, but above all also the simultaneousness and overlapping of the different processes with mutual feedback. Increasingly, megacities are subject to an up to now unknown loss of governability and control (Pile/Brook/Mooney 1999) – with the consequence that more and more processes are unregulated and take place informally or illegally.

## 2 Megacities and Global Change

Under the dynamics of global change – understood as global environmental change as well as global socio-economic and political change (Fig. 3; Goudie 2000, Johnston/Taylor/Watts 2002, Ehlers/Krafft 2001) – megacities affect global change just as profoundly as global change can affect megacities. Thus, megacities research is a central component of global peace policy.

**Fig. 3: Megacities as centres of global change**

<b>geo-ecological change:</b>	e.g. through natural hazards, air-, water- and soil pollution, sea-level rise, global warming, urban heat islands, bio-connection
<b>geo-economic change:</b>	e.g. through economic globalisation, industrial competition, activities of transnational companies, new labour division, transformation processes
<b>geo-social change:</b>	e.g. through (inter)national migration, empowerment of marginalised groups, urban ethnicity, new urban epidemics, global life styles

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<b>geo-cultural change:</b>	e.g. through organisation of global places, globalised media, social movements, new cultural diversity, transnational social scapes
<b>geo-political change:</b>	e.g. through conflicts and power (im)balances, globally acting NGO networks, human rights movements, global regulation, security and stability

Source: Own draft, using categories of Johnston/Taylor/Watts 2002; Kraas/Nitschke 2006.

Too often, megacities are perceived mainly as burdened by numerous disadvantages, origins and motors of multiple problems as well as agents and victims of risks. Such a view does, however, neglect numerous – at least potential – benefits, chances and advantages of mega-urban developments. Consequently, in a more balanced perception megacities possess a so-called double-headed face (Fig. 4):

- On the one hand, megacities are global risk areas – in natural and anthropogenic dimensions. They are subject to increasing socio-economic vulnerability due to increasing poverty, socio-spatial and political-institutional fragmentation and often extreme forms of segregation, disparities, and conflicts. Megaurban societies are disintegrated and destabilised due to the direct proximity of very different local livelihoods and lifestyles (including ethnic and social groups). Megacities not only face risks in consequence of external events, whether natural or manmade. They likewise contain, produce and reinforce hazards (Mitchell 1999) and as such are "victim and culprit" at the same time.
- On the other hand, megacities, as global junctions, offer a multitude of potentials for global transformation. Due to their wide range of available human resources and globally linked actors, megacities are considered to be potential "innovative milieus". For example, improved sustainability can be achieved by decreasing the "drain on land resources", by using resources very efficiently (recycling and regeneration), efficient hazard prevention, and sufficient health care.

The observed multi-dimensional global change processes cause numerous consequences for mega-urban areas, and vice versa the diversely structured, differently governed and unevenly performing mega-urban areas affect the different levels of global change in manifold ways. Broadly and with regard to socio-economic global change, "rich" and "poor" megacities have to be differentiated (Scholz 2002, Roy/Alsayyad 2004): Rich megacities profit as production centres in the global market from the earnings of the international division of labour and involvement in global socio-economic and political networks. However, "poor" megacities are the "absorbing pools" for the rural migration with large percentages of the population living below the poverty line. Here, the production and service levels of a wide range of informal activities persist at regional and national scales.

**Fig. 4:** The double-headed face of mega-urbanisation

	Problems, risks and disadvantages	Benefits, chances and advantages
<b>Ecological dimension</b>	<ul style="list-style-type: none"> <li>- Urban expansion, urban sprawl and fragmented landuse mosaic</li> <li>- Air, water, soil pollution, sewage water problems</li> <li>- Waste disposal; uncollected, illegal and toxic waste</li> <li>- Inundation and land subsidence</li> <li>- Environmental health problems</li> <li>- Expansion in ecologically fragile areas (e.g. coasts, slopes, mangroves)</li> <li>- Sealing and degradation of fertile soils</li> </ul>	<ul style="list-style-type: none"> <li>- Decreased land consumption (per head), partly through high-rise construction</li> <li>- Optimised landuse patterns, efficient landuse planning</li> <li>- More efficient resource use (e.g. water, food, energy)</li> <li>- Closure of material, water, energy flows (recycling)</li> <li>- Comprehensive monitoring and management of nature-human-interaction</li> <li>- Diversity and management of urban biodiversity (biocorridors, habitat diversity)</li> <li>- Sustainable urban agriculture and green space policy</li> </ul>
<b>Economic dimension</b>	<ul style="list-style-type: none"> <li>- Rudimentary or nonexisting infrastructure (transportation, water, energy, communication)</li> <li>- Mass un- and under-employment („redundant population“)</li> <li>- Low labour wages and exploitation of labour force</li> <li>- Wide spectrum of informal (unregistered, uncontrolled, partly illegal) activities</li> <li>- Dilapidating urban fabric</li> <li>- Unaccounted for water and energy flows</li> <li>- Migration and commuters flows</li> </ul>	<ul style="list-style-type: none"> <li>- Increasing interaction of all economic sectors (incl. more formal and informal parts)</li> <li>- Improvement of infrastructure (transportation, water, energy, communication), short transportation distances</li> <li>- Increasing income and wealth</li> <li>- Agglomeration economics</li> <li>- Growth of productivity</li> <li>- Growth of creativity</li> <li>- Scientific and technological innovations</li> <li>- Improved welfare systems</li> <li>- Less vulnerability, growing resilience and robustness</li> <li>- Human security for all</li> </ul>

	<b>Problems, risks and disadvantages</b>	<b>Benefits, chances and advantages</b>
<b>Social dimension</b>	<ul style="list-style-type: none"> <li>- Loss of social coherence</li> <li>- Widening of socio-economic disparities and social fragmentation</li> <li>- Decline of access to health system, education and security infrastructure</li> <li>- Informal, partly illegal settlements, urban decay</li> <li>- Social disorganisation: conflicts, crime, riots, war</li> <li>- Displacement processes</li> <li>- Growing vulnerability in marginalized population groups and communities</li> <li>- Social injustice, misuse of social power</li> <li>- Corruption, bribery, cronyism, nepotism</li> </ul>	<ul style="list-style-type: none"> <li>- Improved education and health care systems</li> <li>- Growth of community and neighbourhood coherence</li> <li>- Increased participation in decision processes</li> <li>- Growth of social justice</li> <li>- Gender empowerment and emancipation</li> <li>- Growth of cultural diversity, interaction and exchange</li> <li>- Rising life expectancy</li> <li>- Multi-disaster preparedness</li> <li>- Development and strengthening of independent control mechanisms against corruption, bribery etc.</li> <li>- Enhancement of social laws (e.g. housing, labour)</li> </ul>
<b>Political dimension</b>	<ul style="list-style-type: none"> <li>- Loss of governability and steering capabilities</li> <li>- Growing informality in decision making processes, politico-economical networks, self-organisation of public functions (e.g. private security, mafia structures)</li> <li>- Loss of just representation of general public (e.g. migrants, minorities, underprivileged)</li> <li>- Incoherent government laws, regulations, rules</li> <li>- Unbalanced internal and external influences</li> </ul>	<ul style="list-style-type: none"> <li>- Growth of width, depth and availability of information and communication; international connectivity</li> <li>- Development and strengthening of civil society institutions</li> <li>- Growth of participation in political decision making processes</li> <li>- Growth of multi-stakeholder participation</li> <li>- Improvement of governance processes, political coherence and enforcement of laws and regulations</li> </ul>

Source: Ehlers 2006, Kraas/Nitschke 2006.

### **3 Megacities in East, Southeast and South Asia: Trends and Challenges**

In East, Southeast and South Asia, radical spatial, social and political structural changes in (mega-)urban areas are associated with the economic rise of the whole region since the mid-1980s:

- (1) As far as demographic development is concerned, a marked decline in the speed of population growth in general, but radically changed migration processes within the states and on an international level are to be observed. With expanded economic activities particularly migration into (mega-)urban areas has grown substantially: In a process of rapid industrialization, not only the local workforce was absorbed, but also a huge wave of migrant workers, mainly from rural and remote areas, was and is attracted, estimated at hundreds of million people in China and India.
- (2) Economic development shows considerable increases in gross national product and income, growing proportions of secondary and tertiary activity, extensive development of transport and communications infrastructure – mainly in (mega-)urban areas. With growing global interdependence the functioning of the world economy is reinforcing vulnerability, particularly within the globally connected (mega-)urban areas, as was seen during the so-called Asian crisis. One factor that was particularly evident as a result of export industry development was the increasing participation by women in the manufacturing sector.
- (3) Social consequences are considerable improvement in health (even if not for the entire populations) and education, a strongly expanding economic middle class, but also greater socio-economic disparities, which exist everywhere particularly in the (mega-)cities, expenditure and price changes in key areas as well as growing poverty and crime rates. Disparities and fragmentation in cities continue to increase, thereby exacerbating the vulnerability of the different societies. For instance, even if China has witnessed the most dramatic burst of wealth creation in human history – since 1978 more than 100 million economic middle class people emerged -, the price the society had to pay for the economic uprise are devastated environments and deteriorated health care systems (Wang/Krafft/Kraas 2006).
- (4) Excessive spatial expansion of the (mega-)urban areas was and is a major consequence, and only partly planned and regulated land use patterns can be found. Substantial parts of the (mega-)cities are developing informally, in nearly ungovernable kinds of spatial organisation. Partly, a crisis-inducing real estate sector can be found, facing high percentages of vacancy rates and binding large parts of financial capital. Unsolved problems of informal settlements and slums (with lack of basic supply and public services) and severe agglomeration disadvantages as well as environmental deterioration are producing diseconomies in the (mega-)cities.
- (5) Increasingly, megacities are subject to an up to now unknown loss of governability and controllability – with the consequence that more and more processes are

unregulated and take place informally or illegally, such as in informal housing, the informal sector in urban economy or informal negotiation processes between stakeholders in landuse regulation. The wide range of informality is until now hardly investigated with respect to form, function, and interaction.

As far as major trends and challenges are concerned, the mega-urban regions of East, Southeast and South Asia show remarkable differences, which may in general be characterized as follows (Fig. 5) – thereby, of course, neglecting individual local mega-urban developments, settings and peculiarities.

**Fig. 5: Major trends and challenges in/for mega-urban areas in East, Southeast and South Asia**

Mega-urban areas in ...	Major trends	Major challenges
<b>East Asia</b>	<ul style="list-style-type: none"> <li>- Vast urban expansion in emerging megacities, partly through land reclamation</li> <li>- Decreased land consumption, mainly high-rise and dense buildings</li> <li>- Loss of urban heritage and historic identity</li> <li>- Strong regulation and control by administration</li> <li>- Dominance of coherent landuse and infrastructure planning</li> <li>- Partly expansion in ecologically fragile areas</li> <li>- Sealing and degradation of fertile soils</li> <li>- Strong in-migration in emerging megacities, low labour wages, exploitation of labour force</li> <li>- Existing, but mainly controlled informality</li> <li>- Strongly growing socio-economic disparities</li> </ul>	<ul style="list-style-type: none"> <li>- Air, water, soil pollution</li> <li>- Environmental health problems</li> <li>- Securing of resource demands (water, energy)</li> <li>- Closure of material, water, energy flows (recycling)</li> <li>- Management of urban biodiversity</li> <li>- Integration of migrants in communities</li> <li>- Socially just access to public health system</li> <li>- Growing social disparities and inequality in China</li> <li>- Displacement processes in inner-urban areas</li> <li>- Urban identity</li> <li>- Enhancement of social services in emerging megacities</li> <li>- Public participation and social responsibility</li> <li>- Urban villages in China</li> <li>- Corruption, bribery, cronyism</li> </ul>

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Mega-urban areas in ...	Major trends	Major challenges
Southeast Asia	<ul style="list-style-type: none"> <li>- Urban expansion and sprawl, fragmented landuse mosaic, much waste land</li> <li>- Sealing, degradation, under-utilisation of fertile soils</li> <li>- High influx of (inter-)national migrants, permanent and temporary</li> <li>- Lack of urban planning and implementation</li> <li>- Rudimentary or non-existing infrastructure in urban fringes</li> <li>- Mass un- and under-employment despite low labour wages</li> <li>- Wide spectrum of informal (unregistered, uncontrolled, partly illegal) activities</li> <li>- Unaccounted for water and energy flows</li> </ul>	<ul style="list-style-type: none"> <li>- Air, water, soil pollution</li> <li>- Inundation and land subsidence</li> <li>- Waste disposal; uncollected, illegal and toxic waste</li> <li>- Enhancement of urban governance and steering</li> <li>- Strengthening of civil society institutions</li> <li>- Improvement of infrastructure</li> <li>- Improvement of public health and education services</li> <li>- Displacement, eviction and relocation</li> <li>- Increasing socio-economic disparities</li> <li>- Loss of social coherence</li> <li>- Growing vulnerability of large parts of urban population</li> <li>- Corruption, bribery, cronyism</li> <li>- Political stability</li> </ul>

Mega-urban areas in ...	Major trends	Major challenges
<b>South Asia</b>	<ul style="list-style-type: none"> <li>- Strong urban expansion in emerging megacities, partly in ecologically fragile areas</li> <li>- Fragmented landuse mosaic, under-used land</li> <li>- Sealing and degradation of fertile soils, but also large areas of urban agriculture</li> <li>- Predominant policy of low-and medium-rise buildings</li> <li>- Rudimentary infrastructure, particularly in urban fringes</li> <li>- Inner-city and heritage maintenance</li> <li>- High degree of informal housing, informal economy</li> <li>- Growing urban unrest and conflicts</li> </ul>	<ul style="list-style-type: none"> <li>- Water and soil pollution</li> <li>- Environmental health problems</li> <li>- Securing of resource demands (water, energy)</li> <li>- Integration of migrants in communities</li> <li>- Growing socio-economic disparities, vast amount/ portions of urban poor</li> <li>- Social responsibility, social awareness programmes</li> <li>- Improvement of governance processes, political coherence and enforcement of laws and regulations</li> <li>- Corruption, bribery, cronyism</li> </ul>

Against the background of pressing challenges, two main aspects deserve particular attention for future urban development: (a) the issues of systematic risk minimisation and risk prevention as well as (b) the question of growing importance of informality within megaurban areas.

a) Systematic risk minimisation and risk prevention are essential in the light of growing global interconnectivity as well as rising amounts of vulnerable urban populations. The areas with the greatest need for action are as follows:

- In the area of the environment and health, problems of emission reduction, the provision of clean drinking water as well as sewage and rubbish disposal are the most important issues. The inadequate environmental situation is already directly responsible for more than a quarter of avoidable health problems.
- The problems of adequate housing and habitat associated with dynamic population growth, together with inadequate landuse planning and poor availability continue to be unsolved problems, mainly in Southeast and South Asia.
- In the case of the rapidly increasing concentration of (inter-)national economic activities, tension can deepen between urban economies and national economic

interests. Power and its social and spatial effects may create polarised active and marginal economic spaces, at a national, regional and local level. The megaurban economies with their multi-layered interconnections with increasing globalisation and the expansion of the informal sectors play crucial roles in the global competitiveness.

- Already, existing symptoms of economic, ecological, infrastructural and socio-economic overload are increasing dramatically and are thus extreme urban security risks at a global level.
- Increasing disparities and sometimes extreme socio-economic fragmentation with serious social and spatial segregation are sources of social and political centres of conflict.
- Natural and man-made catastrophic events are an increasing threat to the megacities, particularly in coastal zones; disaster prevention planning is increasing in significance.
- Poor governability and directability inhibit controlling and correcting intervention on the part of state and local authorities in order to minimise or indeed prevent poor conditions.

b) As for most megacities worldwide in developing countries, also for megacities in Southeast and South Asia, to a much lesser extent as well in East Asia, the growth of informal structures beyond state registered and regulated activities can be observed. These range from the expansion of informal settlements and informal economic sectors – both contribute strongly to overall economic performance – to forms of semi-legal and illegal activities. Increasingly, a multitude of informal networks and actor groups develop alongside formal public and private economic institutions; both basic forms also overlap (Hauck 2001; Herrle/Jachnow/Samol 2002). Along with actors in the established political-administrative system and economy, there are more individual actors and protagonists in self-organised institutions. As yet it is hardly known, how the complex governance mechanisms, bargaining processes and discourses of these new heterogeneous types of social organisation forms will influence the development dynamics in the different megacities and which spatial processes will be achieved or respectively preferred. With respect to the administration capacities, it has been shown that conventional concepts, standards, strategies, tools, and priorities of urban development neither answer conditions of urban poverty nor are they suitable for accepting informality as a widely prevalent basic principle of urban life, economy and settlement. Decentralisation and devolution of decision-making authorities are increasingly accepted as solution strategies; however, the necessary willingness and capability for participation are still underdeveloped. The areas with the greatest need for action, here, are as follows:

- In respect of the securing of resources, crucial questions are directed at highly dynamic and relevant, partly informal processes and flows, such as air, water capital, information, energy, traffic and migration flows. The paths of matter

and resources from their sources to their sinks and sub-systems are important to know in order to obtain a deepened understanding of new processes, including non-linear reactions of sub-systems and "social determinants".

- As to the vast informal urban growth and expansion, including informal construction activities of different actors, informality of control, and the multi-layered bargaining processes between institutions and individuals as well as the future of informal and semi-formal housing production in the context of socio-spatial fragmentation is important.
- The balance between informal and formal institutions within urban economies is relevant in questions as to whether informal institutions (contact and cooperation networks, informal sanction modalities, complex social capital) minimise risks and lower transaction costs and hereby reduce the deficits of formal institutions (trade regulations, standardised procedures, etc.) in megacities, thus contributing to the efficiency of the economic systems.
- The degree of how standards, regulations, methods, and instruments of the interaction of different actors in administration, private sector and civil society in general and at least partly with global claims, which affect the overall development of megacities, should be acknowledged, understood and investigated more intensely.

In conclusion, it becomes obvious that the general perception of mega-urban regions, the international megacity research as well as the priorities in planning and governance need and deserve substantial changes: First, megacities should be more perceived as areas of global importance, affected by and affecting themselves manifold levels of global change over wide distances and long periods of time. Consequently, their performance falls no longer just in the responsibility of local actors, but as they are embedded at least in transnational, if not global development processes the responsibility for their sustainable development lies in the hands of numerous, more or less directly or indirectly responsible, internationally connected actors. Second, the comprehension of the "double-headed face" of mega-urbanisation demands that the general perception of megacities should shift from a predominantly negative view ("moloch", "global sink") to a more positive perception of mega-urban areas as priority areas and drivers of change, with at least often undiscovered potential of improved sustainability and quality of life for many, at least more, if not all inhabitants. Third, the complex reality of phenomena, processes and actors as well as the high pace of development in mega-urban areas inevitably demand international, inter- and transdisciplinary, intercultural as well as multi-stakeholder-oriented action – including stakeholders from research, administration, the private sector and the general public and civil society. This necessarily implies a more engaged and committed interaction among all responsible levels. Fourth, as to the role and direction of research, the generation of not only knowledge based on fundamental descriptions, analyses and explanations but, moreover, the creation of

knowledge for prediction, orientation and decision-making is deemed indispensable. Fifth and finally, for many megacities, particularly in the developing countries, major shifts from a predominantly globalisation-driven, competitiveness-seeking top-down development to alternative priorities are regarded important. Beyond current priorities on structure-, pattern-, landuse-, infrastructure- and housing-based planning more problem-, process- and people-oriented approaches are needed.

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