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Megacities

Editorial

Megacities are more than concentration of millions of people. "The scale, the speed of change, the growing mobilization of inhabitants, information, goods and capital, and the global connectedness of megacities all combine to create new physical, economic and social dynamics, a new complexity, and new dimensions of risk. This places megacities at the centre of the challenges for global sustainable development" (D. Heinrichs). The introducing articles focus on challenges and risks megacities face and their great potential for innovative solutions as well as risks.

Two years ago, the German Federal Ministry for Education and Research (BMBF) launched the programme "Sustainable Development of the Megacities of Tomorrow" (www.emerging-megacities.org) to promote research on growing cities and their management. This programme is part of a broader research initiative. The Helmholtz Association assesses characteristic risks, their driving factors and seeks to develop strategies and solutions for risk management in Latin American megacities: "The Risk Habitat Megacity" (www.risk-habitat-megacity.ufz.de). In 2006, a third programme on "Megacities- informal dynamic and global change" (www.geographie.uni-koeln.de/megacities-spp) has been started funded by the German Research Foundation (DFG), which focuses on informal urban dynamics in Dhaka/Bangladesh and the Pearl River Delta/China.

TRIALOG 92 gives a first overview on work in progress by presenting interim results of the projects carried out in **Brazil, Chile, China, Ethiopia, India, Iran, Mexico, Morocco, Peru, South-Africa, Tanzania, and Vietnam**. The 17 projects display a representative profile of the challenges of megacities in different regions and underline the complexity of sustainable urban development. Unsurprisingly, eight of the 17 projects are located in Asia, among those five in China alone. Harmonizing urban growth and socio-ecological needs will be one of the most challenging aspects in the Chinese as well as in the Indian context. A majority of the projects have so far focussed on more technical-environmental aspects of sustainability as entry point to a broad consideration of environmental **and** economic **and** social factors. Other projects started from a more general urban planning approach, testing urban structures, planning systems and guiding instruments as the entry point to sustainability. For all, urban governance with special emphasis on accountability, responsiveness, and public-private partnerships are of high importance. China offers may be the greatest variety of research approaches:

The project on *Dryland mega-city development Urumqi* uses a "window of opportunity" opened by the establishment of a new planning unit and will test tools and strategies to optimize energy and water distribution, to recycle water and waste, to harmonize urban growth and socio-ecological needs. These measures will lead to improvements in public health, which is the cross cutting issue in this project.

Mega-region transport systems for China aims in developing and demonstrating solutions for sustainable mobility concepts by a mix of mobility services, vehicle technologies and improved transport system management.

Energy-efficient mobility and reduction of energy consumption is subject of the project on *Fengxian energy-efficient development of megacities*. Urban structures will be analysed, developed and tested to reduce the traffic volume and energy consumption. To acquire the energy consumption of a city an energymonitor will be created.

Another entry-point to a *Sustainable model megacity* is presented for *Shenyang*. In cooperation with local government and communities the preserving of the city's cultural heritage is used to enhance the quality of open space, urban infrastructure and to develop tourism.

The fifth project in China deals with *governing emerging megacities* by focussing on housing/energy sufficiency, water/open spaces and health in *Guangzou/Pearl River Delta, China*. The project is strongly interlinked with the one in *Pune/Mumbai, India* with special emphasis on accountability, responsiveness, public-private partnerships, and urban government-citizen interaction. The link of two cities within one project will benefit of the impacts of the different political and social approaches towards urban management.

Sustainable Holistic Appoach and Know-how Tailored to India in Hyderabad, will develop growth strategies and instruments to determine sustainability potentials. As tool serve sustainability indicators, development strategies and thirdly the implementation of demonstration projects in cooperation with local stakeholders.

The project *Sustainable urban food and health security and environmental resource management* in Hyderabad focuses on the improvement of food systems to reduce hunger and malnutrition by analysing the links between the food system and urban lifestyles and livelihood strategies.

The Balance of Urban Growth and Redevelopment in Ho Chi Minh City/Vietnam focuses on strategies for housing provision in redevelopment areas of the inner city as well as at the periphery. These strategies refer to the multidimensional context of social, economic, and ecological aspects.

Another approach for managing urban growth has been taken up in Iran, where *New Towns as a concept for the sustainable development of Megacity regions* are developed. The project aims at guidelines for efficient, integrated and participatory planning, for affordable housing and social amenities including aspects of resource consumption, pollution and cultural identity.

The project on *Promoting place-based solutions to water supply and sanitation problems in the Guadalajara Urban Area* deals with strategies for more sustainable water supply, sanitation and rainwater systems. As water is a critical issue in the region, aim is to develop more context-sensitive, user-oriented and place-based solutions for water supply, wastewater disposal and rainwater management.

Concepts for Metropolitan Lima (Peru) also stress on Water supply and wastewater considering the ecological, economic and social aspects to design integrated concepts under the conditions of water shortage and climate change.

Open spaces in megacities - potential for nature orientated living, Recife/Brazil refers to open spaces as important element for sustainable urban development and highlight their social and ecological benefits and contribution to health and quality of life.

Urban Agriculture as an Integrative Factor of Urban Development in Casablanca deals with the areas where rural and urban features interact and collide. Urban Agriculture can be a tool for a sustainable development, as it saves and integrates open space which is necessary for ecological, social, economic and cultural requirements of a megacity.

Income Generation in megacities of tomorrow addresses the increasing volume of waste and the declining effectiveness of collection and disposal systems in Addis Ababa/Ethiopia. Objective is a sustainable environmental sound waste management to generate income for urban poor through waste collection, use and recycling.

In order to *Manage Rapid Urbanisation in Poverty* in Dar-es-Salaam/Tanzania, trunk infrastructure development will be used for strategic interventions. Today, poor planning control causes urban sprawl with poor utility supply and heavy costs for services. Co-operation between planning and suppliers can guide urban development in a more sustainable way.

The project *EnerKey Joburg* aims at setting-up an integrated development plan for the *Energy system* in Gauteng/South Africa. A reliable, ecological, economic and socially feasible energy system is starting point for a larger perspective and initiative on an overall sustainable development of the megacity region of Gauteng.

The research activities of these 17 projects have shifted from a merely analytical research of individual case studies towards a more action-oriented and problem solving approach from the beginning on. Therefore, the first phase of two years focussed already on feasibility studies and realistic future implementation frameworks. Multi-national and interdisciplinary teams including different local stakeholders will strongly support an open discourse and participatory learning in and for emerging megacities. The next phases of research will be complemented by other aspects crucial for long term implementation and effective changes in urban management and governance.

Dr. Sonja Nebel, Dr. Wolfgang Scholz

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"Cities, like dreams, are made of our deepest desires and most fundamental fears"

Italo Calvino, Invisible Cities

Janice E. Perlman

Daydreams and nightmares

If cities are like dreams, they range from daydreams to nightmares, depending on the city, the moment, and the position of the person within the urban social and physical landscape. Cities, like regions and countries have experienced uneven development, exacerbated by market forces, government passivity and globalization. Likewise, within cities, these inequalities have deepened - between rich and poor communities, between the "formal city" and the "informal city". The informal city is composed not only of shantytowns and squatter settlements but also of clandestine subdivisions, invaded buildings (formerly residential or commercial), provisional housing built for workers or the homeless and sometimes degraded "social" housing complexes. They are generally characterized by lack of title, but even in the cases where they have de facto use of the land, these are stigmatized spaces of exclusion, which house the workers and service providers that make life a daydream for the privileged.

As discussed in the editorial of this volume, virtually all the projected population growth of our planet is expected to occur in the cities of Africa, Asia, and Latin America (often referred to collectively as the "global south," "the developing countries," "late industrializing countries" or the "third world"). Virtually all of that growth will be concentrated in the informal city. Depending on the region and country, this growth will be composed of new migrants from the countryside seeking a better life and wider opportunities for their children, and natural reproduction of those already living in squatments who have been unable to cross the chasm between the inter-dependent worlds of the "divided city."

As formal city housing prices – whether purchase or rental – are prohibitive for the poor, they have no choice but to build their settlements in the most dangerous and least desirable areas of the city where they can find vacant land. This means they are generally found on the streets (pavement dwellers are most common in India), in small alleyways outside the walls of wealthy homes (a common pattern in Asian cities), or in squatter settlements precariously perched on hillsides too steep for conventional construction, in marshes (on stilts as in Bahia's alagados), on riverbanks which flood periodically or in the watershed (Sao Paulo), or in garbage dumps (Manila's trash mountains, for example) or even in cemeteries (Cairo). While at first they improvise shelter, in many cases they remain over several generations and upgrade their homes and communities over time.[1] Still, it is notable in every city that the air is cleaner, the breezes fresher, the water quality better, and any unpleasant odors absent in the upscale neighborhoods.

Whether called villas de miseria in Buenos Aires, kampungs in Jakarta, gececondu in Istanbul, pueblas jovenes in Peru, bidonvilles in Algeria (or Paris), vecinidades in Mexico City, barriadas in Santiago, or favelas in Sao Paulo, informal sector communities account for one-third to two-thirds of the urban populations in cities of the South, with 40-60% in Nairobi, and 80% in Karthoum.[2]

The fact that these settlements are growing at twice or three times the rate of the non-slum areas of cities is creating crisis conditions for environmental sustainability and the social contract. Research has shown that the greater the level of inequality, the greater the social unrest, often manifest in lethal violence and class tensions as we have seen recently in places from Sao Paulo to Paris. In Sub-Saharan Africa, nearly all urban growth occurs in informal settlements.

The rate of urban growth varies by region with cities in Africa growing the most, followed by Asia and then Latin America; with the US and Europe the lowest This is the converse of the degree of urbanization of the region, and follows a typical Poisson distribution (as in epidemiology) since as the region becomes more urban there are fewer potential migrants left in the countryside. In 2005, North America was 81% urban, Latin America 77%, Asia 40%, and Africa 38%.[3]

This urban growth is essential to our understanding how to achieve a sustainable planet, according to every type of definition listed in the introductory chapter of this volume. While the origins of the concept of sustainability related to the eco-system and the depletion of non-renewable natural resources (what is often called the "green agenda," it was soon recognized that the greatest environmental hazards for the human population at large included the "brown agenda" as well – systems of water, sanitation, sewerage, and solid waste disposal. A New York Times Magazine cover story in the 1990s on the world's major environmental risks concluded we were paying disproportionate attention to PCBs, dioxin, and toxic waste, as many more people were dying from lack of clean water and water-borne diseases each year than from all other environmental hazards combined. Rene DuBois, the famous environmentalist, wrote: "poverty is the greatest environmental hazard of our time."

1
In Perlman's recent longitudinal study of Rio's favelas she found that even in the absence of government programs, the older more consolidated communities had houses of brick and cement (most often 2 stories or more), were serviced with electricity, water and sanitation, and had de facto tenure –yet they were still socially stigmatized and still prone to environmental risk. The newer settlements were unserviced and the dwellings of scrap materials and subjected to severe environmental risks. See Perlman, "Marginality from Myth to Reality". In Bombay we found college students living on the pavement with their families who had already been there for one or two generations.

2
UN-HABITAT, State of the World's Cities 2006/07 (Nairobi: 2006), p. 11.

3
United Nations World Urbanization Prospects: the 2005 Revision, Table A.2).

4
Reference John Friedmann on Hierarchy of Cities, Saskia Sassen.

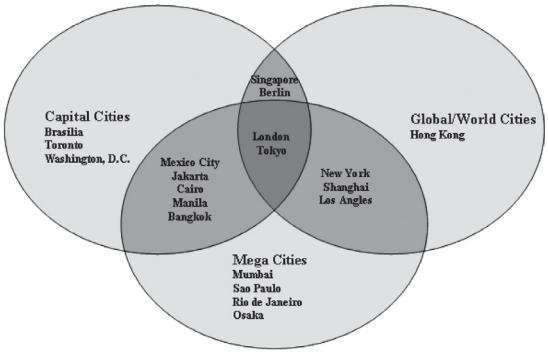
5
Projections often prove inexact if they are based on assumption of the same rate of growth out into the future, but there is little doubt that the cities listed in this chart will be the world's largest.

In this chapter we will argue that the quest for urban sustainability has been a long and difficult one, with many setbacks along the way and that we are still as far from the goal of resource-conserving (or regenerative cities) as we are from socially just cities. We will discuss why urban sustainability is critical for planetary sustainability and how outdated assumptions, perverse incentive systems, short-sighted exclusionary decision-making and current levels of urban poverty and inequality stand in the way of moving forward. The chapter will discuss the progress made, give examples of some successful innovations that are at the poverty-environment nexus and how they have been scaled up and/or replicated elsewhere. It will synthesize the lessons learned from these and the persistent problems to moving forward. It will conclude with some ideas on where to go from here and with a long-term perspective on this urban planet.

What kinds of cities will be determinant in shaping our future?

Our chances of achieving sustainable cities will be largely influenced by three types of cities: world cities (the capitals of capital); capital cities (the capitals of nation-states) and mega cities (the capitals of people, with populations of ten million or more). As seen in the diagram below, the great cities may fall into more than one of these categories, and some like Tokyo and London fall into all three:

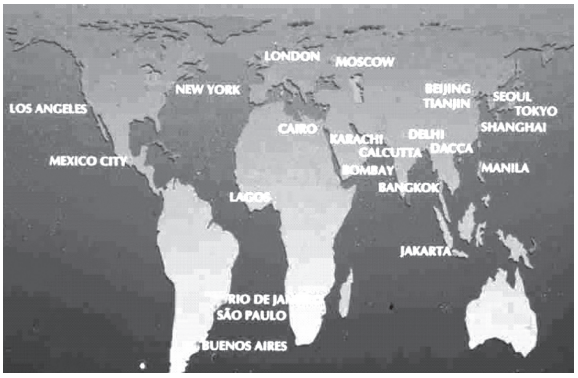
The "global "or "world cities"[4] are the network nodes with high connectivity to other cities via communication and information flows, banking and business transactions, and world headquarters of multi-national corporations.



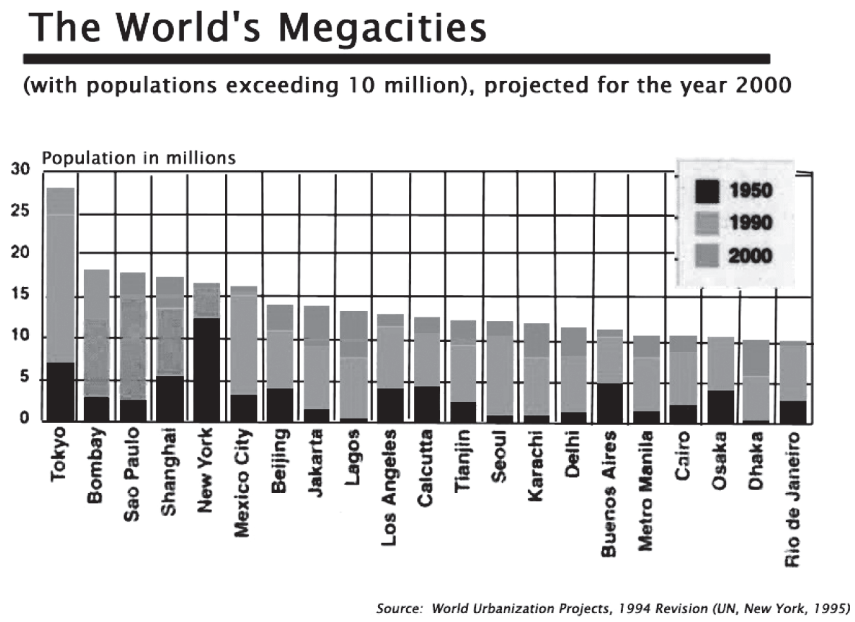
National capitals are essential in geo-politics and are the locus of governmental decisions regarding environmental and social programs. Megacities are the places where large numbers people have come, voting with their feet, to start new lives and open opportunities for their children. They exist at the intersection of the "space of place" and "space of flows" – they set trends in their countries and regions and exert a magnetic attraction for millions. Every mega-city is larger than 160 nation-state members of the United Nations. As Manuel Castells writes:

> *Mega-cities are the directional centers, the centers for technological innovation, the senders of symbolic messages, images and information, the producers of producer services, the collective factories of the new manufacturing, as well as depositories of the remnants of traditional manufacturing. Mega-cities are the nerve centers of our interconnected global system…they are the amplified portrait of ourselves.*

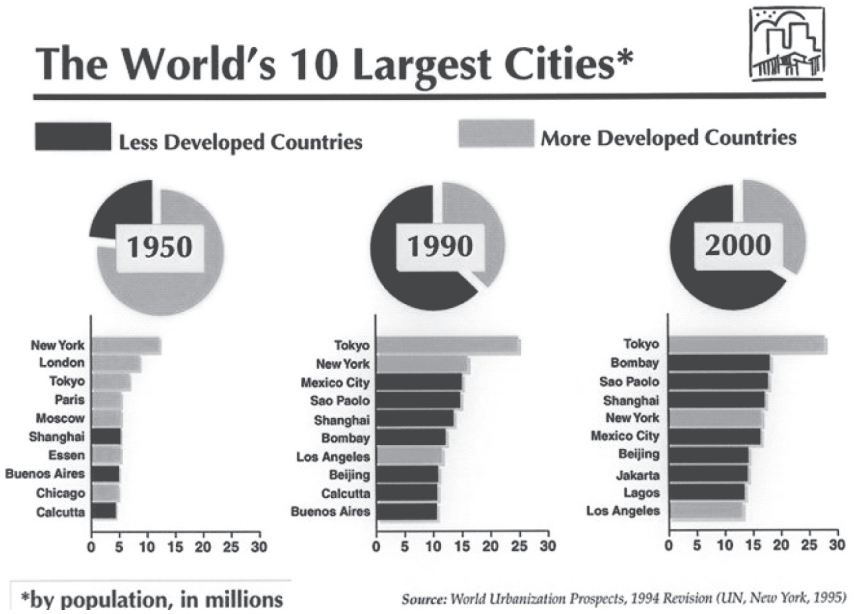
These mega-cities are located around the globe as seen below:



The recent and projected growth of these cities in developing countries has profound implications for the pursuit of sustainable development, as the following charts indicate. The first one lists the world's 22 mega-cities (over 10 million in population) in order of size as projected to 2015,[5] indicating their population in 1950 and 1990 and 2005 to reveal when their major growth spurts took place.

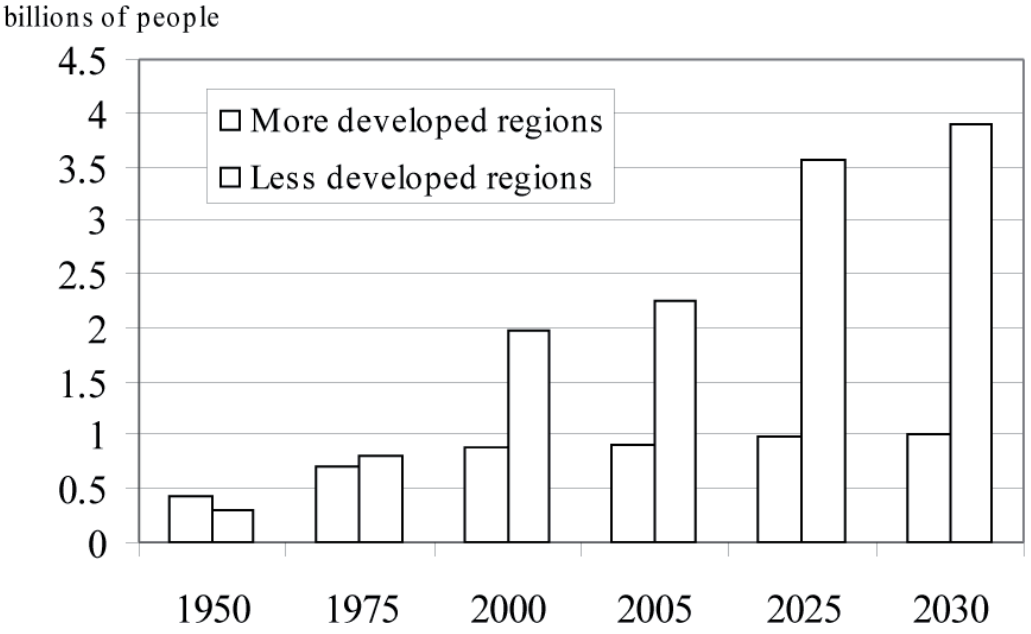


Source: World Urbanization Projects, 1994 Revision (UN, New York, 1995)



Source: World Urbanization Prospects, 1994 Revision (UN, New York, 1995)

Urban Population in More Developed and Less Developed Regions, Selected Years



Cities such as New York and Tokyo had already surpassed the 10 million population mark in 1950; that Los Angeles, the Latin American megacities, Cairo, Manila and Bombay (Mumbai) and Osaka experienced their major growth between 1950 and 1990, and Jakarta, Delhi, Shanghai and Lagos were among those whose growth was striking between 1990- 2005. The cities which need attention now are those which have grown to mega-scale only recently and will be the fastest growing in the coming years including Lagos in sub-sahara Africa, Dhaka and Karachi on the Indian Sub-continent, and Guangzhou in China. Some of these, like Lagos, are ill equipped institutionally, financially and physically to accommodate their current populations and will need help in dealing with their expected growth.

The shift in the geography from cities of the North to those of the South is clear in the chart below. In 1950 the developed countries accounted for 6 of the world's largest cities; by 1990 it was only 4, and currently or projected to 2015, it is only 2, Tokyo and New York.

Overall, it is clear that not just mega-cities, but cities of all sizes have been growing exponentially in less developed regions and are projected to continue to do so, while cities in the more developed countries reached their peak and leveled off around the turn of the century. In time, when the developing countries are highly urban and when the amenities and opportunities of urban life can be enjoyed in the exurbs and less populated regions, urbanization may level off as it has in the United States and Europe, but if there is only one primate city where all the action is, as in the case of Tokyo we can see that despite all Japanese efforts including high pay and excellent living conditions in the countryside, it is hard to keep viable population levels there.[6]

United Nations, Department of Economic and Social Affairs, Population Division (2006). World Urbanization Prospects: The 2005 Revision. CD-ROM Edition- Data in digital form (POP/DB/WUP/Rev.2005).

This shift in locus of the largest metropolitan regions from north to south and the rapid growth in the past decades of those cities with least infrastructure to absorb new demands present a daunting challenge for global sustainability –facing at once the environmental hazards of underdevelopment (water, sanitation, disaster risk, etc.) and the environmental hazards of over-development (air pollution, toxic waste, polluted waterways, and dirty industries outsourced from rich countries to protect environmental health and safety at home). The consequences of the unequal access to resources and safety in these cities are a myriad of problems, newest among them a disturbing rise in lethal violence.

On the other hand, this situation also offers us an opportunity to re-think how city systems function to sustain human life and how to include the poor as well as the rich in meeting this challenge. The largest cities of the world have great potential for creating the innovative solutions to their own problems. They have dense concentrations of diverse populations interacting side-by-side, have attracted the best and brightest minds of their countries, have the greatest institutions of culture, research, leaning, the biggest R&D capacities in their private sector, the most motivated local governments (where in many cases being Mayor is a stepping stone to the Presidency) and most urgent need to find solutions –as the problems of all cities reach crisis proportions in the mega-cities. What is needed is a new mixture of the scarce natural and financial resources and the abundant human resources. If the cities can find a way to better integrate the built environment, the natural environment and the people who are sustained by both –they will be well on their way.

6
Masafumi Nagao at the Saasakawa Peace Foundation has done brilliant work on innovations to maintain what is left of the populations in small towns and agricultural villages -- which could hardly be called rural as they are highly computerized and each farmer goes online each day to determine the region of the highest price for each type of produce before sending out the trucks. One idea was to consolidate the remaining populations in small villages into networks so they could keep open institutions that require a critical mass. One lettuce –growing village he took me to a few hours from Tokyo had every amenity from gold courses, to film centers to libraries, and one of the highest per capita incomes in Japan, and yet the men could not get wives who would live there with them. No one wants to be peripheral to the main action. Even Osaka has not continued to grow despite national government incentives, investment and locating key institutions there.

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holds a B.A. from Cornell University in Anthropology and Latin American Studies, and a Ph.D. from MIT in Political Science, with a concentration in International Urban Studies. She is a recent Guggenheim Award-winner, using the grant to finish a book on the dynamics of urban poverty in the favelas of Rio de Janeiro. Professor Perlman is the Founder and President of the Mega-Cities Project, a non-profit organization dedicated to shortening the lag time between ideas and implementation in urban problem-solving by sharing approaches that work among innovative leaders in the world`s largest cities.

Megacities and Sustainable Development

Why research matters

Dirk Heinrichs

Mega-urbanization and sustainable development

The population in the world's current and emerging megacities rises dramatically – and will continue to do so in the future. While the figures for urban dweller mostly in developing counrtries are predicted to rise to five billion by 2030, the number of agglomerations with more than 5 Million people will increase from 39 in the year 2000 to about 60 by 2015. Some cities will reach inconceivable dimensions. Metacities – massive conurbations of more than 20 million people – are now gaining ground in Asia, Africa and Latin America (UN Habitat 2006).

But megacities are more than concentration of people. The scale, the speed of change, the growing mobilization of inhabitants, information, goods and capital, and the global connectedness of megacities all combine to create new physical, economic and social dynamics, a new complexity, and new dimensions of risk. This places megacities at the centre of the challenges for global sustainable development.

Research for megacities is justified at least for three reasons. First, mega-urbanization is one of the grand challenges and critical for global change and global sustainability. Second, taking precautions for the future of large agglomerations in particular in developing countries can be regarded as an extremely effective instrument of sustainability policy. Third, mega-urbanization poses fresh questions for research.

Megacities are critical for global change and global sustainability

Megacities are powerhouses of global change. As centres of trade, culture, information and industry, they are characterized by a concentration of firms, corporate headquarters, banks and services, often mediating major functions of the global economy (Sassen 2005). At the same time, mega-urban regions absorb resources from all over the world, generate vast amounts of waste and sewage, and contribute considerably to the use of the environment as a sink. The quantity of resources consumed and urban residues produced per capita tends to rise steadily with increased per capita income. Resource demands, measured in terms of the ecological footprint, show that cities take up less than 2% of the earth's surface, but use 75% of its resources (German Federal Ministry of Education and Research 2004). The growth and spread of cities impacts on complex natural ecosystems and resource regimes on a global scale (Hardoy et al. 2001), as is documented, for instance, in the case of greenhouse gas emissions.

Megacities do not merely fuel global change. They likewise bear its cumulative effects. The impact of globalization on cities is relevant to urban development from many aspects. Due to changing environmental conditions, megacities are increasingly exposed to new and highly dangerous environmental risks. The emergence of new economic production patterns changes the spatial structure of cities and results in new socio-spatial topographies. As globalization generates the migration of vast numbers of people across borders on a mammoth scale, it speeds up processes of urban multi-ethnic co-existence.

Taking precautions in Megacities is an effective instrument of sustainability policy

Their role as culprit and victim of global change turns megacities into both a space of opportunity and a space of risk (Heinrichs/Kabisch 2006). Sustainability policies that take advantage of opportunities and overcome risks in megacities contribute significantly to increase sustainability at a regional and global scale.

Most of the world's largest cities are concentrated in areas where earthquakes, floods, and landslides are most likely to happen (UN Office for the Coordination of Humanitarian Affairs 2005). Changes in land use often exacerbate the risk of floods (UN World Water Assessment Program 2006); conversion of agricultural land bears the risk of crisis in the food supply chain for the urban population (UN Habitat 2006); uncontrolled waste disposal results in environmental deterioration and health risks for urban dwellers, in particular those living in precarious locations. Due to their rapid growth, large cities often fail to satisfy the basic needs of the poor population and are thus confronted with severe problems related to poverty, unemployment and social exclusion.

At the same time, they provide the grounds for economic success, as well as for human and social development. Megacities are engines of global economic growth. Several major cities play leading roles in global networks, not merely producing goods and services, and hosting institutions,

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fig 1: Megacities concentrate social and human resources. (Photo: André Künzelmann)

but creating related economic and societal structures. They accommodate human capital to solve sustainability challenges. The intellectual and scientific communities (research institutions, universities, consultancies) are largely urban. The concentration of social resources offers political opportunities. The availability of information and ease of communication can expand civic engagement and participation in decision-making, and thus push for good governance and the development of independent control mechanisms.

Megacities in developing countries have so far not played a prominent role in this global geography (GAWC 2006). They do, however, generate a huge share of the gross domestic product of their respective countries and provide extensive opportunities for employment and investment. Furthermore, "World City status" in the urban millennium is beginning to extend to several key cities in developing regions as well. The competition between megacities as World Cities will intensify (UN Habitat 2006).

Mega-urbanization poses new challenges for research

As the processes that drive urbanization are complex and sometimes evolving quickly, they require new technologies and a solid knowledge base supplied by research.

Mega-urban regions are confronted with particular challenges in the area of environmental (resource-conserving) technology, public and personal transport, traffic, telecommunications, energy supply, water supply, construction and housing. The opportunities and demand for scientific-technological innovation in mega-urban regions open the field for scientific-technological co-operation. Research on urbanization can serve as a driver towards establishing co-operation with scientifically strong and economically capable partners. Joint R&D projects can contribute to the development of appropriate technology solutions for sustainable urban development.

At the same time, there exist knowledge gaps on their conceptualization, contextualization and implementation. Evolving research fields relate to fundamental knowledge (e.g. understanding basic drivers of risk, detection and early warning), orientation knowledge (e.g. analysis of new development patterns, computer-aided scenarios and models) and knowledge for decision-making (e.g. technological innovations, implementation research, forms of decision making).

Taken up as a distinct focus of empirical research, megacities require priorities that move research in three innovative directions. Firstly, research should allow for the complexity of the subject megacity, and involve a comprehensive rather than a sectoral approach. This research approach adopts an integrative perspective on the megacity, attunes analysis to the mutual interdependence of processes, and provides a basis for modelling and scenario techniques. Secondly, research must embrace a problem perspective, linking the generation of orientation knowledge with action-oriented knowledge and the implementation of solutions. This implicates context-specific investigation with the aim of moving governance in megacities from response to action. Thirdly, this kind of research needs to be transferred into both academic and professional education, and to local stakeholders.

In Germany, a number of research initiatives are taking this emerging agenda into focus. The Research on Sustainable Development in Megacities of Tomorrow programme launched by the Federal Ministry of Education and Research - BMBF (2004) concentrates on the management of urban growth. With a focus on cities in Africa, Asia and Latin America it currently supports sixteen international consortia in the development of a research plan. The core programme on informal dynamics in megacities (Megastädte: Informelle Dynamik des Globalen Wandels), funded by the German Research Foundation (DFG), highlights informal dynamics in Dhaka (Bangladesh) and the Pearl River Delta (China), and, as of November 2006, supports the implementation of nine projects. The Risk Habitat Megacity research initiative of the Helmholtz Association assesses characteristic risks, their driving factors and interdependencies, and seeks to develop strategies and implementation solutions for risk management aiming at a more sustainable urban development in Latin American megacities.

fig 2: The Megacity: habitat of opportunity and risk. Photo: André Künzelmann

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Research on Megacities

Michael Cohen

The set of articles included in this issue of Trialog represent an interesting set of windows into significant urban debates. The articles cover some old ground, start work in new places, and add some useful and provocative insights into urban discussions. In this brief note I will comment on four issues which the articles raise:

- The role of new urban settlements
- Decentralization and metropolitanization
- The significance of new sites for learning and research
- Long-term evaluation

New Urban Settlements: For more than a generation there has been the widely-shared perception that new towns, new capitals, and new urban settlements have been unrealistic and too expensive as alternatives to urban concentration. Efforts to adapt the post World War II experience of new towns in England –Milton Keynes being the most famous of these – have generally floundered on the financial rocks, unable to attract the large and sustained financial subsidies needed to keep them afloat. Major exceptions have been cities such as Brasilia or Abuja which both benefited from over-sized federal subsidies to create new capitals, or Dubai which has financed its development through oil revenues. The financial and economic histories of efforts to build new urban settlements have shared the experience of high upfront costs and long-delayed benefits, making the financial and economic return on these investments very low, if positive at all.In poor countries, their opportunity costs have been enormous and prohibitive.

Some of the articles in this issue discuss plans for Iran and China, suggesting that despite the previous experiences elsewhere, there is new consideration to be given to large urban plans which may be necessary to house growing urban populations, given current conditions in existing urban centers or projections of future growth. While important financial constraints– and binding in some circumstances – construction of new towns may be necessary solutions and their economics probably needs to be reconsidered.

This discussion is the result of the competing logics of urban economics, which has emphasized economies of agglomeration and economies of scale – bigger is better – and environmentalism which has raised questions about the ecological footprint of urban areas and carrying capacity of areas surrounding urban settlements. The scale and impact of negative externalities in cities suggests that much more theoretical and empirical work needs to be done to arrive at a better accounting framework to assess under what conditions starting new urban settlements makes sense. This is one of the considerations which need to be taken into account in reading some of the articles in this issue.

Decentralization and Metropolitanization: The parallel trends of decentralization of public authority for urban management within evolving frameworks of metropolitan growth and the birth of metropolitan institutions need more research attention. The tension between these two forms of institutional development suggests that there is likely to be considerable diversity in urban institutional arrangements as cities continue to growth. How institutions interact with and simultaneously manage these two levels of scale is another important subject raised in this issue.

The policy choices between subsidiarity as a principle of local management on one hand and on the other understanding overspill effects at a metropolitan or regional level need to be worked out within local political arrangements. These choices and assessments of tradeoffs will be (and should be) politically determined.

New Sites for Urban Learning and Research: The issue includes articles on places such as Iran, China, Mongolia, and others not frequently included in European discussions of urbanization processes. These articles are interesting and demonstrate that indeed urbanization is spreading and becoming important in countries and regions where other issues had previously dominated public policy and research attention. Fruitful work of the kind represented in this issue suggests that we need to broaden our sample of urban experiences to include new spaces and experiences undertaken at different stages of globalization and national economic and social development. This is good for academic and policy understanding, but also for the countries concerned as they can benefit from being included in the universe of urban experience.

Long-Term Evaluation: The issue also suggests implicitly that there is a need for evaluating the long-term impacts of urban policies and programs. This is rarely done, but some recent work suggests that this would be worthwhile.[1] The normative question is whether assumptions applied to policies at one time continue to be relevant and determinant over time. The fact is that there are almost no examples of truly long-term evaluation beyond 5 or 10 years.

Taken together, the articles offer the reader a brief, but helpful and even intriguing taste of what is yet to come in world's urbanization experiences. My only critical observation is that I believe that more care needs to be devoted to distinguishing the "voices" of authors in these articles. Are the articles descriptive, analytic, or normative? I believe that a frequent problem in urban work at the frontier is that researchers may believe strongly – correctly so – in the importance of sustainable development or social justice, but they must be careful not to confuse their voices in writing up research results. Because we wish something was so does not make it so. Our task is to accurately describe what we encounter, rigorously attempt to analyze causation and dynamics, and then to uncover the normative significance of what we have learned, whether for policy or practice. The distinction between descriptive, analytic, and normative voices is a critical one, particularly as researchers seek to discover the frontier of their fields.

1
Michael Cohen, "Aid, Density, and Urban Form: Anticipating Dakar", Built Environment, May 2007, forthcoming

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Risk Habitat Megacity

Strategies for Sustainable Development in Megacities and Urban Agglomerations

Henning Nuissl

Megacities: Habitats of Opportunity and Risk

In particular in the developing world, megacities provide extensive opportunities for employment and investment that are lacking elsewhere. The agglomeration of people also bears the potential for an efficient and sustainable management of resources due to low per capita costs for e.g. the provision of piped water or the collection and disposal of garbage (Satterthwaite 1999). Furthermore, the urban centres accommodate the social resources and human capital to tackle global challenges, including most non-government organizations and their networks.

Megacities, on the other hand, concentrate natural, environmental, social and economic risks. They do not only face but also produce and reinforce these risks (Mitchell 1999). For example: interference with water catchments jeopardizes the water supply; urban sprawl proceeds at the expense of agricultural land; mounting traffic contributes greatly to worsening air quality; intensive social and economic disparities produce poverty, social exclusion and crime which, in turn increase the vulnerability of the affected people to disasters such as earthquakes, tropical cyclones, floods, or hangslides (World Bank 2000; UN Habitat 2006). The multitude of risks concentrated in megacities does not only affect individuals but also megacities at large and even national economies and environmental conditions at a broader scale. Therefore, it is of global importance to prevent the emergence of new and increasingly serious risks in megacities. However, as they are also spaces of opportunity it is the megacities themselves that carry the promise and the potential to overcome this challenge (Hardoy et al. 1999).

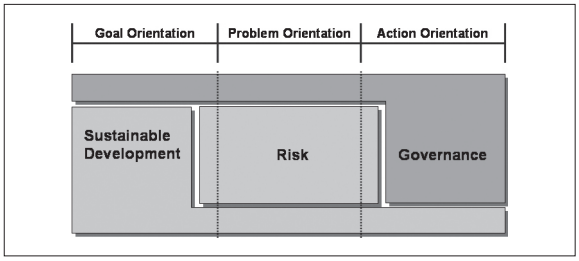

fig 1: The interlinkage of the 'cross-cutting concepts'

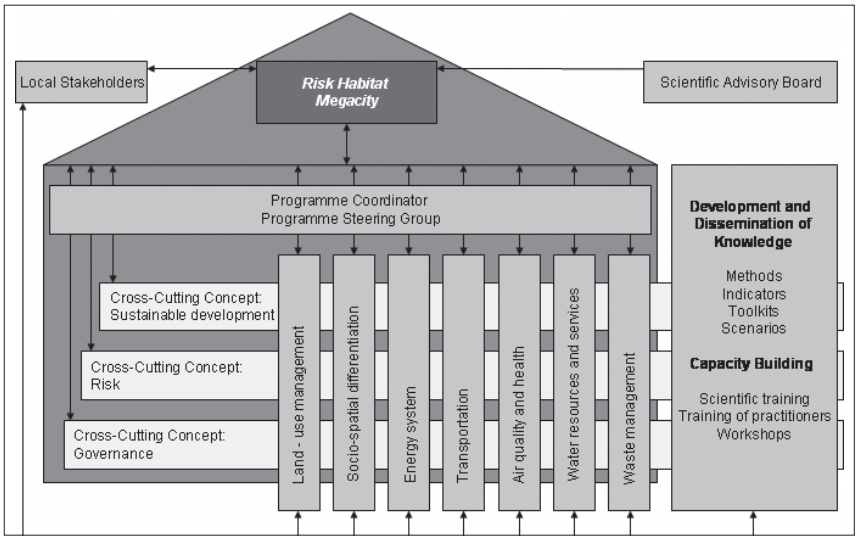

fig 2: Project architecture

The emergence and amplification of risks in megacities proves particularly dynamic. Exogenous and endogenous risk factors and risk trends (such as earthquakes and social exclusion) frequently reinforce each other. Moreover, the co-existence and close interaction of different technical and socio-technical systems in the Risk Habitat Megacity leaves the latter more and more exposed to systemic risks. This can create risk dynamics which are hard to predict. Governance failures frequently aggravate this vicious cycle.

The Risk Habitat Megacity as the focus of research

Risk Habitat Megacity addresses the diverse problems and risks related to mega-urbanisation. The initiative has a particular focus on Latin America, the most urbanised region in the world. It brings together the expertise of about forty natural and social scientists and engineers from five German research centres of the Helmholtz-Association – German Aerospace Centre (DLR), Forschungszentrum Karlsruhe (FZK), Helmholtz Centre for Infection Research (HZI), GeoResearchCentre Potsdam (GFZ), Helmholtz Centre for Environmental Research (UFZ) – and four partner organizations in Latin America – Universidad de Chile, Pontificia Universidad Católica de Chile, Pontificia Universidad Católica de Valparaíso, Comisión Económica para América Latina y el Caribe (CEPAL) of the United Nations.

The overall objective of the research initiative is to deepen the understanding of those complex processes that turn megacities into a risk habitat, to provide solutions for the risks of mega-urbanization, and to derive paths for a more sustainable urban development. More specifically the initiative strives:

- to specify sustainable development as the central guiding principle for the future development of megacities
- to assess characteristic risks and their driving factors and interdependencies in megacities
- to design strategies and instruments that take institu-

tional, political, economic and social backgrounds into consideration
- to build a platform for the integration of academic research and practice and for continuous interdisciplinary, cross-cultural learning, with a particular focus on capacity building and the training of young scientists

In order to adequately capture the complexity of the subject megacity, Risk Habitat Megacity adopts a comprehensive rather than a sectoral approach which is based on three well established theoretical concepts: The sustainable development concept provides orientation towards basic goals. The risk concept focuses on the extent of the megacity-typical problems and their severity. The governance concept concentrates on the actions to be undertaken. Together these concepts form the conceptual framework of research. Thus, despite their particular focus all three of them will be considered when it comes to the formulation of development goals, the assessment of risks, and the design of strategies respectively (see fig 1). The conceptual framework will be applied to seven megacity-typical areas of challenge – concerning the design of Land use management strategies; the consideration and mitigation of Socio-spatial differentiation by megacity-policies; the organisation of Energy systems; the planning and management of Transportation; the improvement of Air pollution and health; the provision for Water supply and services; and the treatment of Waste (see fig 2). Thus, the "architecture" of the research initiative consists of ten topics, the responsibility for each of which lies with a research team involving key scientists from both Latin America and Germany.

Work plan and implementation

The research plan for Risk habitat Megacity was developed over the past eighteen months and will be implemented in two phases from 2007 until 2013, The Metroplitan Region of Santiago de Chile will serve as both the platform for research and the pilot case study.

The first phase (2007–2010) is dedicated to the application of the conceptual framework to, as well as empirical research in Santiago de Chile. In this phase the research work will be oriented towards the following steps:
- development and adjustment of sustainability indicators
- status analysis
- first evaluation of the current situation by determining the "distance to target" for the sustainability indicators
- development of scenarios (models) concerning the future scope for action
- definition of measures and policy recommendations in the different fields of application
- overall integration of results (risk management and risk mitigation strategies)

In a second phase (2010-2013), the Risk Habitat Megacity initiative will be transferred to two other Latin American megacities. It will therefore be necessary to examine the transferability of conceptual considerations and results by the end of the first project phase. This includes an assessment of the proposed strategies and measures with regard to their applicability outside Chile.

As research platform Santiago de Chile provides excellent

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fig 3: Santiago de Chile (Photo: André Künzelmann)

research infrastructure and the opportunity to cooperate with scientific partners of international relevance. But Santiago is also a highly interesting pilot case. Not only is it the capital of one of the most urbanised countries in Latin America, it is – among other cities such as Bogotá or Porto Alegre – also one of the frontrunners of urban policy innovations in Latin America. For example, Santiago is currently experiencing the implementation of a significant reform program in public transport (Transantiago). On the other hand, apart from offering access to a wide range of megacity-typical problems, such as natural hazards by earthquakes or extreme air pollution, Santiago also provides many examples for the difficulties that arise when strategic solutions for entire megacities are sought. The major problem of co-ordinating urban and governance across different levels and between different societal groups, for instance, is far from being solved. Insofar there is a good opportunity to draw lessons from numerous current urban policy strategies in the Chilean capital.

Integration of research as a particular challenge

Integration is a central aspect of the research initiative, taking different dimensions into account. It comprises the integration of:
- scientific disciplines (interdisciplinarity), involving the continuous cooperation of the social, natural, and engineering sciences
- temporal and spatial scales in order to balance short-term (e.g. legislative periods) and long-term (e.g. resource and sink functions of ecosystems) considerations as well as the interrelations between the local, regional, national and even global level
- stakeholders (transdisciplinarity)
- sustainability dimensions
- cultural traditions and conditions, including the development of a common understanding of concepts, methods and goals among the scientists and stakeholders involved which is anything but trivial

In order to achieve integration of research at these different levels, the research initiative employs several tools for integration. First, each field of application is required to take into account the perspective of the individual cross-cutting concepts as a "lens" through which the respective problems are analysed. Second, the different research teams will work together in developing data bases and scenarios. Third, scientists from a wide spectrum of disciplines from Germany and Latin America as well as regional stakeholders have worked together on the individual topics from the very beginning. Fourth, the research programme involves several activities that are designed across individual topics.

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Shenyang: From a Mega City to a Vibrant Capital of Culture and a Liveable Economic Metropolis

Dieter Hassenpflug and Bernhard Stratmann

Point of departure:
Economic restructuring, changing cityscape and endangered cultural heritage

Shenyang (SY), the capital of the northern Chinese province of Liaoning, is the 5th largest city in China. It consists of 13 districts (including 4 counties) and has at present about 7 million inhabitants. SY has been the nation's power house, a centre of the Chinese rust belt. Thus, the coal and steel industry shapes its image until now.

SY has experienced rapid changes: China's opening to market economy has let to a dramatic decline in the state and cooperatively organized heavy industry that lost about 270,000 or 68% of its workplaces in the city since 1992. These changes affected local unemployment rates, which were at 9% in 2005. It also resulted in a decelerated population growth of about 330,000 in the past 10 years, which is less than in comparable Chinese metropolises. However, the number of inhabitants is likely to increase considerably in the future, because SY lately benefits from special central fiscal subsidies and allowances – the same kind of support that the former special economic areas have received.

Since the 1990th the city of SY makes strong efforts to transform itself from a heavily polluted industrial city into a modern capital city, whose economy rests on the service sector. Fuelled by spatial visions that appear baroque to many western viewers traditional "introverted" settlements have been pulled down, as well as industrial buildings worth preserving and complete quarters and villages were demolished. The former industrial district Tiexi (now about a million inhabitants) has been destroyed almost completely and then rebuilt by means of present Chinese turbo-urbanism. Today, near to nothing has remained of China's formerly largest industrial area. Thus, a heritage site that made up a vital part of the city's spatial urban memory disappeared.

Currently, high-speed economic growth and massive industrial restructuring are creating a rapidly growing middle class. While the lifestyles change, the spatial demands increase. Tourism and cultural consumption evolve. The urban display of functions and forms is increasingly unable to represent these changes and new trends. There is a lack of good quality public spaces for lingering and meeting people. Green space and other recreational areas do not exist in adequate numbers, sizes and locations. A well thought out concept for domestic and international tourism is still missing. Additionally, the urban infrastructure, e.g. water supply, sewage and solid waste treatment as well as public transport fall far short to modern standards, especially sustainability issues.

The project: goals and approach

Based on an in-depth analysis of the local situation the Bauhaus University's research team wants to contribute to the sustainable development of SY. Therefore, an

fig 1: Shenyang's Landmark (a Giant Replication of a Stone Age Hairpin). Photo: Copyright Dieter Hassenpflug

fig 2: Concrete Jungle Shenyang. Photo: Copyright Fang Chen

interdisciplinary and participatory approach, being guided by key theories, is applied. In close cooperation with local government and community representatives the projects aims at preserving the city's cultural heritage, at developing domestic and international tourism, and at enhancing the quality of public open space as well as the performance of urban infrastructure in general – the latter particularly with regard to recovering urban ecology. By improving the cityscape and the usability of urban space both, the image of the city and its dweller's local identity, will be boosted. This will also help to increase SY's competitive position. The project's claim is to interlink all these sub-goals and all the measures that will be taken to improve social, economical and ecological sustainability.

As to the way of proceeding we distinguish between a theoretical and a practical dimension. According to this approach the planned sub-projects are derived from a state-of-the-art-understanding of mega-urbanization. For a start two discourses have to be considered, one of which is related to social and cultural sciences, the other one to strategic urban planning. The former can be described as a discourse on risk. It focuses research on subjects such as social polarization, hygienic problems, pollution, informal settlement activities, exhaustion of natural resources, administrative deficits and other problems which are typical for many mega cities, especially for those in less developed countries. However, for Chinese mega cities analysis has to be adjusted to the specific local conditions.

The second discourse is rooted in the reactions to the emergence of the western large city in the 19th and 20th century. Here the thematic focus of research is to solve the (alleged) problems of rapid urban growth by developing the countryside, i.e. the construction of garden cities, new towns, dormitory towns and the like. While the early town-country-strategies strengthened the centrifugal forces of urbanization, the direction of development has to be reversed in the face of mega-urbanization. We call this spatial 'city-county-inversion'. It means that mega-urban solutions are obtained by 'mega-urban landscaping'. Spatial division and zoning have to be reconsidered and new concepts of functional hierarchies, centring and spatial rhythms have to be developed and applied to mega-urban space.

Pilot projects and methods

Based on the discourses mentioned above an integrative pilot project has been suggested: the "Xin Kai He cultural gallery." The Xin Kai is a canal of 50 km in length, which has been constructed for irrigation purposes at the beginning of the 20th century. As it flows through large parts of the SY metropolitan area, the idea is to develop a "tourist route of culture" along the canal, which would connect most of SY's outstanding heritage sites. This gallery would serve a broad range of purposes, such as providing a fresh air corridor, a green belt, a recreational and leisure area, a high standard residential area, and moreover it would offer a key element for structuring the mega-urban cityscape.

Other sub-projects include the development of an integrated overall concept of waste management that reflects the social and spatial heterogeneity of mega-urban cityscapes, the further development and testing of suitable methods for planning and realisation of a central rainwater management system, which is based on decentral structures, and the introduction and enhancement of advanced tools for traffic management and transport planning. These particular projects and the individual measures derived from them will be interlink and linked to the Xin Kai He project, wherever possible. In order to help decision makers to better predict the outcomes the implementation of intended measures are likely to produce an interdisciplinary impact analysis will be advanced and applied to relevant aspects of the project. By this means the effects (benefits) of gaining energy from waste, of strategies for sustainable water use, and of the implementation of traffic management systems could be illustrated. The model will also allow for determining measures to be taken (including their timing), if certain desired effects are defined.

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fig 3: Development area at the Xin Kai He. Photo: Dieter Hassenpflug

All measures suggested will be evaluated with regard to their economic efficiency by the local authorities. For new infrastructure ventures, prepared by pilot projects, specified procedures of cost-benefit-analyses will be developed and applied, taking into account the economic, social, and environmental dynamics of SY. The development and implementation of pilot projects also aims at minimizing total life cycle costs. This will be achieved by integrating the results of multi-disciplinary analyses of costs of planning, financing, construction and operation as well as by establishing suitable incentive mechanisms.

Challenges and prospects

Some of the challenges for this applied research project stem from the features of mega-urbanization in China, which differ significantly from those known of many developing countries. For example, China consumes about 1,5% of its total arable land for urban growth annually, which poses a huge risk for the most populated country in the world. Another problem is that the research team is confronted with a very hierarchical system of local and state authorities, while civil society is still relatively weak. Therefore, we started early with networking and capacity building activities on the local and the national level. Besides, most of the team members can refer to many years of intercultural experience with China.

Being successful in turning SY into a "sustainable model mega city of tomorrow" would not only have a huge impact on the development of many other large cities in China, it would also serve German interests in the fields of economy, politics and ecology.

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Urumqi: Dryland Mega-City Development

Managing Interconnected Sensitive Cycles

Bernhard Eitel and Beate Sandler

Motivation and aims of the project

The economic boom in China is accompanied by an accelerated urbanisation. Cities are growing rapidly, are changing their face and structure fundamentally. In the shadow of the well known metropolises along the coast, Urumqi, a former oasis on the Silk Road and now the capital of the Xinjiang Uygur Autonomous Region in north-western China, is rapidly developing, too. Natural resources (especially oil, coal and gas) are the basis of the economic and demographic dynamics, which are well above the Chinese average (growth rate of GDP in 2004: 17%, population will reach ~6 Mio. in 2020). The central Chinese government is further stimulating this process with a development programme.

But the boom of this megacity of the future is taking place in a highly sensitive dryland environment in the southern Junggar Basin. Water is the most limited resource; today already 65% of the drinking water supply is surface runoff from the Tian Shan Mountains. Accelerated industrialization along with rapid melting of the glaciers due to global warming will dramatically increase existing health risks, the danger of social conflicts, and ecological devastation. The dryland-city system is steering towards the limit of its resilience.

On this background the aim of the project is the implementation of strategies and concepts for the sustainable growth of Urumqi. The special challenge is to maintain and improve the quality of life by applying sustainability paradigms to decision making, and by developing new methods and tools which are adapted to semi-arid environments. Moreover, Urumqi can be considered exemplary for similar cities in drylands with accelerated growth and limited ecological resources (e.g. in Central Asia, the Middle East) so that the results of the project will be transferable.

Scientific approach and first results

The project uses a "window of opportunity" opened by the government's decision to merge the economic and political organisations of Urumqi and the Changji Counties into a new planning unit of more than 4 million inhabitants ("U-Chang"). The merger started in 2005 with a pilot region MiDong, and within the next ten years this process should be completed. The project goals can be linked with the sustainability objectives of the recent 11th Five-Years-Plan, which gives considerable support for our projects. MiDong will serve as a key area for the development and the test of managing tools and strategies to optimize energy and water distribution, access and consumption, to reduce losses, to recycle water and waste, to harmonize urban growth and socio-ecological needs. Consequently, the project has a broad multidisciplinary approach with three elementary core cycles: water, energy and waste as well as their interrelations. Public health is defined as the integrating cross-cutting issue that serves as an indicator for the success of the measures.

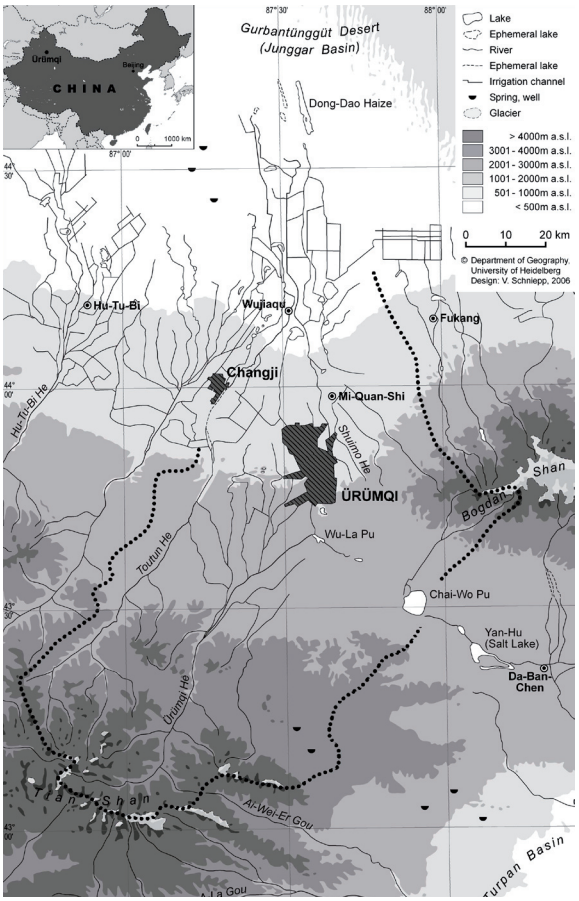

fig. 1: Topographic map of the Urumqi region and the hydrological catchment area with geographical location in NW China

fig 2: Urumqi City, power plant and footzone of the Tian Shan Mountains. Photo: B. Sandler

During the set-up phase of the project (2005 - 2007) we were able to:

- define the central needs of the growing urban population
- identify the most striking resource conflicts and inefficient resource usage in industries, private households and agriculture
- identify resource saving potentials
- contact the most important stakeholders
- create a competent network and support perpetual communication, in order to form a base for the successful transfer
- raise the awareness for the importance of sustainability
- start capacity building with several Sino-German workshops

Special features, challenges

Special features make this project ambitious. (1) The environment in the study area reacts extremely sensitive to global climate change on two counts: hydrologically, due to the dryland environment, and more thermally, due to glacier melting. This is accompanied by extreme socio-economic changes, and interconnections make the problems very complex. (2) The high velocity of the environmental and urban transformation processes is even accelerating. The approaches for realising the economic goals additionally increase the speed of socio-economic change. This calls for flexible management tools and strategies, and all means must be adapted permanently to transforming needs and institutional networks. (3) The transformation also requires permanently adapted governance structures. This fact raises new challenges for the Chinese project partners to apply modified decision making pathways. It is necessary to harmonize top-down and bottom-up processes, and to preserve clear responsibilities even under these permanently changing conditions. (4) Under such terms local/regional reference values for social, economic and environmental data sets become unreliable. This complicates the comparison of data, disrupts time-series, and hinders a clear interpretation.

Lessons learnt

The network of actors, competences and jurisdiction is complex and the system structure is hardly transparent. This leads to difficulties in communication and incompatibility of information exchange. Today the management is not elastic enough to meet the big challenges of transformation. Therefore flexible and adaptable management modules and means are necessary. The Chinese partners are very interested in collaboration in order to organise the transformation processes with regard to the sustainability concept.

Perspectives and further steps

It is planned to start with comparative best practice studies in MiDong, a new district of Urumqi, which is the largest industrial park project in Xinjiang. It consists of areas for private households, industrial complexes, and extended agriculture, and comprises areas of Urumqi and Changji. This gives outstanding opportunities for the development and introduction of new and sustainable structures.

▲
fig 3: View of Urumqi City Centre (photo Th. Sterr)

CC Water: The foundation for the development of a water conservation plan is (1) an assessment of the recent hydrological state of the region and of its future development. (2) This is the fundament for a modelling of water resources and water conservation. (3) The hydrological data and a modularly structured model will support the local implementation of a water conservation plan which consists of an integrated catchment-area based water management system, water control management, and water information management. MiDong will serve as a pilot area for this plan.

CC Energy: It is the objective to assist in the development of a sustainable energy master plan. The starting point is a systematic model of the past, current and future flows of energy, followed by the stakeholder-based evaluation of potential measures (technological, planning) in detail. In close cooperation with the local "Planning and Construction Committee of Urumqi", model projects are planned, such as the energy improvement of a residential area of about 100,000 sqm and approx. 1.200 flats.

CC Waste: Primary goal is to support the development towards a circular economy by closing material cycles. The Chinese government stressed the importance of a sustainable development, which supports the project's influence in current decisions. The first and mandatory step will be the creation of a waste inventory. Opportunities for a circular economy have to be identified and developed, esp. recycling of tires and rubber. Conceptualization of a recycling park in the area of MiDong should also be started.

Health as the Cross-Cutting Issue: Correct health information is a prerequisite for a reasonable health policy; but health statistics in Urumqi are insufficient. Therefore it is planned to establish a Demographic Surveillance System (DSS) for collecting reliable basic demographic and health information on vital events. To gather more details, an additional household survey (HHS) in a representative sample is proposed. HHS is a good tool to get detailed information about socio-economic status as well as living conditions and habits with respect to the core cycles and their influence on health (e.g. water access and quality, energy sources and consumption).

Capacity building will also be a major task in all subprojects, such as support of environmental education in schools and development of training programmes for architects and builders, and waste recycling techniques.

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Sustainable Holistic Approach and Know-how Tailored to India

The SHAKTI-Project

Bärbel Schwaiger, Alex Wall, Peter Gotsch

Introduction

Hyderabad: on the way to become a leading city?

Hyderabad, the state capital of Andhra Pradesh in Southern India, is an urban agglomeration with a population of 5.75 million (2001 census). That number makes it India's sixth largest city and one of the fastest growing metropolitan areas of the country. The city is experiencing rapid and steady economic growth that is based primarily on biotech industries and the IT sector. Its population is characterized by a huge diversity in terms of religion, language, income, educational level etc.

The Municipal Corporation envisions Hyderabad as "A smart and globally competitive city with opportunities for all its people in a safe, stable, livable, prosperous, and people friendly environment"[1]. These goals, however, represent a major challenge for local politicians and the administration as the city has to face severe budget constraints and, at the same time, cope with the implementation of new infrastructure as well as environmental and social demands. Without new investment, the constant demographic growth will continue to aggravate the existing lack of basic urban infrastructure and the exploitation of natural resources.

At the regional scale, private development groups are undertaking several major projects: the construction of an outer ring road; the building of several integrated New Towns, each of which is planned to house up to a million people; an international airport, which is planned to be a major hub for South-East Asia; and an above-ground rapid transit line. These projects will strongly alter existing infrastructure, settlement pattern and the way the metropolitan area is used.

Against the background of these dramatic private developments, the city is left to face many challenges such as unbalanced spatial development, the lack of an effective citywide public transport system, an unreliable electricity supply and poor infrastructure maintenance. Today, about 20-25% of the population is living in slums or informal settlements with almost no infrastructure. Furthermore, the air, water and noise pollution level is high.

Thus, the aim of sustainable development of Hyderabad requires the simultaneous consideration of both the existing urban fabric – particularly the historic centre – and the new development areas in the periphery. The existing city needs sensitive solutions for the renewal of affordable housing and an upgrade of technical urban infrastructure, while new areas have to be developed according to an integrated regional concept with long-term perspectives.

General goals

The goal of the SHAKTI[2]-project is to develop, compare and assess growth strategies and instruments, and to determine sustainability potentials by working at three levels: first, to advise on existing plans and develop general sustainability indicators; second, to generate development strategies with associated scenarios for the specific sectors; and third, to work with partners on the implementation of particular demonstration projects. All project levels are to be integrated into a long-term sustainable development perspective.

SHAKTI places particular emphasis on sustainable integrated solutions for technical urban infrastructure within a given urban context; this relates to the optimization of the existing infrastructure as well as new developments. Collaborative learning and planning will be a vital part of all of the sectoral projects and processes, ensuring public participation and the development of long-term monitoring and evaluation procedures and supporting the decision making process.

The team

The interdisciplinary German project team consists of 11 partners, composed of research institutions, NGO's, and private companies. This team is collaborating with various Indian research and training institutions, city as well as state government agencies, the chamber of commerce, utility companies, and numerous NGOs.

1
MCH, 2003

2
SHAKTI: Hindi for "power", "force", "capability"

3
See JNNURM, 2005

fig. 1. Traffic density. Photo: Peter Gotsch.

▼

fig. 2. High Tech City - growth over the hills. Photo: Bärbel Schwaiger

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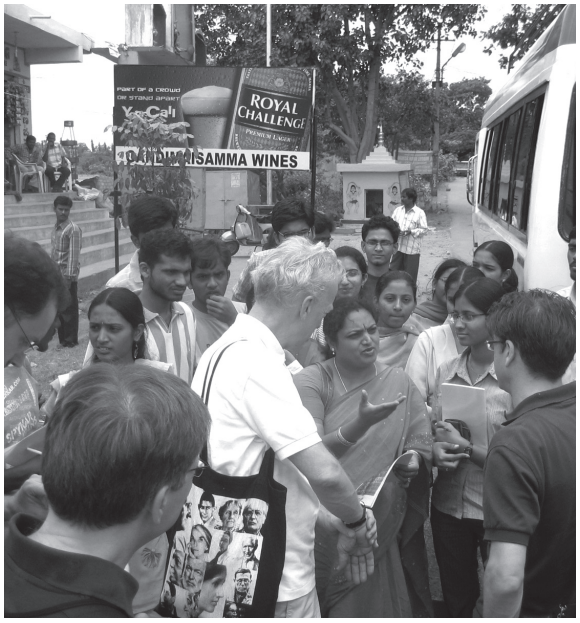
While the main sectors represented are energy, water, sewerage, waste, and transport, the cross-sector support is provided by the fields of urban design and planning, sociology, economics and environmental science, technology assessment, communication science, geographical information management, and remote sensing.



The Approach and First Results

Bottom-up & top-down: inner transformation & outer growth

In order to build up the project, SHAKTI has identified the tools for multi-scale analysis and action–operating at global, regional & local levels. At a global scale, developments driving urbanization form a general context. In the peri-urban region, overall growth may be measured from a "top-down" perspective, while a "bottom-up" view from existing neighborhoods gives a more direct and intimate portrait representing the inner transformation of the city.

All disciplines within the SHAKTI-team will define conditions and needs, and develop intervention strategies at both top-down scale (region and city), and bottom-up scale (neighborhoods and buildings). On each scale different actors need to be addressed (e.g. inhabitants, neighborhood committees, city government, utilities). As the institutional structures are complex and political decisions are influenced by many other issues, identifying the impacts will take time. Intervention strategies on the neighborhood scale, which will include public participation, may lead to faster results. Building "sustainable" capacity within the population may also trigger changes in the decision-making process on the political level.

In all sectors, the SHAKTI team has started to analyze the institutional structures and planning processes, as well as the different stakeholders with their responsibilities and interests at different scales. Links to already planned projects within the scope of SHAKTI are identified. A first data screening to check accessibility, quality etc. is in development, as well as the development of data for the integrated GIS database. Furthermore, external funding opportunities e.g. with the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) program[3] from the Indian Government are examined. In addition, several diploma theses in different disciplines have provided the project with valuable background information, which has proved very useful in planning the next steps.

Difficulties and lessons learnt

The first findings already show that there is a need to address the dynamic and potential of neighborhoods in greater detail as the current master plan does not distinguish between different local conditions. The neighborhood scale is a practical level to start with to learn how the different disciplines integrate with each other. On this basis, the existing data can be assessed which is needed for simulation models (energy, groundwater, transportation). The exchange of students is generating a substantial amount of information, and is a very useful mechanism to ensure a regular contact with the Indian partners.

Within this highly interdisciplinary team we have discussed different manifestations of growth and how the various disciplines are dealing with it. The main challenges have to be addressed at institutional and political level, as in almost every sector, there is no administrative coordination on the regional scale. Others difficulties are: a general lack of transparency, and difficulties in identifying the 'real' key implementation agencies. In addition, the 'mobility' of key persons in some public institutions makes it difficult to establish long term relations, and the lengthy processes of obtaining agreements due to the hierarchical systems at city and university administrations slows progress. Further, basic data in many sectors is not up to date, available studies are outdated, access to data is sometimes difficult to obtain, and in some sectors the information is scattered among many institutions. The current master plan is no longer up to date, and the implementation rate is lower than 40%. Thus, it is no longer an efficient instrument to steer the growth process, a condition that is exacerbated by the growing extent of private development, with its focus on the upper middle class and the wealthy. Growing social and economic inequity will increase the growth of informal settlements, and this will be accompanied by further social and environmental problems.

Next steps

Based on the findings in the first studies, other reference neighborhoods will be analyzed. The status quo situation will be assessed regarding environmental, social, economic and institutional aspects. In some sectors (energy, transport, water) the scenarios will be calculated with simulation models, which allow assessing directly several indicators. As the whole city cannot be well understood merely as the sum of its modules, we have to identify effects from mechanisms emerging at a lager scale. Various tools will be analyzed for their interdisciplinary potential in terms of their usefulness for other team members. The necessary steps to ensure integration between the teams will be developed. A continuous dialogue with the public institutions will continue to ensure that the results will be useful for local decision makers to assist them in meeting the challenge of a sustainable and global competitive future for Hyderabad.

◀◀
fig. 3 SHAKTI team members are examining neighborhoods together with students from the JNT University. Photo: Bärbel Schwaiger

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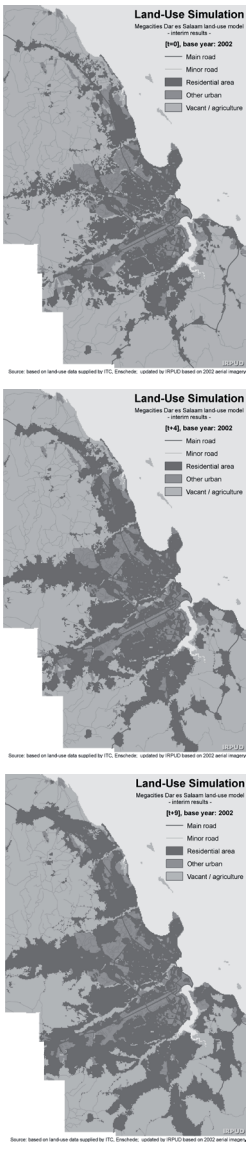
Trunk Infrastructure and Urban Growth – Managing Rapid Urbanisation in Poverty in Dar es Salaam, Tanzania

Timo Basteck, Alexandra Hill, Tanja Hühner, Christian Lindner, Wolfgang Scholz

fig. 1: Simulation of urban development in Dar es Salaam (draft). (t=0, t+4, t+9)



In Sub-Saharan Africa, urbanisation rates are mostly higher than national economic growth rates. Therefore, rapid urban growth has already outstripped the capacities of governments to regulate and guide urban land development, to provide urban infrastructure services and to manage the urban environment. This results in uncontrolled informal urbanisation without adequate services. Rapid urbanisation under poverty is, therefore, a major challenge for sustainable development in these regions.

The intention of the project is to identify access points for strategic interventions into rapid urban growth under poverty. The project focuses on the mutual links between trunk infrastructure development and urban growth. The feedbacks between infrastructure and urban growth are reciprocal: urban expansion calls for infrastructure supply, while the existence of infrastructure attracts urban development. With poor planning control, the outcome is urban sprawl in form of linear development along major trunk infrastructure lines leading to an unsustainable city structure. Furthermore, there is a great difference between formal and informal urban development. Formal urban growth starts with planning and zoning for various land uses, followed by the provision of trunk infrastructure, and finally plot allocation and building construction. In informal urban development, however, this process is reversed: at first land is occupied, and then covered with buildings, which calls for the ex-post provision of infrastructure services together with the regulation of tenure. This dichotomy arises from the priorities of low-income households, which rank shelter first, followed by drinking water and access, and then other services. This sequence increases the cost of infrastructure provision, but it corresponds to the perceived needs and demands of low-income households.

Following the concept of guided planning, the project will use incentives and co-operation between civil society groups, service providers, local authorities and planning bodies to guide urban development.

Objectives

The aim of the project is to analyse the impact of trunk infrastructure on urban growth and to assess its potential as a tool to guide urban development in the city of Dar es Salaam. As statutory planning is not able to cope with rapid urban growth the main hypothesis is that infrastructure provision could be an entry point to guide urban expansion.

The project focuses on the following research objectives:

- Determine how infrastructure is supporting, moulding and influencing urban growth and development.
- Identify suitable and less suitable areas for future urban expansion.
- Investigate how the strategic provision of trunk infrastructure can be used as a tool to guide and control urban development.
- Identify best practice examples of infrastructure supply in the urban periphery.
- Develop and implement management measures on the citywide level to secure better intersectoral co-operation between public and private stakeholders.

Methodologically, the project includes fieldwork, expert interviews with stakeholders both in professional (suppliers and planners) and academic fields, questionnaires to residents, workshops with all stakeholders, best practice examples for technical solutions of appropriate infrastructure supply, and a computer-based simulation model to forecast urban development.

The case study Dar es Salaam

Dar es Salaam is located on the coast of the Indian Ocean in Tanzania. As one of the fastest growing cities in Sub-Saharan Africa, Dar es Salaam is featuring most of the phenomena and problems of rapid urban growth under poverty. Growing by about 100.000 inhabitants per year in the last decade, the city recently has more than three million inhabitants constituting one third of the country's urban population. Nearly 75% of the built-up area exhibits informal development with uncontrolled urban sprawl in the absence of any land-use regulation.

Modelling Dar es Salaam's future urban growth

A computer-based model serves to monitor and forecast the rapid urban growth of Dar es Salaam and to support decision-making for future urban development. It is particularly designed to display the links of urban expansion and infrastructure supply. Land-use data extracted from aerial photographs (provided by ITC, Enschede) and own updating surveys serve as base data. Using the technique of cellular automata (CA), the model is able to simulate land-use development displaying main land-use types like planned residential, informal settlement, other urban and vacant/agriculture.

The spatial patterns identified in precedent GIS-based analyses confirm that almost all urban growth in the last decades has taken place in informal settlements along the main roads towards the urban fringes. Unsurprisingly, informal settlements are characterised by significantly higher population densities compared to planned residential areas within the same radial distance to the CBD. The analyses also display a distance decay effect in population density towards the urban fringe where, with few exceptions, surprisingly constant low population densities are observable.

The model aims at reproducing these spatial development patterns. Therefore, various drivers of urban development which can be represented with appropriate data have been identified, like natural conditions (e.g. slope), accessibility (e.g. distance to main road), and access to water supply (e.g. distance to water main). The so-called neighbourhood effect is one special feature of CA. It enables the simulation of spatial diffusion processes where nearby land uses influence each other. It can also compensate for knowledge gaps e.g. on the micro level preferences of urban settlers concerning agglomeration advantages like social and family relations.

When all variables have been integrated into the model it will be calibrated to most accurately reproduce the spatial patterns observed over the last decades and generating valid forecasts of the likely future urban development. This step also forms the basis for the subsequent testing of planning and policy scenarios to examine future interventions and their likely outcomes. Thus, the simulation model will become a valuable tool for the project as well as for future planning and decision-making in Dar es Salaam. Local planning experts and utility providers have already indicated their interest in the outputs and implications of the land-use simulation approach.

Fieldwork: The role of infrastructure for location decisions of settlers

Detailed field surveys were conducted in three settlements at the periphery of Dar es Salaam to analyse the impact of the supply of trunk infrastructure on the allocation of settlers in informal settlements. The survey included focus group discussions with plot owners, water committees, women, youth groups, elderly people and settlement leaders and about 210 household questionnaires.

Preliminary findings indicate that during the initial phase of settlement development the availability of technical infrastructure is not the predominant determinant while affordable land prices play the most important role. However, later on in the consolidation phase of a settlement, water supply is ranked most important, followed by accessibility, a clean environment, and the availability of social infrastructure. So obviously, services and utility supply play an important role for settlers in informal settlements but not in the initial phase when land transactions take place. Results from expert interviews and the analysis of aerial photographs, however, underline the importance of the availability of services for informal urban development. Interpretation is that settlers put land and shelter first but consider future demand for services already unconsciously in their choice. These findings have to be carefully considered within the implementation phase of the project and for policy-making.

Workshop and expert survey: Uncoordinated provision of infrastructure services

Three workshops (each scheduled for two days) with participants from utility companies, municipal planners, and the relevant ministries for lands, water, and infrastructure development were conducted. The general observation is a lack of co-ordination between utility providers and urban planning authorities. Weak interagency linkages cause negative impacts on the urban development of Dar es Salaam and the servicing of settlements. Each agency follows its own agenda without considering potential benefits from intersectoral co-operation. So far, a strategic planning approach co-ordinating utility provision and urban growth regulation has not been implemented yet. An improved co-operation between utility providers and urban planning authorities could mitigate the negative effects of informal rapid urban growth.

Furthermore, it was emphasised that utility agencies provide their services only if a sufficient number of residents or costumers have already settled. For suppliers adequate returns are more important than strategic provision of services. Therefore, settlers remain unserviced for an unforeseeable period and have to rely on unsafe water and harmful energy sources for their daily living. Together with the prevailing weak urban development control, this urban management deficit causes uncoordinated and uneven service provision, and high unit costs. To sum up, a more sustainable development of Dar es Salaam requires an integrated planning approach including utility agencies as well as the respective ministries, and the municipal planning departments.

Task force

At the October 2006 workshop the project team established a task force to tackle the issues of urban growth and infrastructure provision. The task force consists of representatives of the most relevant actors in urban development, namely the Ministry of Regional Administration and Local Governance, the Ministry of Infrastructure Development, the Ministry of Water, the Ministry of Lands, Housing and Human Settlements Development, the Dar es Salaam City Council, Kinondoni Municipality, and the water and power utilities DAWASA and TANESCO. Main aim of the task force is to strenghten intersectoral collaboration. This important milestone was facilitated by the local project partner the University College of Land and Architectural Studies (UCLAS).

Outlook

The focus of the second phase will be on an integrated urban infrastructure development plan to co-ordinate planning and services in a sustainable way. Furthermore, a pilot settlement project will be developed at the periphery of Dar es Salaam. The aim is to combine affordable land prices, a suitable layout and anticipating infrastructure supply to meet the needs of low-income households as well as to save land, energy and costs. The pilot settlement will be embedded into major infrastructure projects in Dar es Salaam, i.e. the construction of a new ring road in the periphery and the improvement of water supply creating new residential areas which are serviced but nonetheless affordable for the urban poor.

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Open Spaces in Emerging Megacities – Potential for Nature-Orientated Living in Recife, Brazil.

Wilfried Morawetz, Hartmut Gaese, Simone Sandholz, Jens Wesenberg, Ana Maria Benko Iseppon

Purpose and main goal

Open spaces are important elements of the urban environment and provide potential social, ecological, health and quality of life benefits (Council of Europe 1986, Thompson 2002). They have a strategic importance in the urban development process, even more in the case of growing megacities, where a lot of them represent spaces to urbanize. Open spaces in rapidly growing cities of less developed countries are facing much more pressure, formal and informal, than in other cities around the world (fig. 1). Planning, management and monitoring of open spaces therefore forms an essential part of the sustainable urban development. But up to now, planning doesn't react with adequate strategies and measures or interdisciplinary concepts integrating social, economic and ecological aspects (Kaltenbrunner 2004), especially in the developing countries (De Sousa 2002).

The development of adequate planning strategies and tools requires to understand:

- The functions and dynamics of intra- and periurban open spaces considering their social-cultural, ecological and economical values, risks and potentials as well as their interdependencies,
- The interactions of open spaces with their surrounding matrix (fig. 2),
- The complexity of formal and informal uses (Frischenbruder & Pellegrino 2006).

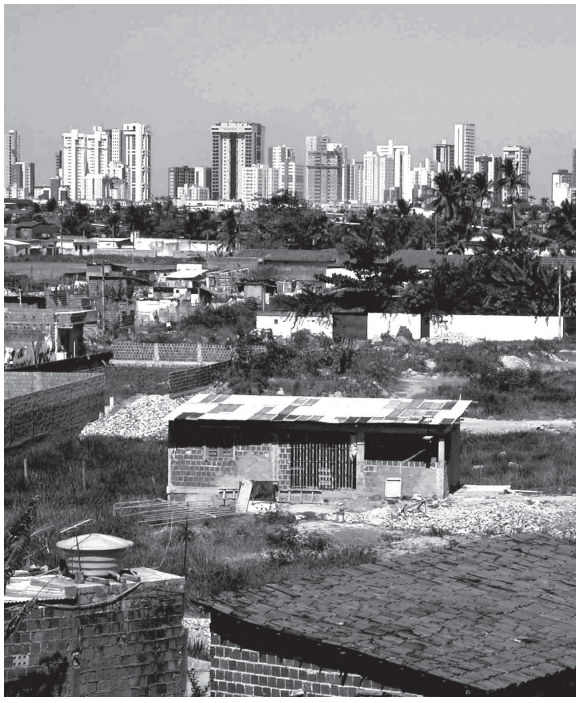


fig 1: Informal urbanization is one of the strongest pressures acting on open spaces in growing cities of less developed countries. The image shows a Favela in front of the skyline of Boa Viagem, the most verticalized quarter of Recife. Photo: D. Sattler

These requirements result from the complex structure of the urban system characterized by a large numbers of variables and sub-systems, connected in time and space by feedback relationships (Araunita 2004, Erkut 1997, Laurini 2001).

The interdisciplinary project "Open spaces in emerging megacities – potential for nature orientated living in Recife, Brazil" aims to create interdisciplinary and integrated methodologies for the analysis and valuation of development-, vulnerability-, risk-, resilience- and conflict-potentials and -dynamics of open spaces on different spatial scales what allows to elaborate scenarios, models and tools for the use in planning processes. This will be done in a holistic and comprehensive applied approach in close cooperation with the local decision makers and further stakeholders, considering their interests and experiences to ensure the acceptance and applicability of the project products. Such close interaction is indispensable because integrating instruments to manage open spaces in urban planning in Brazil and other less developed countries so far often failed due to inefficient decision-making and the lacking integration of important political stakeholders (Frischenbruder & Pellegrino 2006, Trancik 1986). By establishing effective cooperation structures, as well as by means of capacity building activities, including education and participation processes, the project also expects to improve the functionality and governance structures during the planning process.

Working steps, results and particularties

The project is located in the metropolitan area of Recife, capital of the Brazilian Federal State Pernambuco, a city which disposes of an innovative tradition in urban development. Recife shows typical problems related to open spaces of (emerging) megacities in Brazil and Latin America.

For the 2 years pilot phase of the project (2005-2007) a small pilot area (1,2 km²) was selected. This area is located in quarter Apipucos in the southeast of Recife, near the Mata Dois Irmãos Reserve and shows a great variety of urban and social structures as well as representative types of open spaces.

To achieve the objectives mentioned above a series of working steps was defined. On a first level different functions of open spaces were focused separately by

7 working groups (Urban Planning, Urban Geography, Sociology, Physical Geography, Ecology/Biodiversity, Urban and Periurban Agriculture, Urban Forestry). Each of these groups defined relevant indicators, collected the necessary data and conducted a valorisation of selected open spaces as well as a first analysis of single data. Thereupon these single results have to be integrated to an interdisciplinary system with multicriteria diagnosis using a common GIS under the responsibility of an eight workinggroup. The system analysis will help to formulate a common language for the interdisciplinary work to provide the framework for the setting up of an interoperable information system which will in turn ensure the integration of the research work. In the first step of the system analysis, which is realized actually, the indicators are classified and put into relation using the DPSIR framework (Smeets & Weterings 1999).

In further steps principally during the main project phase, the results of the integrated analysis will be used to develop scenarios which include the modelling of causes and effect relations and allow prognosis concerning the open space development. In the final step action alternatives and instruments for planning, monitoring and management of open spaces will be developed and implemented.

Beside this scientific-technical studies another main working field and important result of the pilot phase is the establishment of cooperation structures together with the stakeholders, like local actors, municipal and state government authorities.

Innovative approaches of the project:

- Strong combination of the three major columns of sustainability in all working steps from data collection up to transsectoral integrated land use planning in order to secure, develop and improve existing open spaces,
- Understanding intercultural differences of concepts, perceptions and attitudes towards open spaces and their ecological, economical and social functions,
- Strong consideration of problems and potentials related to biodiversity conservation in the ecological aspect,
- Including education and participation: Town planning, universities and population will interact in order to commonly create new solutions for open space integration into "human spaces" in megacities.

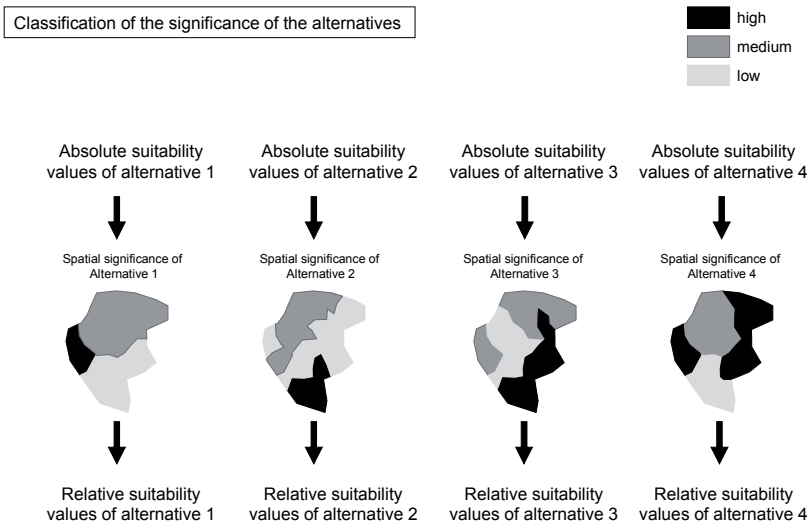
Lessons learnt

To achieve sustainable planning and development it is necessary to bring together aspects of open space use and open space value. In particular, informal uses and use strategies have to be considered and the overall planning aims need to be studied. This has to include their spatial dynamics, also in relation to their interactions with the surrounding matrix. The integration and participation of diverse interest groups, scientists and practitioners, administration and stakeholder, has to be a central element in all working steps.

Outlook, further steps in second phase

In the main phase the project will present three main acting fields, which are coupled to each other.

1. The direct investigations of open spaces will be continued using the methodologies evolved and/or tested during the pilot phase. But contrary to the present study the investigations will be realized in the whole metropolitan area at different spatial scales. Furthermore the studies will focus much more on the temporary dynamics of open spaces and their surroundings and a greater variety of (monetary) valuation approaches will be applied.
2. The results of the first (two year) project phase and then of the three main phases are intended to be used at various levels and by various user groups. In addition to outputs that will be used by the German and Brazilian project partners it is intended to provide results, like strategies and instruments for planning, monitoring and management, that can be put into practice by the stakeholders of urban development in Recife.
3. The transferability of the projects methodologies, strategies and instruments to other growing (mega-) cities in Brazil and Latin America will be evaluated. That way the problems related to open spaces and urban development in different cities will be compared and classified. If possible, instruments and strategies are intended to be tested practically in other cities, too.



▲ fig 2: The absolute suitability of the individual open space areas for the different management/use-alternatives, which is derived from the Multi-Criteria Evaluation (MCE), has to be evaluated regarding the significance of the alternatives within the urban context. This overlay of the absolute suitability values of the open space areas and the map for the spatial significance of the different alternatives result in relative suitability values within the spatial urban context. Graphic: G. Meier

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Young Cities - New Towns in Iran

New Towns as a Concept for the Sustainable Development of Megacity Regions

Rudolf Schäfer, Sebastian Seelig, Florian Stellmacher

Starting Point - New Towns for the emerging Tehran-Karaj Megacity Region

Are New Towns a suitable concept for the sustainable development of emerging Megacity regions? In the last decades, the City of Karaj has experienced the highest population growth rate of all cities in Iran[1] and thereby developed into the second major urban center of the emerging Tehran-Karaj Megacity region, with a total population of 12.3m inhabitants in 2006[2]. Situated 40km off the capital, Karaj forms part of a coalescing growth corridor reaching from Tehran beyond Karaj to Qazvin (fig. 1). One central strategy to tackle the rapid urban growth has been a nationwide New Towns policy, firstly in the Tehran Province including Andisheh and Hashtgerd in the western growth corridor. Hashtgerd is located 30km west of Karaj and will house some 0.5m inhabitants by 2016 (fig. 2).

New Towns have mainly been implemented in industrialized countries in the post-World War II era, but became increasingly discredited in the North, whereas Southern countries often introduced nationwide New Towns programs. These towns were mainly based on a functionalistic, top-down planning ideology, in today's view an aged concept. Although the Iranian New Towns program from the late 1980s initially contained some elements of sustainable urban and regional development, such as the aim of balanced housing markets and economic development or reduced impact on environment, the policy came short to achieve these ambitious effects so far.

Population growth and urbanization, however, pose challenges in all dimensions of sustainability to the western growth corridor: inadequate housing, overstressed infrastructures, pollution, depletion of natural resources, and the threat of geo-hazards can be identified. These problems are aggravated by spatially and sectorally fragmented local and regional policies.

Approach and first results – testing and detecting new chances for an aged concept

Based on these observations, the Project "Young Cities - New Towns in Iran" is exploring the question, whether a revised New Town concept may be a suitable strategy for the sustainable development of the western growth corridor. The consortium with its lead-partners TU Berlin, Building and Housing Research Center and New Towns Development Corporation (both Iran) have developed a two-track approach in order to test the aged New Towns concept for new chances in sustainably developing Hashtgerd.

The first track is based on "revolving invasive activities", the repeated implementation of Pilot Projects; three were started ab initio:

- the five-storey residential New Quality building – focused on constructive earthquake resistance and construction quality (erection in 2007)
- the two-storey office High Technology building – focused on innovative technologies and materials and reduction of energy consumption (erection in 2007)
- the 35 ha area in Hashtgerd – focused on compact, energy-efficient, integrated urban planning and development (three urban design scenarios have been devised (fig. 3).

The work on these Projects has shown potentials in reducing consumption of energy (e.g. through vacuum tube collectors and multi-service chilled beams), landscape (low-rise high-density approach, horizontal and vertical mix of uses), resources (integrated water and sewage management) and impacts of geo-hazards

1
From 10,000 inhabitants in 1950 to 1.23 million inhabitants in 2005, see: United Nations, Economics and Social Affairs: World Urbanization Prospects, The 2005 Revision, New York, 2006, p. 136

2
Barakpou, Naser, Governance of Tehran City Region: Challenges and Trends, Paper presented at the „Cities in City Regions" Conference, Warsaw, Poland , May 11th until 14th 2006

fig 1: The western growth corridor from Tehran to Hashtgerd

fig 2: Overlooking central Hashtgerd New Town to the North in 2006

fig 3: 35 ha Area Pilot Project. Isometrics of one neighborhood in scenario 2

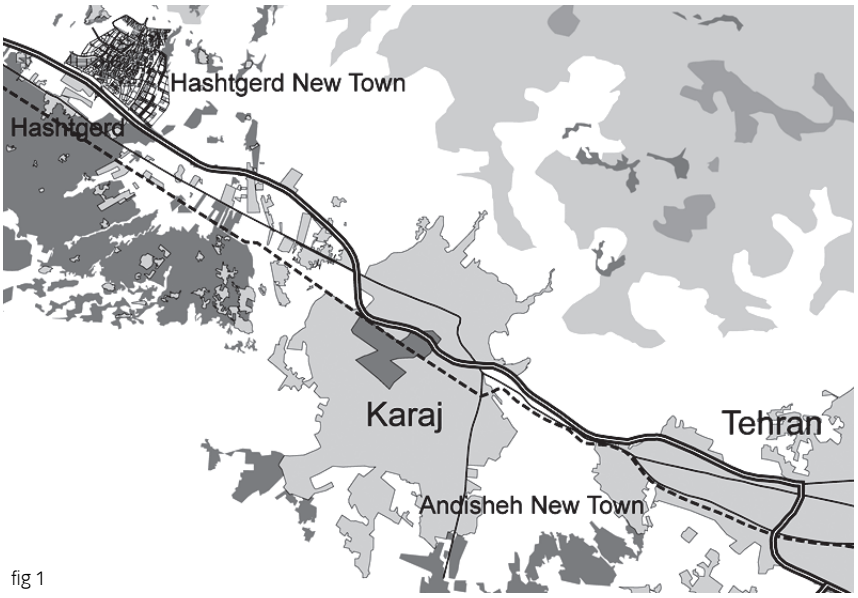

fig 1

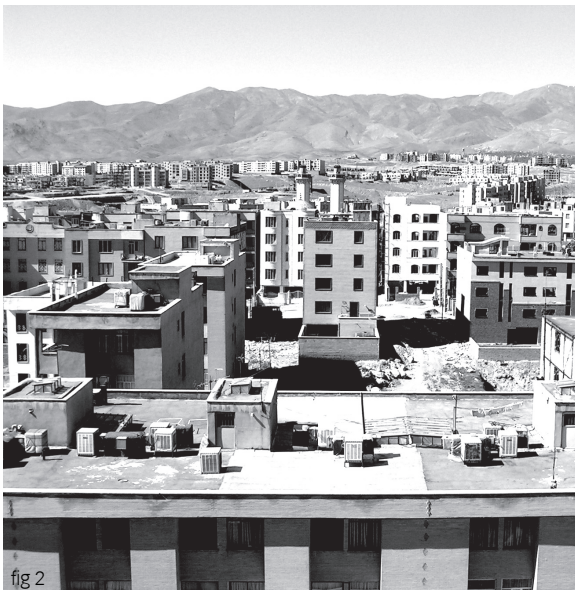

fig 2

(mass reduction and appropriate stiffening systems of buildings); potentials regarding planning and management methods (sectoral integration) or construction materials and technologies (multi-layer façades with ETFE-foils and prefabricated devices) could be identified, too.

The second track is based on "continuous analytical activities" including the accomplishment of an "Analytical Grid". This covers the analysis of New Towns in Iran, regarding political, economic, social and spatial aspects allowing the comparison to New Towns in other Megacity regions. The work is accompanied by research on ecological and geophysical topics. In addition, an international symposium on „New Towns as a concept for the sustainable development of Megacity regions?" was held at TU Berlin in 2006, establishing a global "Research Cluster" of New Towns researchers and practitioners. The results of the analytical activities have shown that New Towns have (re-)gained an increasing importance as strategy for the development of large agglomerations especially in emerging markets worldwide.[3] They also exhibit potentials e.g. by increasing economic attractiveness (through establishing economic base and integration in regional and national comprehensive strategies) or project management (efficiency and calculation methods).

Project objectives – defining new chances for sustainable development

Based on confirming the concepts' new chances, the Project aims to

- further systematically explore the potentials of New Towns for sustainable development and
- formulate and implement guidelines for Hashtgerd's and the region's sustainable development.

The following objectives were derived as new chances, developing Hashtgerd as place of

- sustainable architectural and urban quality
- efficient, integrated and participatory planning and development
- affordable housing and broad social amenities including groups with special needs
- reduced impact on resource consumption, pollution and exposure to natural disasters
- distinct cultural identity
- systematic innovation and learning in planning, designing and constructing the urban environment as a node within regional economic networks.

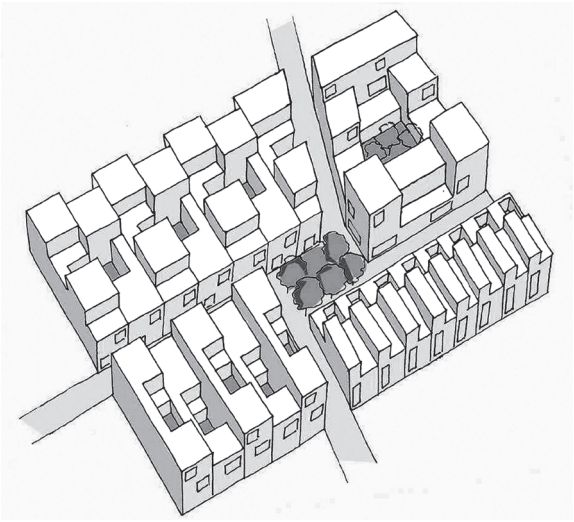

fig 3

The Project's activities are to form part of a Planning and Building Exhibition broaching the issue of sustainable development of Hashtgerd New Town in the emerging Tehran-Karaj Megacity region.

Project Specifics, Difficulties and Lessons learnt

The complexity and the traditional state involvement in New Towns development is reflected in a strong commitment of the main Iranian partners, both directly affiliated to the Ministry of Housing and Urban Development. This guarantees for administrative and financial facilitation and fast implementation of experimental activities. First results show that these activities play a central role giving the possibility to discuss complex systems by means of small "touchable" projects. The Pilot Projects allow obtaining information (literature, data, codes, guidelines) and approaching a wide range of stakeholders from the beginning.

Threats are posed to the Project by the international political context, especially the partial isolation of Iran and the imposition of sanctions. This has evoked intense discussions within the consortium but not yet hampered the cooperation between the Iranian and German partners.

Outlook and next steps

Work will continue to focus on advancing and implementing the Pilot Projects and on the concomitant research. This includes a close monitoring of the two building Pilot Projects' development, implementation and use. From the analysis, solutions on a larger level for Pilot Projects of a second generation will be derived and implemented as well. The monitoring will also form a basis for advancing the 35 ha area Project, to start construction from 2008. Its detailed planning will further expand the range of Iranian actors involved, turn the focus even more to the (prospective) users of the New Town and form the ground for small-scale projects regarding water, energy, social infrastructure, transport, qualification, participation and management.

These implemented products will be accomplished by consulting products (manuals, guidelines, plans) and scientific products (publications, seminars, conferences). Concomitant research will be supported by diploma and PhD classes at and in cooperation with TU Berlin, involving academic partners in Europe, Iran and countries in Middle East and North Africa (MENA). The Project's results will be transferred to New Towns in Iran, allowing for a strategic consulting role of the binational Project consortium, and MENA countries with New Towns programs employing TU Berlin's MENA Cooperation Unit. In Europe, deepened exchange has been initiated with the European New Towns Platform and the recently founded International New Towns Institute.

The exchange of results emerging from the interdisciplinary, complex strategies on the local level will help reanimating the aged New Towns concept and thus fostering its regional significance worldwide.

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www.youngcities.org/

The Balance of Urban Growth and Redevelopment in Ho Chi Minh City

Sustainable Housing Policies for Megacities of Tomorrow

Corinna Kennel, Christina Liesegang, and Volker Martin

Background and objectives of the research project

Ho Chi Minh City (HCMC) is a dynamically growing metropolitan area in the south of Vietnam characterized by a high economic growth rate and a rapidly increasing population. Counting over 8 million inhabitants today and facing ongoing in-migration, HCMC will soon cross the threshold to a megacity (GSO 2006; Waibel 2005:13).

One of the most pressing problems of the emerging megacity is the enormous demand for housing, especially for low-income residents (Hiep 2005:1).

So far, large-scale informal settlements have developed all over the city, causing negative effects on the environment and the urban society. Uncontrolled by urban planning, the extensive land use at the periphery indicates the beginning of urban sprawl, whereas some of the inner districts are so densely populated that the quality of life is often very low. In general, the informal settlements are characterized by poor constructions standards, a lack of adequate technical and social infrastructure, severe environmental problems and, all in all, precarious living conditions.

In view of these problems, the research project "The Balance of Urban Growth and Redevelopment in HCMC – Sustainable Housing Policies for Megacities of Tomorrow" focuses on housing provision as a key element for an overall sustainable urban development. The project aims at the formulation of strategies for housing provision that take the balance of redevelopment in the inner city districts and of urban expansion at the periphery into account.

fig 1

These strategies do not only focus on spatial aspects of the built environment. Rather, they refer to the multidimensional context of housing provision, thereby contributing to the social, economic, and ecological dimension of urban sustainability.

Furthermore, the strategies address the target group of low-income households who are mostly affected by the lack of affordable housing. Since the introduction of a liberal economy in Vietnam the housing market is dominated by private investors who concentrate on serving the demand for housing of the upper-income groups. Thus, parallel to an increasing social polarization of the urban society, the phenomenon of spatial segregation can be observed in HCMC (Waibel 2006).

In order to counteract these segregation processes and to contribute to social cohesion, the strategies envisage a socially mixed population with all the positive effects on the community life. Consequently, the term 'low-income' includes a diverse group of households that have inadequate access to affordable housing in common.

Project structure and results

The research design of the project is based on the core principles of an integrative planning approach and of an orientation towards application and joint learning processes.

a) Integrative planning approach

Sustainable urban development requires an integrative planning approach that reflects the various spatial levels as well as the different, yet interrelated fields of urban development.

fig 2

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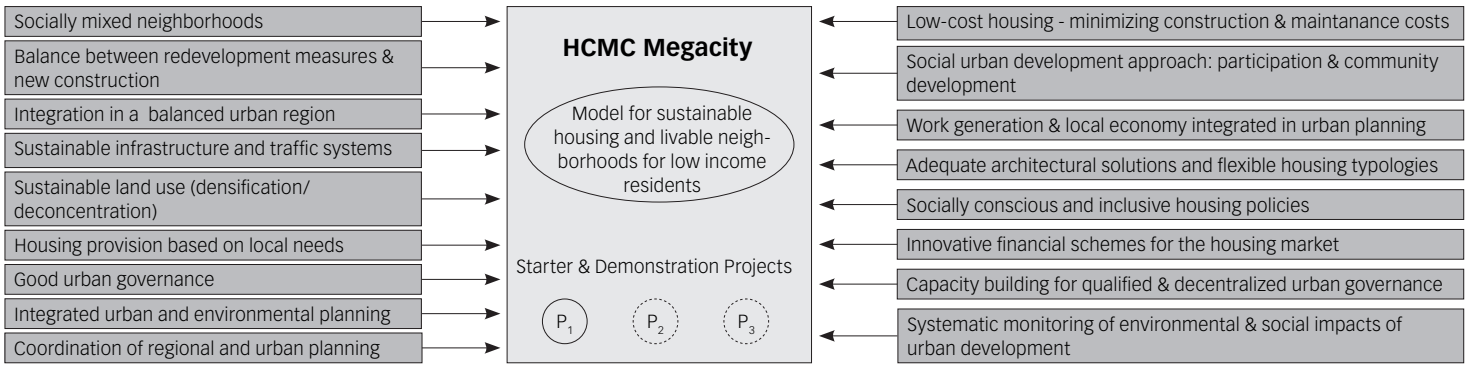

In correspondence to the complexity of a transdisciplinary approach, the research project is organized in six action fields: 1. planning management, 2. integrated regional development, 3. spatial planning and land use, 4. housing market and provision, 5. livable neighborhoods, 6. evaluating sustainability via a GIS-based indicator framework.

In the respective action fields, different approaches and demands have been identified on one hand and on the other hand conceptual elements have been developed that are now incorporated in comprehensive strategies for a sustainable housing provision (see fig. 3).

b) Orientation towards application and learning

The implementation of a starter project (P1) (fig. 3) for housing on the neighborhood level followed by the realization of several demonstration projects (P2,3...) in urban expansion and redevelopment has been an integral component of the research design from the onset. These projects have a dual function: first, they serve as examples in which the implementation can be tested in a specific urban context and the applicability of the formulated strategies can be demonstrated. Secondly, they allow the re-formulation and improvement of the overall strategies based on the experiences made in concrete projects. Thereby, the projects create opportunities for intensive joint learning processes and the development of capacity-building measures that respond to the actual needs of the stakeholders involved.

Lessons learned and specific characteristics of the project's context

At the end of the first research phase the results have confirmed the need for action in the future megacity HCMC. The findings can be summarized as follows:

- Insufficient cross-sectoral cooperation and almost inexistent information exchange between the regional and the local level create a need to focus on connecting the relevant local stakeholders. Here, the project functions as a catalyst for transdisciplinary cooperation and extended partnerships.
- Successful approaches and projects have been carried out in HCMC in the past. However, these did not take into account the perspective of the entire city but dealt with sectoral issues such as canal sanitation and slum upgrading. In addition, experiences made in these individual projects were not incorporated systematically into the mainstream of urban policies. Therefore, integrative, long-term projects that influence housing policies and the overall planning system are needed that are based on step-by-step learning processes.
- The planning system – including its institutions, legal frameworks and enforcement of regulations – lags behind the rapid pace of the actual urban development. Also the centralized and hierarchical structure of the political system often inhibits action appropriate to the dynamics of development in HCMC. Therefore, the demand for strong strategies that are oriented toward direct application is evident.
- Since policy-making is still characterized by its top-down-style, there is a need for decentralization and capacity building for qualified urban governance. It is important to strengthen the regional and local administrative levels as well as participatory approaches to enable the local inhabitants to utilize their capacities and social resources as part of the solution of the housing problem.
- With regard to urban design, different life-styles as well as different incomes and economic activities such as home production require flexible housing typologies to serve the demands of the low-income population. This requires minimizing construction and maintenance costs, which implies a shift from the high-rise building practice to low-rise and affordable housing solutions that at the same time allow high urban density.

Outlook

In the first research phase the objectives were an in-depth analysis of housing and urban development in HCMC as well as the qualification of the German and Vietnamese partners allowing the presentation of integrated strategies for housing provision.

Here, various innovative elements are incorporated in the process of urban development in HCMC, such as a) administration decentralization, participation and community development; b) integration of land use and housing policy; c) qualified environmental protection; and d) regional integration. Likewise, training programs will be conducted to facilitate and support the application of these innovations. The implementation and spatial realization in form of demonstration projects will take place in the next project phase.

So far, the research team has been able to establish partnerships involving a broad range of actors in the multiple fields of urban development. Based on these joint learning processes, the elements of comprehensive strategies for housing provision will be elaborated and integrated in innovative solutions for the sustainable development of the future megacity HCMC in the next research phase.

fig 1: Extensive land consumption by informal settlements in a peripheral district of HCMC

fig 2: Marginal settlements along canal and high-rise residential buildings in central HCMC

fig 3: Demands and conceptual elements of a model for sustainable housing and livable neighborhoods

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Mega Region Transport Systems for China (METRASYS)

Philipp Böhnke

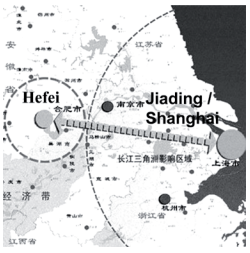
Aim & objectives

Mega Regions are hot-spots with regard to all dimensions. Mobility in all is one of the keys to an intended sustainable development. The requirements for freight transport and to provide mobility for all parts of the population is of special relevance in fast growing agglomerations. With the implementation of goods transport solutions in mega regions, there is a chance to initiate favourable impulses for the development of larger areas. The gain from successful paths in development will even be greater if the approaches can be transferred to other agglomerations.

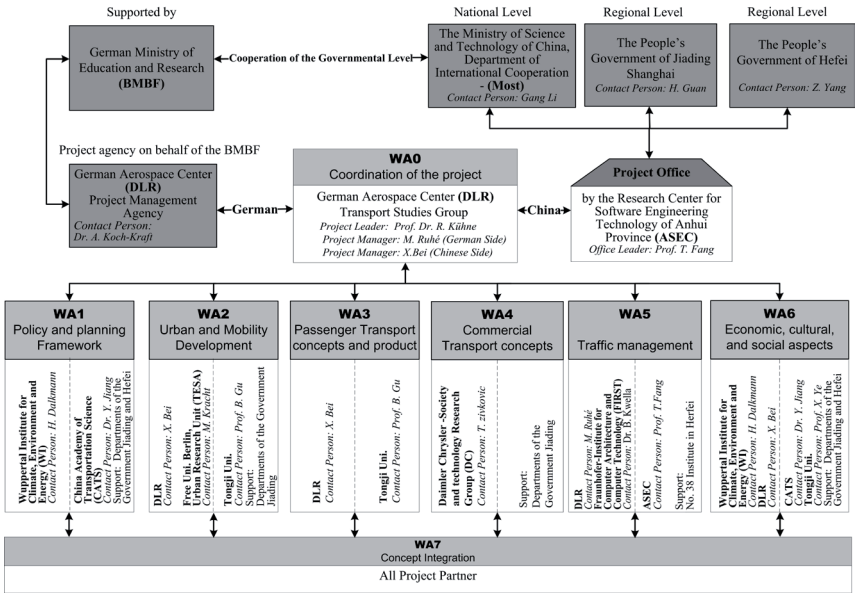
The general objective of this project is to develop and demonstrate solutions for sustainable mobility concepts by a mix of mobility services, vehicle technologies and improved transport system management. The challenge, however, is to adapt to the special demands of target groups in passenger and goods transport as well as to the lower purchasing power (most of mega regions belong to the Third World) and embed the technical solutions into a planning and policy framework oriented towards sustainable development. The project will investigate how the developed solutions could be transferred to large conurbations.

The central idea of the project is to develop sustainable mobility concepts for urban mega-regions that form around megacities in countries all over the world with a highly dynamic economic development such as China.

fig 1: Hefei is close to the Yangtze Delta Area around Shanghai



tab 1: Project Structure - it shows all project partners and Working Areas (WA).



Approach & results

The project itself is preceded by an orientation and planning phase during which the political, societal, and economic conditions for a successful implementation of concepts and technological solutions will be explored. This will be accomplished by establishing close co-operation and knowledge exchange between the German and Chinese project partners. Table 1 shows all project partners and Working Areas (WA): (see tab. 1)

The complete project spans a time period of 11 years, which is divided into four project phases. It includes an initial

The sustainable mobility concepts envisioned will rely on

- solutions and implementation strategies that are targeted towards the needs of users and the achievement of sustainability goals,
- innovative technologies for vehicles and traffic management,
- an integrated approach to transport planning,
- the projection of general conditions and business environment.

Solutions that have been rated promising will be implemented and demonstrated for the case study region Jiading District and also for a transfer city Hefei. The district Jiading is one of the megacities of tomorrow embedded in the vast Metropolis of Shanghai in rapidly industrialising China. Its population is expected to grow to 1,200,000 inhabitants by 2010 and together with Shanghai this metropolitan region would have a total population of about 15 million. The administration of the conurbanisation of Shanghai has ambitious plans for their economic development and could, therefore, be a model for less developed areas all over China and beyond. One of the less developed areas is the transfer city Hefei. Hefei (as transfer city) is located about one flying hour from Shanghai, in the middle of china and is capital of the Anhui Province. It has the important regional advantage to connect Middle with East and West China.

Product and service innovations that have proven to be suitable for the study and the transfer region could hence serve as templates for other developing countries. Therefore, the major challenge of the project is to accompany the process and provide concepts and execute pilot projects to develop a sustainable pathway. This will be enabled by a strong involvement with the Chinese partners ensuring the consideration of cultural aspects and the exchange of knowledge.

orientation phase of 2 years which aims at the specification of concrete tasks, the establishment of co-operations and project financing and the outline of a project plan. This is followed by three project phases of 3 years each aiming at the realisation of specific. After each phase an evaluation will be carried out in order to decide on the further proceeding.

Until now, almost Phase 0 – Orientation and Project Planning - is done. During various Meetings between the German and Chinese project partners an arrangement of the working contents and pilot projects was agreed, as well as a project-timetable, which was confirmed by all partners. Afterwards a short-term action plan was elaborated, in particular for the first 18 months that can be presented to the permission by the mayors of the cities Jiading and Hefei.

Following, the status quo will short be reported.

WA 1: The planning process comprises many steps and plans need to be approved by different administrative levels and departments. To get a good overview over operational sequences a master thesis by a student was composed. Through that thesis and also through personal connections during the workshops the main decision-makers are known.

WA 2: The historical development of the research area is examined and described on different levels. A literature review is on the way and will lead to a working paper. This paper will focus mainly on the historical development since ~1900, the constitution of modern China. The literature review will lead also to a comprehensive bibliography of the actual scientific discussion on mega cities especially on Shanghai.

WA 3: Three research aspects are developed and in process. First of all the Research on the applicability of modern Tram& light rail transit, secondly the Research on Anting Transport Hub and thirdly the Research on TOD (Transit-Oriented Development) mode of the transportation junction in Jiading area and the method of raising capital.

WA 4: Presently there a few problems which will be solved shortly. The data situation has to be improved dramatically. Hardly any consistent data is available. Also the acquisition of suitable partners is a longer process. The motivation and contribution of the potential chinese partners contacted so far is quite diffuse. We need to gain a deeper understanding about the motivation in order to get to a more obliging approach.

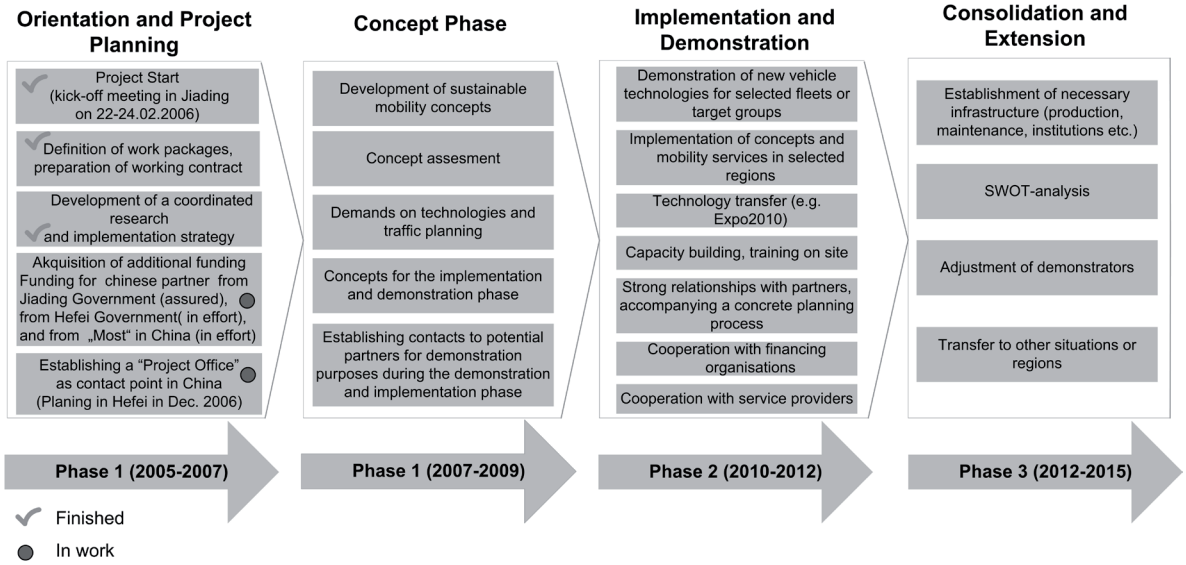
WA 5: The Chinese partners showed their strong interests in the field of airborne Traffic monitoring, traffic simulation and broadcast distribution of traffic information. Common projects are under discussion.

WA 6: In order to evaluate the social welfare effects of technical and organizational strategies of the intended sustainable development, an economic assessment is necessary. Through the interviews and exchange with representatives from various Chinese planning authorities it became clear that it is crucial to formulate the financial aspects of all planning actions and to clarify who is responsible for which part of the actions budget.

Particularities & difficulties / lessons learnt / outlook & further steps

China isn't Europe. That sentence characterise the key difficulty. The identification of the economical, cultural and social aspects in Jiading District is crucial to provide a common basis for future concepts and actions within the project. As the concept of sustainable mobility has to take all dimensions (ecological, social and economical) of sustainability into account, it has to be developed based on the cultural background. The decision-makers have to be found out.

Surprisingly is the willingness to share information by the Chinese Partners about their planning, participation processes and management of changes - many a prejudice was disproved. First subcontracts for local financed by the Chinese side show that the idea of project promotion affects to others, worked out. First pilot project integrated in METRASYS are planed and already done as well as additionally projects like the opening of a working office in Hefei are on the way. The project is not a one-way. Impressive is also the participation of high-ranking city representatives in the meetings, discussions and in the assignment of the studies. This underlines the importance of the projects approach.



◀ tab 2: Project Plan

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Energy efficient Structures for the Shanghai Region, China

The Fengxian Example

J. Alexander Schmidt, Jörg Schönharting, Hannah Baltes, Timo Barwisch, Sabine Drobek, Natascha Schlömer, Stefan Wolter

Occasion and objective of project

The global impact of rapid economic development in China and the attendant rise in the standard of living there is being felt in the energy consumption sector as well. The world market for fossil fuels may be thrown out of kilter by the increasing levels of individual mobility and climbing standard of living of 1.4 thousand million Chinese. In view of these developments, it is now more important than ever to develop new, energy-efficient structural concepts for urbanization, mobility and buildings. Viewed from one perspective, China's dynamic growth generates an extreme growth potential providing an opportunity for development of such new structures, and model realization thereof that is not currently seen in this form in Europe and Germany.

The population of the megacity Shanghai is growing rapidly due to its enormous attractiveness for poor rural residents. The extremely high population and building density in the city are signalling the end of growth capacity of the core city of Shanghai. To relieve this situation, it has been decided to found nine "New Towns" in the region to form a ring of independent satellite cities and alternative locations around Shanghai.

▲ fig 1: Location of the planned new towns and the city of Shanghai

▶ fig 2: Appartment building

fig 3: New high rise buildings under construction

fig 4: Kooperation of german and chinese team in Shanghai

One focus of this multi-faceted project is the city of Nanqiao in the Fengxian District, 40 km south of central Shanghai. Fengxian's surface area of 704 km² is currently populated by 584,000 people, that is sparsely. Government plans foresee approximately 400,000 new inhabitants in its capital city, Nanqiao, by 2020, together with new jobs for them.

The objective of the project is to plan new urban structures and living accommodations so as to facilitate energy-efficient mobility and significantly reduce overall energy consumption. Automobile dependency on the Western model is to be nipped in the bud.

Procedure and working results

When attempting to establish energy-efficient urban mobility, it is absolutely necessary to couple urban structure and mobility very closely: This means an urban structure planned according to the principle of short transit distances with high population density, mixed functionality and short distances between living quarters and principal areas of activity, with significant reciprocal effects on transit distances, traffic volume – and hence energy consumption as well. The establishment of Transit-Oriented Development (TOD) will show similar effects, since it focuses mainly on proximity of the facilities to be reached without individual motorization.

In the course of the project, the existing Master Plans for 2020 were analyzed and evaluated at the levels of both the Fengxian area and the Nanqiao urbanization. On this basis, the energy consumption levels inherent in these plans were determined. Alternative concept developments involve placing the existing plans within the framework of different spatial and functional scenarios, then optimizing energy consumption to reach savings potentials of up to 12% at the district level. Comparable results are expected at the city level.

Additional energy savings potentials are also demonstrated as achieved by proper building standards and up-to-date building technology – even in the face of increasing demands for room heating and floor space. These effects are featured in planning of a model residential quarter.

Regenerative energy sources are another important theme of this work. Since only part of the necessary energy consumption can be saved, alternatives to fossil energy fuels must be determined and developed with a

fig 3

view to a post-fossil fuel age, especially in the areas of mobility and building utilization. In Fengxian, this thematic complex is represented in rudimentary form only by three wind-driven power plants and requires further expansion.

Special features / difficulties

In the course of work with our Chinese counterparts, clear differences became evident between the German and Chinese views in some areas regarding planning concepts and processes. The notion of working with alternatives and scenarios – the daily bread of German planners – is completely new to the Chinese team. All-inclusive models and planning concepts for the entire city are still lacking and are not considered necessary at the present time. The reason for this may be that alternative plans take time that the current dynamics in China simply do not allow for: Fast decisions are needed if planning is not to be smothered by encroaching realities. On the other hand, a certain level of systematic planning and conception is of course required for long-term planning in particular, since it allows for correction of potential errors in the planning phase.

The Chinese planners have come to recognize the problems – and their consequences - that await their country down the road. The way solutions to these problems are tackled is still not up to snuff from a German point of view, however, the point being that the plans tend to remain at a generalized level instead of taking on clear and specific contours. This also reflects a know-how deficit in the relevant bureaucratic quarters.

Lessons learnt

The intention of the project is to transfer German knowledge to China within a framework of specific cooperation. The idea is to provide German skills and knowledge won through experience to the Chinese partners, facilitating realization of planning processes elsewhere without outside help.

The high-level dynamics at work in China's development process result in imbalances, problems are emerging into view down the line. Entire cities are being built in the environs of Shanghai without consideration of spatial relations – cities that will remain virtually empty after completion for

fig.4

a year or even longer. The nearly completed New Town Anting, as well as other new satellite cities based on imported architectural models, have therefore come to resemble ghost towns. The fact that the New Towns are apparently being constructed without concrete demand in toto, instead of in construction segments, renders planning corrections impossible. To alleviate this situation, building in phases and steps can be taught and learnt. If the plans appear to be ignoring the needs of the populace, it will then be possible to integrate corrections before an entire city has been built.

It is also becoming apparent that integrated job and residential area planning has been lacking. Future inhabitants of the new urban centres will therefore be forced to commute long distances to reach their workplaces. In other words, local urban planning based on short-distance transit concepts is still a long way off.

Perspectives and work steps for the coming project phase

In the longer term, the project will encompass continued work on various aspects of these problem areas.

- At the level of the city of Nanqiao, an energy-efficient scenario is being developed for the Master Plan 2020 based on the results of analysis of the existing plans. The focus is on networking of workplaces and residential units so as to reduce transit distances. The concept includes a strategic phased plan.
- Within the framework of a study, a model residential quarter is being developed in Nanqiao with a focus on energy-efficient architecture and technical building utilities. Regenerative energy sources are being integrated in both the building utilities and the mobility concepts. The ultimate goal is to build this model quarter with the help of the participating partners.
- In cooperation with the Chinese partners from the Shanghai Planning Institute and the Urban Planning Offices of Shanghai and Fengxian, the concrete case study will be utilized to derive general guidelines for upcoming planning tasks in the megacity.
- An initial "energy monitor" model is under development that will facilitate hour-by-hour calculation of total energy consumption. Energy consumption guidelines will also be formulated to facilitate comparisons with current energy consumption levels. The specific location of excessive energy consumption can thus be determined at any given time. In the final analysis, this approach will provide a basis for rational and feasible planning decisions and a heightened awareness of energy consumption within the populace in a sustainable megacity.

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Energy as a Key Element for the Sustainable Development of the City Region Gauteng, South Africa – EnerKey

Integrated energy and climate change concepts for a sustainable development of the megacity region Gauteng, South Africa

Ludger Eltrop

Energy as the ubiquitous necessary source of life and development is one of the essential infrastructure elements needed for the functioning of a city. Particularly in the developing world and transition countries energy is not always available in sufficient amounts or at the right time. Cities and particularly megacities rely to a large extent on the adequate supply of energy, often coming from peri-urban or outside areas. More importantly cities play a very important role in organising energy efficiency and demand side management measures. An integrated approach evaluating the interaction of all components of the energy system is needed to enable the process of an overall sustainable development.

Integrated approach as rational and objective

Against this background the EnerKey-Project intends to contribute to a more sustainable transformation of the Gauteng urban area by developing an integrated program on an efficient, environmentally friendly and climate protecting system of energy supply and utilisation. This process shall be supported by research and by assisting the stakeholders in the implementation and monitoring of projects, measures and strategies. The development and application of tools and instruments for energy and environmental planning is an important component of this process. Providing training and education courses to staff and administration members of the municipalities shall enable capacity building and dissemination of the results and allow a continuous improvement process of the projects.

Gauteng – a good study region for energy and climate protection initiatives

The urban area of the city region of Gauteng, dominated by the three large municipalities of Johannesburg, Tshwane and Ekurhuleni, forms the target region of the project. In Gauteng more than ten million people live together, with more than 4 % population growth it is expected to range under the thirty largest urbanised areas worldwide in 2015.

Gauteng is a particular good study region for energy and climate change issues. The region exhibits typical features of a transition country, with fast economic growth, a wealthy upper class and a growing broad middle class on one side and strong poverty and perspectivelessness for a larger part of the people on the other side. One expression of this situation is an extreme high rate of criminality. This situation is aggravated by particular impacts on the environment like extensive land use, endless traffic flows and low air quality. Large and steeply increasing amounts of energy are consumed, but efficient energy use and e. g. renewables like solar warm water are not widely in place. As a consequence Gauteng may run short of energy, as it was the case in early 2007 where complete electricity blackouts were experienced causing severe impacts on business and private and public life.

fig 1: The EnerKey logo.

fig 2: Structured energy planning according to the ALEP (advanced local energy planning)-methodology. (acc. to Jank, et al., 2005: Energy efficient communities and advanced local energy planning)

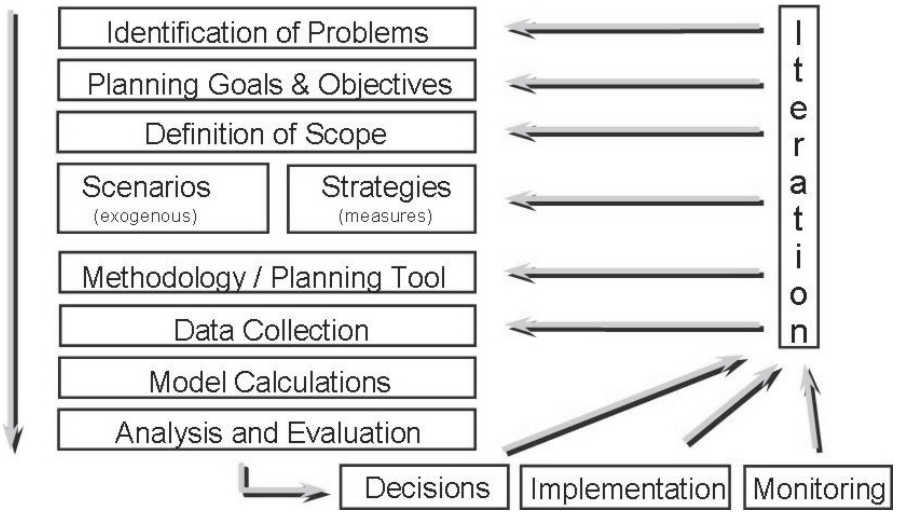

fig. 3: Low cost energy house with solar thermal collector on the roof on the campus of the Witwatersrand University in Joburg

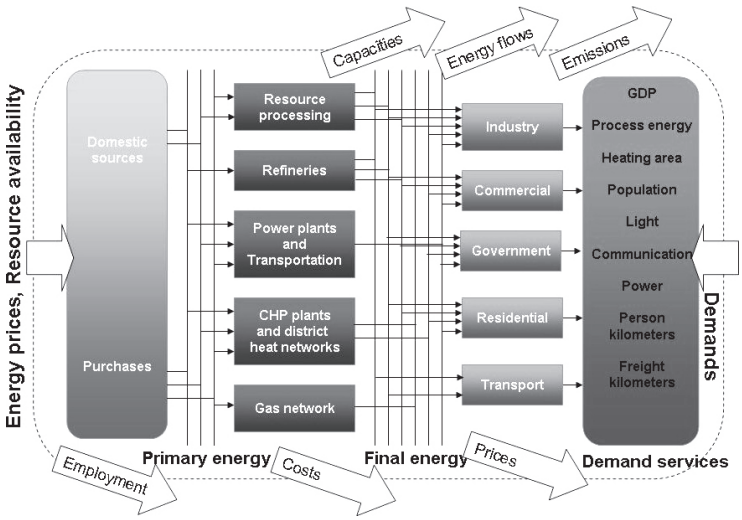

fig. 4: Structure and process scheme of the integrated energy system model TIMES. The model generator has been developed within the ETSAP framework of the international energy agency (IEA) and has been used to assess and analyse various communal energy systems in Europe.

This situation is more challenging as in 2010 the Soccer World Cup, which is of great importance to South Africa and Gauteng, is approaching quickly. As secure energy supply, public transport systems and a clean and healthy environment constitute major benefits and an added value for the image of the cities and the country as a whole, this event provides the unique chance to foster sustainable development in South Africa considerably.

Approaching the crucial energy questions in Gauteng

According to what has been identified as the crucial energy questions in the Gauteng region four topics have been addressed in research and field implementation work:

On the supply side of the energy system it was found that solar thermal heating units are not well distributed and even newly developed settlement sites for mid class buildings are not equipped. As there are numerous systems available on the market, a survey was initiated to investigate the success and failure factors for past and existing programs and on the market introduction and penetration of solar thermal hot water systems. The investigations showed that particularly the low electricity price inhibits a wider application of this technology. Also the missing availability of skilled workers and a maintenance infrastructure is detrimental to a further market penetration. Also the fact that no electronic controllers are in use to regulate the function of the geasers either on electricity or on the renewable solar energy leads to the conclusion that the potential of solar hot water systems is much higher than the present use.

At the demand side of the system an integrative energy efficiency project for schools was initiated. Two schools, the Gaersfontein Primary School in Tshwane and the Emmarentia Primary School in Joburg were technically evaluated for their potential of energetic retrofitting measures. The evaluation was done by the Fraunhofer Institute for Building Physics using the "Energy Concept Advisor", which was adjusted to South African conditions and was used to systematically screen the schools architectural and structural characteristics and possible weaknesses (IBP, 2007). Additionally, as a cross cutting and integrative issue, energy topics will be introduced into the school curriculum and the project results will be communicated to pupils, parents and the school staff. Thus awareness on energy and climate related issues shall be raised among the stakeholders. This will also be done by an international collaboration between the South African schools and a German school in the partner city Stuttgart.

In the traffic and mobility sector an investigation is ongoing looking at the type and use of fuel and the impact of driving cycles on air quality and greenhouse gas emissions. First results show that a change in the car fleet and the technical equipment would result in the highest changes of the quantity and quality of air pollutants. The installation of a functioning and high-standard public transport system, which is almost completely lacking at present, could however make a big difference. The started implementation of the "GauTrain", a commuter train crossing from Tshwane to Joburg, and the ongoing discussion on the installation of a rapid bus system (RBS), demonstrate the will of the city authorities to improve the transport and traffic system considerably.

The set-up of an integrated development plan for the energy system in Gauteng using the TIMES modelling instrument (fig. 4) is an important long-term project trying to identify the optimal combination of adequate technologies at minimal cost and minimal ecological impact. This question of how to secure a reliable, ecological, economic and socially feasible energy system is seen as a starting point for a larger perspective and initiative on an overall sustainable development of the megacity region of Gauteng.

Lessons learnt for the way ahead

The first investigations in Gauteng show the necessity to tackle the crucial energy and environmental questions in an integrated approach and a systematic way. Some initiatives have been undertaken so far, e. g. the City of Ekurhuleni has elaborated a 'State of energy report" (Ekurhuleni, 2006), where a similar comprehensive overview for the other cities is missing. Tshwane has issued an integrative environmental policy, (Tshwane, 2005) and Joburg the framework for an environment report (Joburg, 2003) and an integrated transport plan 2003/2008 (Joburg, 2004). However, as all three cities are growing together in the "midrand" area, a harmonisation of such initiatives and an incentive to act in all important areas of the energy system simultaneously is evident. The EnerKey projects endeavours to initiate this process and to come clear steps forward towards this goal.

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Place-based solutions for Sustainable Water Management in the Emerging Megacity of Guadalajara

Project Title: PlaceMeg - 'Place Making' for Sustainable Mega-Cities of Tomorrow: Promoting Place-based Solutions to Water Supply and Sanitation Problems in the Guadalajara Urban Area

Timothy Moss and Carsten Zehner

Background, Purpose and Objectives

The Greater Metropolitan Area of Guadalajara is subject to rapid and persistent urban growth, with certain areas experiencing the highest growth rates of entire Mexico. Given current trends, boosted by the latest phase of post-NAFTA industrialisation, Guadalajara is likely to become a mega-urban region within the next ten years. Current patterns of urban growth, characterised by developer-driven, low-density suburban development in stark contrast to marginalised communities in informal settlements, are increasing already high levels of consumption of natural resources and aggravating severe problems of socio-spatial segregation. These unsustainable pathways can be attributed to weak institutional capacities, inadequate legal frameworks and planning tools as well as a lack of political will to enforce existing regulations and to pursue a regionally coordinated approach to urban growth.

Against this backdrop, issues related to water have become the most critical limitations to development and therefore a source for constant contestation. Shortage of water due to over-exploitation of ground and surface water resources combined with excessive consumption and serious environmental pollution from untreated waste water and regular flooding have become the most challenging problems in the region. Especially in the urban periphery - the main arena for new growth - connection to infrastructure networks and public provision of water services is wholly inadequate, and in some neighbourhoods non-existent. Private forms of water services – both formal and informal – fill the gap left by public provision, often resulting in marginalised communities paying a high price for low quality water, thus re-enforcing social inequalities and poverty. Public water authorities are advocating and advancing various mega-projects, such as a large-scale dam combined with waste water treatment plants, but these schemes are proving highly contentious with local stakeholders.

fig 1: Guadalajara – an emerging megacity

In this problematic environment the PlaceMeg project generates knowledge, contexts for action and strategic guidance with which to promote more sustainable water supply, sanitation and rainwater systems against the backdrop of the rapid urbanisation of the urban region of Guadalajara. It uses the issue of water – of critical importance to the future development of the region – as a window through which to explore the structures, processes and dynamics of an emergent megacity region. The purpose of the project is to both develop and implement – together with stakeholders in the Guadalajara Urban Area – concepts, methodologies, strategies and technologies for promoting more context-sensitive, user-oriented and place-based solutions to water supply, wastewater disposal and rainwater management problems, in particular in marginalized urban settlements experiencing rapid and unorganised population growth, and from this to generate knowledge of value to other emergent mega-cities.

Research approach

The PlaceMeg project applies two new research concepts both to provide conceptual guidance to the research and as an innovative contribution to megacity research. The concept of 'technological recesses' has emerged from the field of science and technology studies, an established body of social science literature exploring the interrelationship of technologies and social practices. 'Technological recesses' refers to those territories which are not – or not adequately

– served by standardised utility services, such as municipal water supply and sanitation networks. The concept draws on a rich literature analysing the socio-technical complexities and dynamics of utility services in developed countries and applies this – critically – to developing country contexts, to reveal important differences. If the 'technological recesses' concept is useful for characterising the multiple problems of water and sanitation in marginalised communities, the 'place-making' concept is used to identify the potential for local stakeholders to contribute to improving this situation. 'Place-making' is a term used in urban studies to describe strategic or non-deliberative initiatives to raise the attractiveness of a locality for a particular purpose. It is applied in the project to reveal and pursue opportunities for context-sensitive, user-oriented and place-based solutions to water supply and wastewater disposal problems in the marginalized urban neighbourhoods of the region, building on and enhancing existing capacities to act.

Four research questions haven been elaborated to guide the research process of the PlaceMeg project:

1. How are processes of rapid urbanisation, socio-economic restructuring and institutional change affecting systems of provision and consumption of water in the Greater Metropolitan Area of Guadalajara?
2. How far and in what ways can place-based, user-oriented forms of collective action help improve water supply, sanitation and rainwater services in the region's marginalised communities?
3. How can potentially beneficial place-making processes in marginalised communities be promoted as part of a wider strategy to improve water supply, sanitation and rainwater services in the Greater Metropolitan Area of Guadalajara?
4. How can the findings and experiences be applied to place-making in other policy issues and to water supply, sanitation and rainwater services in other Mexican and Latin American cities?

Special challenges of collaboration

Interdisciplinary collaboration between experts of different backgrounds is a significant characteristic of the PlaceMeg project. Throughout the preparation phase an extensive network of select expertise from both Germany and Mexico has been built up capable of addressing the ambitious research and implementation activities of the main funding phase. The project partnership signed up to the common project methodology reflects different disciplines, different professions and different cultural backgrounds. It includes geographers, political scientists and planners specialising in urban and regional studies as well as engineers, ecologists and social scientists specialising in water management. Its members come from research institutes, private businesses, public authorities and NGOs. The active and influential involvement of Mexican organisations at all stages of the project is designed to ensure maximum possible sensitivity to the social and political environment of the region.

However, the highly politicized nature of the water sector in Guadalajara and the controversial public debates and conflicts between different interest groups and stakeholders in the region require special forms of integration sensitive to particular social, cultural and political contexts. In this regard, the PlaceMeg project provides a neutral environment for collaboration which is appreciated by the various stakeholders as a forum for stakeholder interaction and as a source of valuable new knowledge on the complex interrelationship between water management and urban development.

◀ fig 2: Workshop with local residents in La Huizachera

fig 3: Marginalised area on the river Atemajac ▼

Preparatory activities and future work programme

During the preparatory phase of the project, the conceptual and methodological framework has been elaborated and refined together with international and Mexican researchers. Following this, an information base on the main urban development trends and water management issues in the Guadalajara region (using quantative and qualitative empirical data) has been created with particular reference to water supply and sanitation in marginalised neighbourhoods. On this basis, criteria and indicators have been developed in order to select several types of "technological recesses" as test areas where further research has been conducted and processes of local self-organisation were initiated. Bi-national, inter-disciplinary project working groups developed new knowledge on urban development trends and water service provision, built up a network of local stakeholders, tested the research methodology and set up two pilot projects for the main funding phase. On this basis, a comprehensive work programme has been elaborated for the main project phase comprising in-depth research, practical applications, capacity building and transferability.

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Water Supply and Wastewater in Megacities of Tomorrow

(LiWa – Lima Water)

Christian D. León and Manfred Schütze

Overall Objective

The objective of the "LiWa" project consists in the development, planning and implementation of sustainable concepts to improve the water supply and sanitation situation in large conurbations. The Metropolitan area of Lima has been chosen for a case study since it is characterised by a number of features typical of emerging megacities, such as:

- Today Lima Metropolitana has about 8 million inhabitants (one third of the population of Peru). It has been estimated that in 2025, Lima will have a population in excess of 12 million.
- High population growth (annual growth rate of 2.1 %), in particular due to an influx of poorer people, putting an additional pressure on those parts of Lima lacking appropriate supplies of electricity, water and sanitation.
- Irregular water supply due to arid climate (only 9 mm annual mean precipitation) and irregular flow characteristics (significant seasonal rainfall variations in the Andean mountains, which serve as the main source of water supply).

In order to cope with these problems, water and sanitation management demands interdisciplinary expertise to shift from traditional sectoral water management aimed at the control of users' functions to integrated freshwater and waste water management considering the full water use cycle. Managing the different water fluxes in an appropriate way, considering the ecological, economic and social aspects, is of crucial importance, in particularly for fast growing megacities in arid regions such as Lima. Hence, the core elements of LiWa consist in:

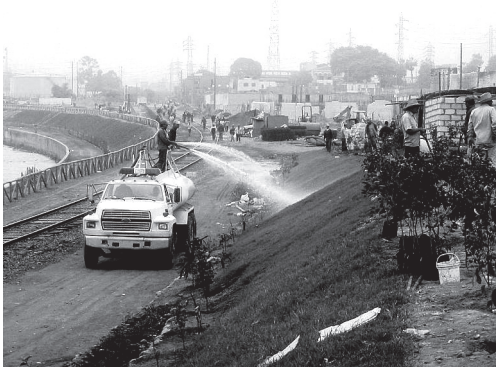
1) Implementation of model-based participative methods for designing scenarios and technical-organisational solutions in order to support the decision-making process.
2) Evaluation and design of integrated concepts (including technical, financial, organisational and participatory procedures) for sustainable water use and wastewater treatment under the conditions of water shortage and climate change.
3) Provision of improved capacity and sufficient capabilities for the local water company, technicians and stakeholders to manage the water services in an effective, efficient, financially viable and socially acceptable way.

Sustainable Water Management Concepts for Lima

The development of sustainable concepts in the LiWa project means taking into account technological, environmental and socio-economic aspects whilst ensuring appropriate public participation and the consideration of all stakeholders' interests. Public participation may increase public awareness and acceptance of the problems as well as the needed solutions (for example pricing of water).

fig 1: Decentralised wastewater treatment in a peri-urban settlement (Photograph: J. Alex)

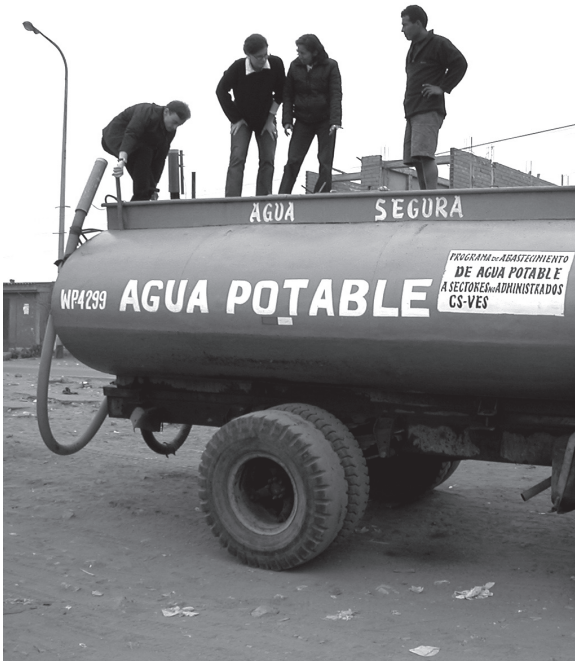
fig 2: Irrigation of green areas by lorries using drinking water. Image source: Ministerio de Vivienda, Construcción y Saneamiento, Peru



Secondly, participation may lead to better decisions as it enriches the decision-making process with relevant viewpoints, interests and information and is instrumental in a learning process. Thirdly, participation may increase the accountability of decision making, as participants get an inside view in the decision-making process and they become co-responsible for the decisions that are made. Modelling techniques will support decision making processes whilst allowing for a better understanding of the complex interrelationships within the system, the analysis of its sensitive parts, the development of appropriate strategies to manage the system and a prediction of the system's future development. LiWa considers the complex interrelationships between the different technical, social, financial and institutional components of the system constituting the metropolitan region as crucial for its analysis. Hence, the development, implementation and validation of technological and organisational concepts integrates aspects of costs, tariffs and financing options within the prevailing social framework as well as the implementation of the solutions derived in close cooperation with the local water authorities. Methodologies and modelling tools developed in this project will result, inter alia, in a manual document which compiles the project experiences and may well serve as a base for capacity building and as a strategic guide to the transfer of the results of LiWa also to other megacities in other parts of the world.

Expectations for the main phase

Despite the fact that significant efforts have already been made by the local authorities and the water company – including, but not limited to, the treatment of water used for irrigation plus a number of other initiatives (e.g. greywater reuse, ecotoilets) with strong NGO involvement – the water supply and sanitation situation in Lima will become serious unless careful plans are developed and appropriate measures are taken with respect to the rapid developments of urban growth. Pilot projects in various parts of the city, developed and adapted to megacity conditions in close cooperation with industrial partners and with support of the local water company and participation of the population, will allow the implementation of sustainable concepts taking into account the local requirements. Government plans, such as the recently launched programme "Water for All" (Agua para Todos), will assist in implementing the developed solutions.



◀ fig 3: Most parts of Lima are connected to the public water distribution network. Some parts are served by water lorries (Photograph: U. Jumar)

◀ fig 4: River Rimac: Lima's main source of water supply (Photograph: U. Jumar)

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Governing Emerging Megacities: Water, Health and Housing

Towards Quality of Life in Pune/ India and Pearl River Delta/ China

Thomas Krafft, Frauke Kraas, Carsten Butsch, Gerrit Peters, Alexandra Ziemann in collab. with Erach Bharucha and Xue Desheng

Urbanization viewed as „one of the most powerful, irreversible and visible forces on Earth […] is associated with both social phenomena - ranging from aspects of population distribution to diffusion of urban lifestyles – and the physical transformation of landscapes" (Sánchez-Rodríguez 2005). Therefore urban governments could and will have a far-reaching influence on the ecological footprint of their cities by shaping sustainable policies for water consumption and management, for energy use, housing, land use planning and for their citizen's health.

The Pearl-Pune-Project with Guangzhou (China) and Pune (India) as partner cities aims at identifying, developing, assessing and implementing applied solutions for sustainable urban management as an essential precondition for enhancing the quality of life in Chinese and Indian Emerging Megacities.

Focussing on three crucial sectors of urban development – housing/energy sufficiency, water/open spaces and health – all project activities are strongly interlinked and related to the overarching leitmotif of urban governance with special emphasis on accountability, responsiveness, public-private partnerships, and urban government-citizen interaction (fig 2). The scientific support for urban management innovations based on the respective strengths and potentials of the participating cities and the development of human resources at all levels are key components of the joint project. Thus, the project combines both research and scientific collaboration with elements of development cooperation The close and continuous collaboration with two Emerging Megacities within one project will contribute to a better understanding of the impacts of the different political and societal approaches towards urban management.

A scientifically moderated trialogue has already commenced during the preparatory funding phase of the project (2005-2007) and led to a first joint conference with high-ranking participants in Frankfurt/Main, Germany in December 2006. The "International Dialogue on Governing Emerging Megacities: Challenges and Perspectives" organized by the German project partner InWEnt1 has underlined the need for such an international forum for local authorities, stakeholders and experts (fig 1). A series of trilateral and bilateral workshops held in 2006 and 2007 in China, India and Germany has also facilitated the development of new project related and/or long-term partnerships to provide opportunities to develop and test more flexible, participative and cooperative models of urban management.

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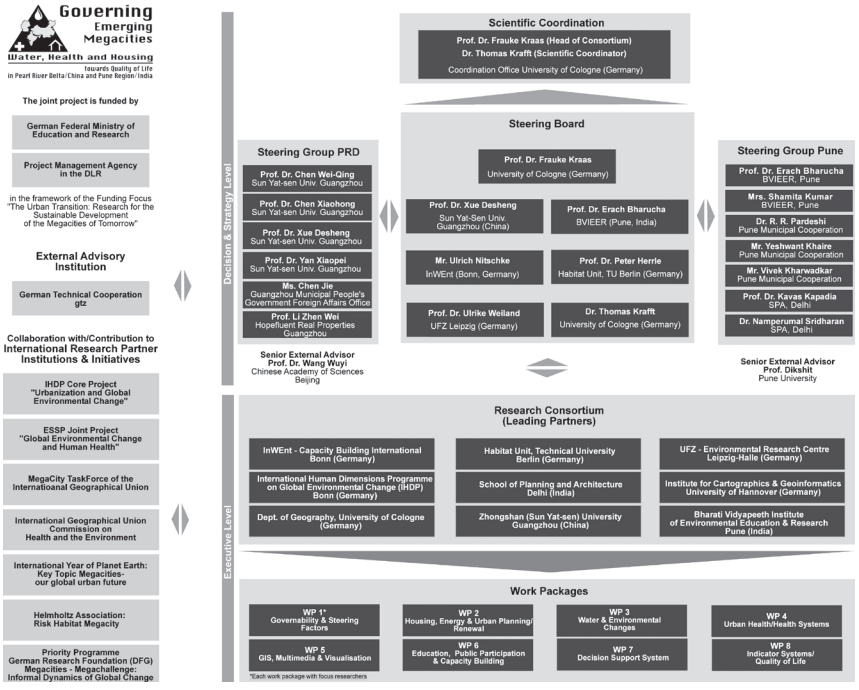
The Conference documentation is accessible on the internet under www.gc21.de/ibt/de/ilt/ibt/programme/megacities/media/megacities_conferencereport_2006.pdf

fig 1: the mayor's forum on governance and urban development as cental element of the trialogue initiated. Photo: InWent

fig 2 (Pearl-Pune-Project): structure of the research consortiuum



Research objectives and development cooperation objectives

Both Cities are part of larger urban agglomerations (Pearl River Delta and Mumbai-Pune-Urban-Corridor) constituting two of the world's "hot spots" of urbanization. Both urban regions are nationally and internationally important economic and financial centres with strong business links with Germany. The rapid urbanization process has brought about fundamental changes to the environment as well as to the social structure. Lack of adequate housing, social inequalities and fragmentation processes lead to significant intra-urban supply disparities (water and energy) as well as profound health inequalities. At the same time, Emerging Megacities offer chances and an enormous potential to direct the development towards ecological, economic and social sustainability.

The project's research activities aim at identifying the potentials of the participating cities and at developing adequate solutions. Identification and understanding of the different actor networks and their respective goals and strategies formed central part of the activities during the preparatory phase. The project's development cooperation activities consists inter alia of testing and

implementing decision support tools for the local key actors in order to regain or strengthen steering capabilities with a strong emphasis on human resources development.

For the "sectoral" components of the project the following visions were set as guidelines:

- housing/urban planning/energy sufficiency: reintegration of the different strains of development within the cities in order to overcome the urban fragmentation, provision of adequate housing and development of a strategy to secure future energy sufficiency,
- health: improve the access to and the quality of health care for all citizens by facilitating the development of a comprehensive urban health strategy,
- water/and green spaces: secure sustainable water supply for all citizens and ensure, concerted planning for green spaces and of the urban river systems.

Approach and first results

The activities are embedded in several international and national programmes and designed to contribute to their respective research strategies. The project has applied for endorsement from the IHDP Core Project on Urbanization & Global Environmental Change (UGEC) and is directly linked to the Urbanization Project of the CNC-IHDP (c.f. Yan, Xue & Yin 2006). In India the project is also linked to the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), in which governance issues are prominently addressed: "The thrust of the JNNURM is to ensure improvement in urban governance and service delivery so that ULBs [Urban Local Bodies] become financially sound and sustainable…" (MUD 2006: 13). Pune has already been selected for funding from this most important urban development programme within decades and the project contributes to this initiative.

In China where "the huge demand for housing combined with the lack of financial support for housing projects and land development by the state has brought private real estate developers in the game" (InWEnt 2007: 41-42) the close collaboration with private enterprises (Hopefluent Real Properties Company) has become an important and innovative part of the project. The role of Special Economic Zones for urban development and especially for the housing market are of specific interest for both the Chinese and Indian partners whereby the latter are interested to learn from the large experience of the Chinese.

Comprehensive pilot studies have been completed based on extensive joint field research activities as part of the established teaching/research partnerships of the University of Cologne and other partners of the German research consortium with the respective partner universities and academic institutions in Guangzhou and Beijing as well as in Pune and Delhi.

These pilot studies were focused on the

- urban fragmentation processes,
- understanding of the different strains of the dynamic development (gated communities, urban villages, government housing, slum rehabilitation, etc),
- health care and access to health (based on comprehensive household surveys),
- utilisation of emergency medical services,
- the perception of the quality of life,
- identification of best practice in river beautification,
- the role of open and green spaces, and
- quality of the water supply.

Together with the Pune Municipal Corporation and the Bharati Vidyapeeth University a new GIS platform integrating so far dispersed data sets is currently being set up for Pune involving also training activities by German researchers for their Indian counterparts.

Distinctive features and lessons learned

The most distinctive features of this particular project are the trilateral approach with partners form the two largest and fastest growing urban systems in the world and its explicit focus on urban governance. The wide spectrum of stakeholders involved, also reflected by the composition of the audience of the Frankfurt conference, assures a broad participatory approach that is i.a. necessary for the legitimate negotiations of the distribution of scarce resources in the Emerging Megacities. The project has also established close links to the successful town twinning programmes. Frankfurt (partner city of Guangzhou) and Bremen (partner of Pune) have already proofed to be valuable partners, due to the long established relations and mutual trust. As the project develops further the German twin towns will offer excellent expertise and have already expressed their willingness to closely collaborate and thereby deepening and extend the existing partnerships. The project is also closely collaborating with the Indo-German Chamber of Commerce and respective partners in China.

The preliminary phase of the project proved that while there is less a lack of technical expertise with the project partners in China and India at the same time there is a real need to develop concepts and skills for successful urban management under the conditions of rapid growth, pressing social problems and increasing economic competition. The Pearl-Pune-Project intends to address this need during the main funding period by enhancing the joint research and training activities and by further developing and intensifying the broad trialogue with German, Chinese and Indian partners.

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Sustainable Urban Food and Nutriton: A Challenge for the Emerging Mega-City of Hyderabad

Christoph Dittrich, James Garrett and Natalia Smith, Juliana Helmerich and Vishnu Vardhan

Major Challenges for Hyderabad

During recent years, the emerging Indian mega-city of Hyderabad with its present population of about six million developed into one of India's leading new tech-one cities. The agglomeration, which is expected to grow to about 8 million inhabitants in 2010, is yielding its place to "Cyberabad" as a centre for information and communication technologies and hardware as well. Due to economic boom times, the city generates considerable opportunities, but also strong pressure for change accompanied by environmental degradation. The agglomeration grows much faster than its infrastructure, and its uncontrolled urban sprawl fosters high traffic volumes, ecological overload, unregulated and disparate property markets and such extremes of poverty and wealth living side by side that already provoke social unrest. As Hyderabad is characterised by segmentation and fragmentation, environmental pressure, food insecurity and health risks the issue of governance becomes critical, raising questions of legitimacy, social exclusion, access to resources and political power.

Objectives

The guiding working hypothesis of the project is that progress can actually be achieved by adjustments in rules and organisation of the urban society, economy, politics and administration (including its links to peri-urban and rural levels). Innovation in institutions and governance structures is one central objective of the project. Other major objectives are: (1) to implement an action plan for solving problems of food insecurity, malnutrition and environmental degradation as well as to lead to institutional innovations and governance reforms; (2) to institutionalise selected pilot projects at community level and to organise learning processes for their adoption.

Analytical Framework and Expected Results

The project focuses on four major challenges: poverty, food, nutrition and health security; environmental and resource degradation; application of locally generated knowledge; and institutional innovation and improved governance structures. These will be complemented by more process-oriented components such as communication and cooperation strategies emphasising the gender dimension, development of a knowledge-based action plan and a dissemination strategy (through policy learning workshops). The project design intends to apply mutually co-ordinated analytical frameworks and methodologies like the institutions of the sustainability framework, the livelihood system approach, concepts of participation and empowerment, nutrition and health analysis, approaches of knowledge management, co-operative science and urban governance.

Preparatory Case Studies on Food and Nutrition Security

National and international experts from India, Germany and the United States have been engaged in the two-year preparatory phase so as to design the present "qualification phase" together with the relevant stakeholders.

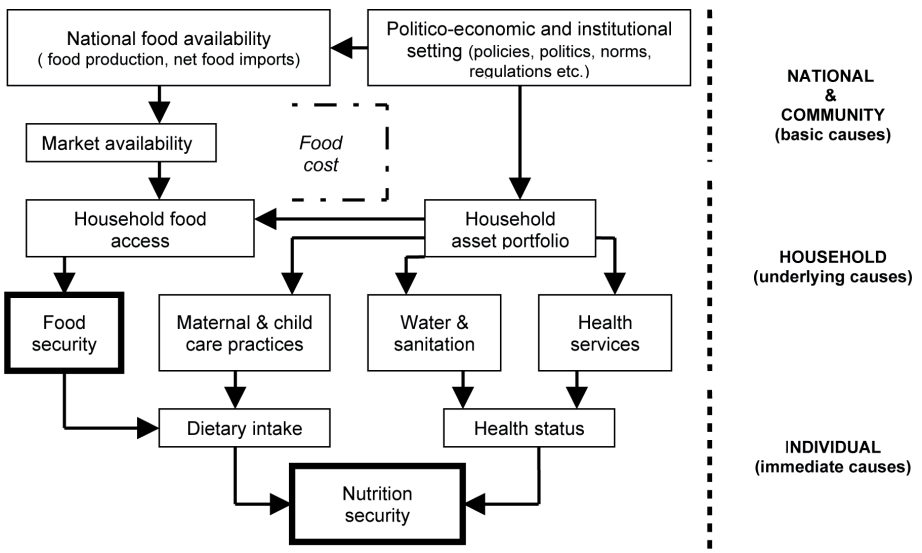

fig 1: Conceptual Framework for Food and Nutrition Security; Source: Adapted from Smith et al. (2007).

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fig 2: Musi River Slum, Hyderabad

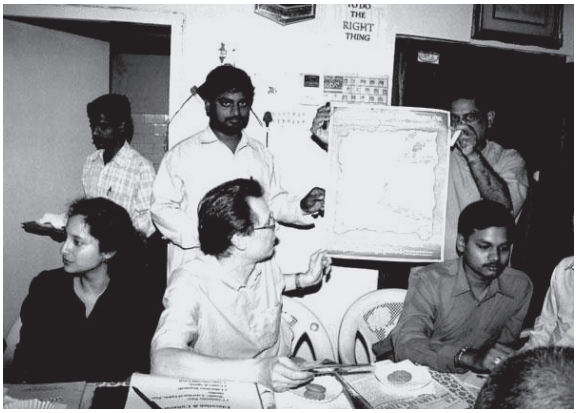

fig 3: Visit at the Standing Committee of Tanaka Residents' Welfare Associations, Tamaka

To elaborate the issues dealt in the project, results of the pilot projects dealing with specific problems of urban food and nutrition security will be presented. The conceptual framework used is illustrated in fig 1. It defines nutrition and food security as outcomes of complex and interrelated processes at various levels.

While poverty levels are declining in India, concerns over food and nutrition security are increasing. According to the findings of the pilot projects two antithetic and contradictory trends can be recognised in Hyderabad: The first trend concerns the underprivileged urban dwellers. Over half of the urban population is poor, and more than 1.2 million Hyderabadis live in marginal settlements. Community studies conducted in two low-income settlements using rapid appraisal techniques at the household level and focusing on households' asset portfolio, food and nutrition indicated that the large majority of these households are highly vulnerable to hunger and malnutrition. Deficient diets cause severe incidence of malnutrition particularly among women and children (Smith, Garrett & Vardhan 2007). Other factors include unhygienic conditions, high incidence of gastrointestinal infections and lack of access to appropriate public health services (Prasad & Ramachandraiah 2007). The studies also clearly evidenced the lack of state- and city-level involvement in food and nutrition issues. However, it is important to point out that programmes relating to food and nutrition do exist, but are often badly implemented and inefficiently runned (Smith, Garrett & Vardhan 2007). The pilot project focusing on women's consumer cooperatives indicated that one important first step in ensuring basic food security for the urban poor is making them independent from local retailers, where prices fluctuate a lot and food quality is not assured. The study points out that the members of consumer cooperatives are enabled to buy good quality staple food at a reasonable price below the market average (Helmerich et al. 2007). In the urban food marketing system street food vending plays an important role. Significant findings of another pilot project highlight both the role of about 15,000 street food vendors in providing cheap food to urban dwellers and the employment potential of this market segment. However, the study also raises concern over unhygienic conditions and improper handling of food (Wipper & Dittrich 2007).

The second major trend in the food system of Hyderabad concerns the rapidly changing food purchasing and consumption patterns particularly among the the newly emerging urban middle-classes (Lohr & Dittrich 2007). Due to economic growth and changing lifestyles the demand for greater diversity of food products has never been as high as it is at the present. Hyper- and supermarkets mushrooming all over the city are just one indicator of this. One survey carried out evidenced that changing purchasing habits are accompanied by new dietary patterns, manifesting themselves in the change of the daily dish in middle-class households. Increasing numbers of fast food restaurants, snack bars and ice-cream parlours make this trend visible. Interviews with nutritionists and medical doctors revealed that the city has one of the highest national rates of patients with diabetes and an alarming number of overweight children and obese people. The preparatory study concludes that this "secondary malnutrition" will be one of the biggest problems that Hyderabad's middle-classes will face in the years to come.

Conclusion and Recommendations for Future Action-Research

As our pilot projects on food and nutrition security showed, the knowledge on which to base action in Hyderabad is scarce. The community profiles focusing on food, nutrition and health are the first ones of the kind that we know of; and the figures on nutritional status are the first to be compiled in well over a decade. The studies on women's consumer cooperatives, street food vendors and changing food purchasing and consumption patterns are also the first studies produced on these important topics, and are essential if we are to find successful ways of facing the future. Thus, the key aim of this project component is to continue to generate information that the municipal government and other actors in Hyderabad can use as a basis for their strife to reduce food insecurity and malnutrition. This information will also provide insights into urban livelihoods and into the effectiveness of the government's assistance strategies on food and nutrition in urban areas. The long-term objectives of this research component are (1) to generate global knowledge for action that will improve food systems and reduce hunger and malnutrition in growing mega-cities; (2) to understand the contribution of the food system to the lifestyles and livelihood systems of different urban strata; (3) to promote discussion, uptake and implementation of research by policymakers, NGOs, and other actors; (4) to promote elements of a sustainable diet, lifestyle, and livelihood; and (5) to strengthen the food provisioning system and improve effectiveness and efficiency of actions intended to improve urban food and nutrition security. The research will be of significance for the future development of Hyderabad, that is research for Hyderabad, not on Hyderabad, with an emphasis on results and not just on diagnosis.

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Casablanca: Urban Agriculture as a Strategy for Sustainable Development in the Megacity of Tomorrow

Undine Giseke and Noa Ha

The research project examines Urban Agriculture as an integral component of the dynamic urban development in Casablanca-Region, Morocco. "Urban Agriculture" seems to be an inconsistency, but the central questions posed concern on the one hand a possible contribution of Urban Agriculture to food provision and the fight against poverty (in line with the intentions formulated at the 1996 Habitat II Conference), and on the other hand the importance of this form of agriculture – regarded as production not only of food but also of landscape - to build up an urban open space system and ecological cycles in a city-region.

The Urban Agriculture Concept - Agriculture is not just Agriculture

The concept of Urban Agriculture within this project is based on the assumption that the city region of tomorrow, specially the peri-urban will grow discontinuously and inhomogeneously and will produce specific spatial patterns so that rural and urban environments will collide, exist alongside one another and interact. Within this context the concept of Urban Agriculture signifies a module for a sustainable growth of the city, as it saves and integrates a system of open space based on productive urban landscape, a system which is evidently necessary for ecological, social, economic and cultural requirements of a megacity.

Above all the question posed itself, what is to be understood by Urban Agriculture, and what forms and practices are meant? Why is it advisable to secure space for Urban Agriculture within the framework of sustainable urban development? Agriculture within the urban context is often still viewed as "old fashioned" and as a condition to be overcome. So the first step was to reach a common understanding of Urban Agriculture, to generate a fundamental appreciation for its multidimensional nature and to look for synergies between agriculture and the city for an increased utilization of its multidimensional potentials. Urban agriculture means not only food-production, the perspective is to serve serveral purpuses such as contributing to the reduction of economic dependencies and social inequalities, minimizing ecological risks and supporting an ecological-balanced development, to care for cultural heritage and produce healthy and beautiful environment.

The high-dynamic Periurban of Casablanca: Entanglement of the Urban and Rural Sphere

Some 3.6 million inhabitants live in the Casablanca region with marked increases in the peri-urban areas, and for the years 2030 a population of 7-8 million persons is forecasted. The peri-urban area is affected by the strongest dynamic developments in the Casablanca region. Because of migration, the rate of population growth in the previous years has run at over 5 % and partly in double figs. The lack of intervention in the migration process has had repercussions in the form of informal settlement and the informal establishment of industry and manufacture. This has resulted in manifold social, ecological and economic problems. Insufficient legal settlement regulations, lack of transparency in decision-making structures, land speculation, scarcity of cheap and affordable living space coupled

fig 1: Abandoned urban agriculture plot within the urban perimeter ▼

fig 2: Casablancaise farmer family ▶

with years of droughts have led to the abandonment of agricultural space and contributed to a fragmented and unregulated urban development. The peri-urban urbanisation takes place on plots within the rural municipalities with almost no control and involves forms of consolidation by a further successive infrastructural development. Simultaneously intensive irrigation agriculture has spring up producing for export or the regional market and even first forms of rural tourism for the citizens are created.

In this dynamic process there is a mutual penetration of the rural and the urban sphere. In view of the impending social and spatial challenges, it is sensible to not consider agricultural and urban developments as separate entities. As a consequence the focus of the research project is an inquiry into mechanisms produced by the intersection of urban and rural speres.

Between Urban an Rural: Identifying Spatial Categories of Urban Agriculture

Beside forming an international, interdisciplinary and transdisciplinary consortium, the first phase of the project concerns itself above all with an exploration of the specific structural parameters of the Casablanca region and the categorisation of the various forms of Urban Agriculture, particularly in relation to their spatial classification. These categories simultaneously serve as markers for the identification of possible pilot projects. Based on these analyses, initial basis strategies will be developed to support existing structures of Urban Agriculture and for the implementation of new forms. Due to the specific developmental dynamic of rapidly-growing metropolitan regions and the difficulty in steering or influencing these developmental processes, the project aims to combine short-term implemental and long-term steering approaches to support Urban Agriculture as well as to join top-down and bottom-up-approaches. A particular innovation hereby is the combination of planning, technical, social, economic and ecological disciplines relating to the requirements and necessities of Urban Agriculture regarded as multidimensional.

As a consequence the work within the initial phase concentrated on identifying and developing pilot projects. These pilot projects were generated by the spatial categories and focus on a specific urban-rural relationship.

Future Prospects for a multidimensional Urban Agriculture

At the end of the first project-phase the process of urbanization including the perspective of agricultural transformation can be described qualitatively, however deeper investigations and a scientific attendance have to follow. So in the further process of research it has to be clarified if and how Urban Agriculture can serve the city and reverse. "The farmers as the gardeners of the megacities" - awareness-rising and empowerment are first constitutive steps for a vision like this. Many actors in the region of Casablanca, such as the administration, researchers and the civil society have recognized the value of Urban Agriculture for sustainable urban development and are highly interested in integrating this value in current development processes.

But further questions pose themselves by combining the perspectives of urban and agricultural development. Which perspectives can the specific forms of agriculture really gain in the dynamic progressing urbanisation? They are highly dependent on the expected growth and on the planning propositions, but even more on the regulation modes, the informal processes and real estate speculation. All these questions arise if Urban Agriculture is understood as an integrated component of urban development towards a green and sustainable Megacity of tomorrow.

Partners

- L'Institut National d'Aménagement et d'Urbanisme, Rabat (INAU)
- Université Hassan II -Ain Chock de Casablanca, Faculté des Sciences
- Institut Agronomique et Vétérinaire Hassan II (IAV), Rabat
- Inspection Régionale de l'Aménagement du Territoire et de l'Environnement, Casablanca
- Direction Provinciale de l'Agriculture de Casablanca, Casablanca
- Synergie Civique, Société Civile – Casablanca
- HafenCityUniversität HCU Hamburg
- Universität Hohenheim
- Fachvereinigung Betriebs- und Regenwassernutzung e.V. (fbr)
- Technische Universität Berlin: Department of Landscape Architecure and Spatial Planning, Department of Chemical Engineering, Department of Climatology, k u b u s

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www.megacity-casablanca.tu-berlin.de

◀ fig 3: Shepherd and sheeps in front of casablancaise housing area

IGNIS – Income Generation in Megacities of Tomorrow by Valorising Municipal Solid Wastes in a Sustainable Way

Andrea Schultheis and Dieter Steinbach

Cause and objectives

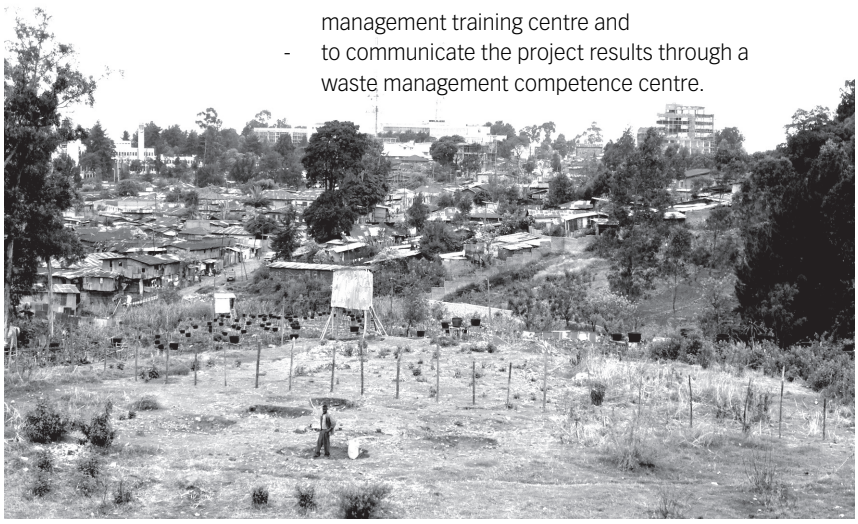
The project acronym „IGNIS" comes from the German project title „Income Generation in Megacities durch die nachhaltige Inwertsetzung von Siedlungsabfällen". The project idea is a holistic approach considering adapted technologies, environmental and climate protection, education and training, health and safety, cultural and social conditions, awareness raising as well as the political and economical framework conditions, exemplarily for the city of Addis Ababa, Ethiopia.

Addis Ababa was chosen for the project, as it is one of the fastest growing cities in Africa. According to estimations, Addis Ababa will have reached the limit of 10 million inhabitants by the year 2010-2015. For many cities in Africa, dealing with the environmental costs of rapid growth and urbanization represents a phenomenal challenge. This is particularly true in the area of solid waste management. While cities are generating an ever-increasing volume of waste, the effectiveness of their solid waste collection and disposal systems are declining.

This is where the action-oriented R&D project IGNIS starts up. The fundamental objective of IGNIS is income generation, especially for unemployed people and marginalized groups through waste collection, use and recycling. Thereby also sustainable environmental sound waste management will be established. This comprises

- to develop further technologies for waste treatment and recycling by scientific accompanying of pilot projects,
- to initiate the technical education in a waste management training centre and
- to communicate the project results through a waste management competence centre.

fig 1: Plot of land for the composting facility



We will introduce pilot projects, which will be analysed scientifically under different aspects e.g. efficiency, economical, ecological and social effects. If the pilot projects are evaluated as successful, the projects will be extended to Kebele, sub-city and city level, wherever it makes good sense and contributes to sustainable city development.

Methodology and results

Generally, the whole project is divided into a thematic and a global approach. The thematic approach comprises all aspects of waste management and is structured into vertical and horizontal „channels". The vertical „channels" represent the different waste technologies and the horizontal „channels" the overall aspects of waste management. In the context of the global approach the modules developed by the partners (= deliverables of the „channels") will be realised in pilot projects, training courses and transferability studies.

The tasks are arranged into several work-packages, mostly carried out in close cooperation by the project partners (WP „leader" and „contributors").

During the pre-phase we established a well working consortium of partners and we could also interest international organisations in our project. One of our main tasks was it to discuss and develop ideas about useful pilot projects. These pilot projects on income generation through waste are focused on unemployed people and marginalized groups. ENDA, our NGO partner has very good contacts to youth and women groups. So, three of our pilot project could be started already during the pre-phase. These pilots are still in a very initial phase and will be developed further during the main project.

The already operating and potential pilot projects presented in the following are dealing mostly with the collection and treatment of organic waste or faeces. This is due to the huge portion of these wastes. Here adapted collection and treatment will show the biggest effects on downstream waste treatment.

The Berhan organisation is a private company working in the field of waste collection, and employing former street kids, former bar ladies and other socially marginalized individuals. The pilot project is to collect the organic market wastes with handcarts and to introduce a composting facility to treat around 10-16 m³ organic waste per day from the nearby vegetable market. Addis Ababa city council provided a

plot of land directly in the city centre for the composting plant. For construction work of the facility, handcarts and other initial investment, we received financial contribution of 20,000 Euro from the Landesstiftung Baden-Württemberg. Construction and commissioning will be finished during the pre-phase, the scientific analyses comprising overall performance (e.g. material flows, handling times, costs, product quality etc.) and the socio-economic effects will start with beginning of the main phase.

Another potential pilot project is the scientific analyses of a biogas latrine (input faeces and organic waste) operated by a youth group in the outskirts of Addis Ababa. It was expected to use the produced biogas in the nearby cafeteria, also operated by the youth group; but it is not working well. The digestion sludge, that is not hygienic, is actually used for soil conditioning and growing vegetables. In general, such combination of latrine and cafeterias could be a really promising perspective for income generation by waste/faeces treatment at many locations in and outside of Addis Ababa. This topic is of great interest, since in many African cities for a high percentage of residents pit latrines are the only sanitation facilities available. Establishing biogas latrines can reduce to a high degree the environmental pollution and health risks originating from pit latrines.

However, before spreading this idea, the current problems have to be analysed and to be solved. For this, a scientific analyses program will be worked out considering material flows (efficiency and potential improvement), material quality (especially hygiene) ecological effects and workers health and safety aspects. In addition, mental and cultural reservations using the gas and sludge are also an important aspect to be analysed.

Characteristics, difficulties and lessons learnt

The IGNIS project is very practical oriented. We work with scientific organisations, politicians, NGOs and also with marginalized groups. It was a balancing act to discuss and meet the different expectations of this very heterogeneous group during the pre-phase and also when preparing the proposal for the next phase.

Although all Ethiopian and German partners are very experienced in international co-operation, inter-cultural communication was somewhat difficult during our first meetings. To avoid misunderstandings we came to a common understanding that we have to be more direct and better ask twice than not. We learnt that priority setting and the way of working is very different among the partners. This means we will have to work out very clearly tasks and work packages for the next phase in very close co-operation.

Outlook and further work stages in the next phase

In the next phase we will continue the pilot projects and start new ones. The Berhan project will be continued no matter whether we reach the next project phase. During the next phase, we will define the scientific methodologies to analyse our pilot projects. Then we will analyse and evaluate them and if suitable we will extend the pilots not only from very small to medium scale level, but also from Kebele to sub-city level. This will be a further step to a scientifically proved concept for mega cities.

In order to demonstrate the effects of the pilots and the effects of up-scaling we will develop a simulation program linking GIS tools, waste models, and MFA tools. We will use this instrument to simulate up-scaling of the projects from different city levels through Addis Ababa as a whole. The tool will be transferable, as it is our goal to provide a universally applicable tool for mega-cities.

During the main project phase we also plan to establish a waste management training centre for teaching all aspects of waste management and related business aspects, and also occupational health and safety. The training centre will be one module for long-term sustainable income generation.

◀ fig 2: Biogas latrine operated by the youth group

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Neue Bücher / Book Reviews

Architektur

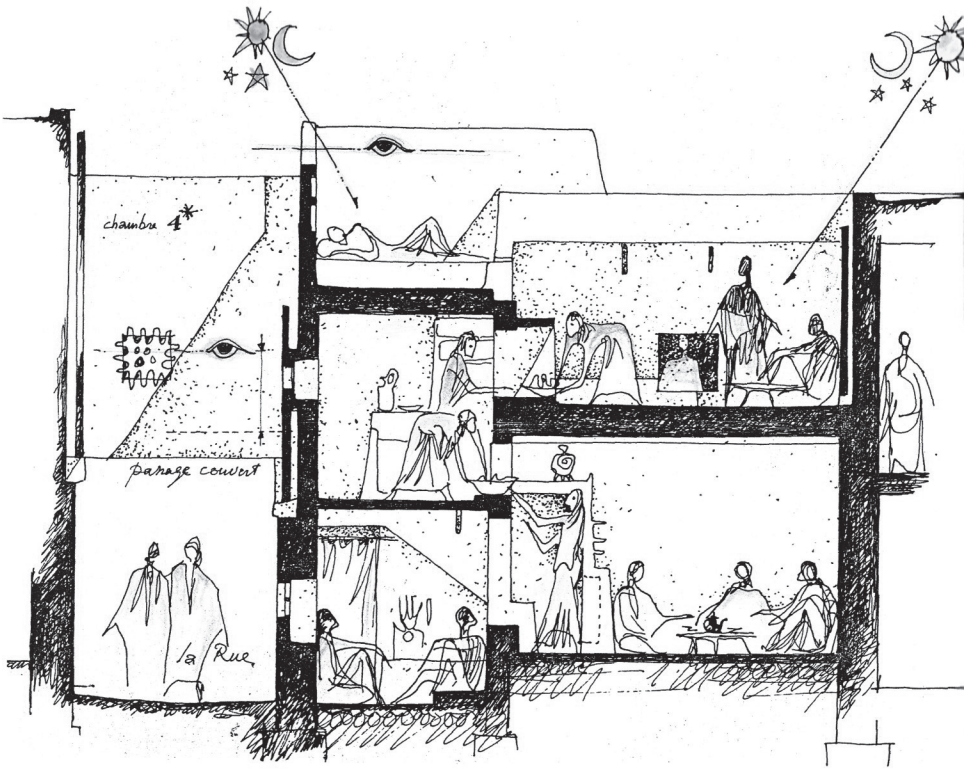
Rémi Baudroui, Philippe Potié (eds). André Ravéreau – L'Ateliér du Désert. 192 S., ISBN 2-86364-120-4, 2003. € 34,-. Editions Parenthèses, Marseille (ed.parentheses@wanadoo.fr).

André Ravéreau ist ein 1929 in Frankreich geborener Architekt, dessen Werk die Qualitäten von Le Cobusier und Hassan Fathi kombiniert. Noch während seinem – durch Krieg und deutsche Gefangenschaft unterbrochenen – Studium kam er 1949 das erste Mal nach Algerien und war von der Lehmarchitektur der Wüstenoase M'Zab tief beeindruckt. 10 Jahre später dorthin zurückgekehrt stellt er mit Entsetzen den Verfall dieser einmaligen Bau- und Sieldungstradition fest und überzeugt die französische Kolonialregierung, ihn mit der Anfertigung eines General-Entwicklungsplans für die Region zu beauftragen – der aber durch die algerische Unabhängigkeit und den Rückzug der Franzosen nicht zur Ausführung gelangt. Der revolutionär gesinnte Ravéreau lässt sich von der nationalen algerischen Regierung einstellen und erhält im Kommunikations- und Kultusministerium den Posten des ‚Architecte des Monuments Historiques' und wird 1970 der Koordinator des ‚Atelier du M'Zab 1970' – eine durch Ministerialbeschluß abgesicherte Studiengruppe. Diese inventarisiert zunächst die lokalen Kulturdenkmäler und starte im Anschluß ein groß angelegtes Sanierungsprogramm – was dann auch zur Aufnahme des M'Zab in die UNESCO Liste der Weltkulturerbes im Jahre 1982 führt. Die anfänglichen Erfolge des Ateliers können den kritischen städtebaulichen Folgen der rapide einsetzenden Urbanisierung der zentralen Stadt Ghardaia mittelfristig wenig entgegensetzen, bis das Atelier dann 1992 in den Rang einer Denkmalschutzbehörde erhoben wird. Eine neue Dynamik kulturbewusster Stadtentwicklung zeichnet sich seit 1996 ab und die beachtlichen Erfolge sind letztendlich das Ergebnis der nicht ermüdenden Hartnäckigkeit und Hingabe von André Ravereau.

Das Werk von Ravéreau als bauender Architekt beschränkt sich auf wenige Bauten, von denen immerhin die Gesundheitsstation von Mopti (Mali) 1992 mit dem Aga Khan Award ausgezeichnet wurde. Andere Projekte, insbesondere die Wiederaufbauprojekte nach den Erdbeben in Orleansville (heute Chleff 1954) und in Cephalonia (Griechenland 1954-56) setzen ein stärkeres Gewicht auf Kostenminimierung und kurze Bauzeiten als auf eine Architektur mit dem großen ‚A'.

Das Buch setzt sich aus Aufsätzen von vielen verschiedenen Autoren zusammen – die alle irgendwann in ihrem Leben mit Ravéreau verbunden waren. Das macht die Lektüre zu einem Puzzlespiel, aus dem sich der Leser bzw. die Leserin Werk und Lebenslauf von Ravereau Stück für Stück zusammenbasteln muß. Glücklicherweise ist auf den letzten Seiten ein Biografie abgedruckt – mit der man praktischerweise die Lektüre beginnen sollte. Nicht zuletzt auch wegen der schönen Fotos und Zeichnungen verdient der Band nachdrückliche Empfehlung.

Kosta Mathéy



Cor Wagenaar (ed.). The architecture of hospitals. 534 S. ISBN 90-5662-464-4. 2006. € 60,- NAI Publishers, Rotterdam, www.naipublishers.nl.

Sehr wenige Architekten interessieren sich für das Thema Krankenhausbau, obwohl z.B. in Holland 4%des gesamten Neubauvolumens auf diesen Sektor entfällt. Sicher, die Aufgabe ist ähnlich komplex wie ein Flughafen, Shopping Center oder Bahnhof – und hat mit den genannten Bauaufgaben mehr Gemeinsamkeiten, als man gemeinhin annehmen mag. So benötigen große Kliniken oft einen Hubschrauber-Landeplatz, und die Kommerzialisierung des Gesundheitswesens inkorporieren in neue Krankenhäuser große kommerzielle Verkaufsflächen ähnlich wie in einem Bahnhof oder Shopping Center.

Das vorliegende Buch macht von außen wie vom Titel her den Anschein eines Lehrbauches oder Compendiums für die Planung eines Krankenhauses. Dieser Eindruck trügt. Es handelt sich in der Hauptsache um eine Ideensammlung darüber, wie sich die heute unbefriedigenden Charakteristika konventioneller Krankenhäusern vermeiden lassen. Schon lange haben es die Krankenhausbetreiber gemerkt, dass sich die Anforderungen dieser Bauaufgabe wie schon über letzten Jahrhunderte und Jahrzehnte auch heutzutage noch weiterentwickeln – nur schneller. Im Rahmen eines achtjährigen Forschungsprojektes ist es dem Herausgeber gelungen, über siebzig Autoren zu spannenden Beiträgen zu animieren, die sich in dieser Veröffentlichung vereinen. Die Gliederung des Material alleine macht schon neugierig: der erste Abschnitt, den den vier Vorworten folgt, ist erwartungsgemäß dem historischen Wandel der Thematik gewidmet. Abschnitt 2 befasst sich mit dem großräumlichen Kontext, der städtebaulichen Einbindung, gefolgt von einer Serie von Aufsätzen zum Thema Klimatisierung in Krankenhäusern. Der folgende Abschnitt ist lediglich mit dem Namen ‚Berlage Institut' überschrieben, was nur Architektur-Insidern etwas sagen mag. Die so bezeichnete Einrichtung in Rotterdam bietet kostenintensive Vertiefungsstudien für Architekten, Städtebauer und Landschaftsplaner an, und stellt in diesem Beitrag eine interessante Sammlung alternativer Konzepte und Interpretationer einer Krankenhausplanung an, und zwar als Metapher für oder von: Flughafen, Kongresszentrum, Kaufhaus, Hotel, Wohnsiedlung, Internetcafé, dezentrales Stadtmobiliar, Ferienlager, Themenpark, Sauna, Kreuzfahrtschiff und Börse. Ein weiterer Abschnitt, mit ‚healing by architecture' überschrieben, thematisiert die psychologischen und medizinischen Auswirkungen der räumlichen Ausgestaltung einer solchen Bauaufgabe. Abschnitt 6 vertieft darauffolgend alternative Konzpte der stationären Gesundheitsversorgung bis hin zu statistischen Details wie Infektionsvariablen in Einzel- und Doppelzimmern. Den Abschluß bilden eine Serie von Aufsätzen, die den anderen Abschnitten offensichtlich nicht zugeordnet werden konnten

und deshalb hier als ‚country presentations' vorgestellt werden, aber keiner erkennbaren Auswahl oder Sozial-Analyse von Ländern folgen.

Das Buch ist spannend und sollte natürlich allen Krankenhausbauern ans Herz gelegt werden – auch wenn es nicht leicht sein dürfte, diese auch zur systematischen Lektüre zu überreden: einmal fehlen Hilfen, unter der Masse der Artikel solche auszuwählen, die für eine bestimmte Aufgabe relevanter sind als andere, und zum Zweiten folgt der Verlag seiner Tradition, durch gestalterischen Schnickschnack die Lesbarkeit des Textes aufs Äußerste zu minimieren: z.B. durch möglichst ungegliederte Textseiten, Farbdruck mit beispielsweise hellgrauem Text auf weißem Grund oder dunkelgrünem Text auf schwarzem Grund oder umgekehrt.

Kosta Mathéy

Stadtentwicklung

Tannerfeldt, G., and Ljung, P.: More Urban, Less Poor – an introduction to urban development and management, Earthscan, London 2006, 190 S., $19.99 (earthinfo@earthscan.co.uk).

Dieses von der schwedischen Entwicklungshilfeagentur SIDA finanzierte Buch ist eine vorzügliche Kurzfassung der städtischen Problematik und der Herausforderungen für die Entwicklungszusammenarbeit. Inzwischen macht sich ja langsam die Einsicht breit, dass die Urbaniseirung der Entwicklungsländer nicht mehr zu bremsen ist, und dass die Bedingungen der Städte, das zukünftige wirtschaftliche, kulturelle und soziale Leben prägen werden. Selbst das von den Millenium Devleopment Goals (MDGs) der Vereinten Nationen angesetzte Ziel einer Verbesserung der Lebensbedingungen von 100 Millionen Slumbewohnern scheint da klein bemessen zu sein. Doch auf dem Wege dahin, müssen ernsthafte Umweltschäden angegangen werden, wenn der gegenwärtige Stand der städtischen Produktivität (etwa 2/3 der nationalen Produktion kommt aus den Städten) nicht nur erhalten sondern weiter ausgebaut werden soll. Diese Dominanz der Städte für die Wirtschaften bedeutet inzwischen auch, dass selbst die Zukunft des ländlichen Raumes davon abhängen wird, dass die Städte besser gemanagt werden. Kultur, Ausbildung und Kommunikation sind ebenfalls sehr stadtbezogen, und von vitaler Bedeutung für die nationale Entwicklung, und auch hier haben die Städte eine zentrale Rolle.

Das Buch kommt zu einem Zeitpunkt, an dem nachgedacht wird, wie die Habitat II Agenda von 1996 wiederbelebt werden kann, und wie ein breiterer Konsens für angemessene Interventionen im Stadtsektor geschaffen werden können. Allen, die daran arbeiten wollen, ist dieses Buch empfohlen.

Florian Steinberg

Gesellschaft und Politik

Holger Thiel. Partizipation und Selbstbestimmung. Chancen zivilgesellschaftlicher Organisation indischer Straßenkinder. 170 S. ISBN 3-88939-829-4. 2006. € 15,-. IKO Verlag, Frankfurt am Main.

Der Autor nähert sich seinem Thema behutsam: zu Beginn stehen prinzipielle Betrachtungen zur Definition von Straßenkindern, über Partizipation und Zivilgesellschaft, bevor es zur eigentlichen Sache geht: die Überlebensstrategien von indischen Straßenkindern und die Wertung unterschiedlicher und realer Lösungsstrategien, wie der Autor sie in Hyderabad lokalisieren und analysieren konnte. Dem Autor gelang es, durch Straßenarbeit das Vertrauen bestimmter Kindergruppen zu gewinnen und deren Erfahrungen aus erster Hand aufzuzeichnen. Er berichtet von Ausbeutung, den gesundheitlichen Risiken, Bildungsdefiziten, Drogensucht, Schlepperdiensten und -opfern sowie dergleichen mehr. Dabei überrascht, wie nicht nur die offensichtliche Problematik, sondern auch die Vorteile des Lebens auf der Straße erkannt und bildhaft dargestellt werden – wie z.B. leichter sozialer Anschluß, viele Möglichkeiten der Zerstreuung, Erziehung zur Selbstständigkeit, teilweise sogar relativ hohe Einkünfte. Die Aussagen der Kinder lassen eine rationale Wahl des Lebens auf der Straße vermuten. Nicht verheimlicht werden natürlich auch die Nachteile, die im Übrigen allgemein bekannt sind und hier nicht wiederholt zu werden brauchen. Die Arbeit schließt mit der Auswertung verschiedener vor Ort praktizierter Therapieansätze, die von Heimunterbringung bis hin zu autonomen Wohn- und Arbeitsgemeinschaften reichen.

Gemessen an den überschaubaren Möglichkeiten zu fundiertem wissenschaftlichen Arbeiten, die eine reguläre Diplomarbeit mit zeitlich beschränkten Feldstudien bietet, finden wir hier eine spannende und fachlich fundierte Arbeit vor.

Kosta Mathéy

Worldwatch Institute (ed.): State of the World – Our Urban Future 2007, W.W. Norton & Co., New York/London 2007, 250 S.,$18.95 wwpub@woldwatch.org

Diese wichtige Veröffentlichung ergänzt ähnliche Arbeiten der Vereinten Nationen, nur dass hier weniger statistisches Material, und dafür mehr Fallbeispiele verarbeitet sind, und die Orientierung stärker auf Umweltschutz ist. Die Hauptthese dieses Buches ist, dass Städte eine Schlüsselfunktion haben werden bei der Bewältigung der weltweiten Armut und der Bremsung des Klimawandels. Angesichts des riesigen Ausmasses an armuts-bedingten Elendssiedlungen, und wegen des so enormen Wachstums an informellen Siedlungen hat das Risiko für die Wirtschaft, die öffentliche Gesundheit und das Weltklima durch nicht behandelte Abwässer und un-sanitär abgelagerten Abfall entstehenden Abgase gewaltig zugenommen. Das Buch apelliert an Politiker, die sich dem gewaltigen Investitionsbedarf für die Armen, vor allem in Ausbildung, Gesundheitswesen, Infrastruktur und Wohnungsversorgung, stellen sollen. Es wird konstatiert, dass die städtische Entwicklungshilfe zwischen 1970-2000 nur etwa 4% der gesamten Entwicklungshilfe ausgemacht hat, also erheblich zu niedrig gewesen ist. Trotz der allgemein bekannten Weltuntergangsstimmung will das Buch jedoch aufzeigen, dass es inzwischen schon einige gute Erfahrungen von innovativem städtischem Umweltmanagement gibt, und dass wir mit gewissem Optimismus in die Zukunft blicken können. Angeführt werden da die bekannten Beispiele der Abwasserversorgung in Karachi, Pakistan; der städtischen Landwirtschaft in Freetown, Sierra Leone; die Nutzung von Sonnenenergie in Rizhao, China; und des ausgedehnte Bussystem Transmillenio in Bogotá, Kolumbien. Die Schwerpunkte des Buches decken diverse Themen ab: Trinkwasser und Abwasser; städtische Landwirtschaft; umweltfreundlicher städtischer Transport; saubere Energie; Risikomanagement und Katastrophenschutz; Verbesserung der öffentlichen Gesundheit durch Slumsanierung; und die ökologische Wiederherstellung von ehemaligen Tagebergwerken. Wenn diese Fälle zwar nicht die Bandbreite aller heute bekannten Innovationen im Umweltbereich wiederspiegeln, so sind sie doch sehr relevant und illustrativ. Im Schlusskapitel wird der Kampf gegen die Armut und Ungerechtigkeit des umweltbedrohenden Städte thematisiert, und die Erfolge vor allem der NGOs im Kampf gegen die Armut hervorgehoben.

Florian Steinberg

Ökologie

Ockelford, J., und Reed. B.: Participatory planning for integrated rural water supply and sanitation programmes, Water, Engineering and Development Centre, Loughbororugh University 2006, 124 S. and CD Rom www.wedc.lboro.ac.uk/publications/

Dieses am Water, Engineering and Development Centre (WEDC) erstellte Manual ist gedacht als eine systematische Arbeitshilfe für Fachplaner des Wasser- und Abwassersektors und für Dorfgemeinschaften ländlicher Regionen. Das Buch ist sehr übersichtlich gegliedert in zwei Teile: Teil A - Vorbereitung der partizipativen Planung, und Teil B die eigentlichen Planungsschritte, die von der Sammlung von Informatio-

nen, Konsultationen mit Dorfbewohnern und Institutionen, und technischen Untersuchungen und Befragungen, zur Analyse und Einschätzung der Daten hin zur Planung der erforderlichen und finanzierbaren Massnahmen reichen. Das Material ist mit vielen Flussdiagrammen, und Arbeitshilfen zur Strukturierueng und Aufarbeitung von Daten und konkreten Projektaktivitäten ausgestattet. Um das Material noch anwendungsbezogener und praktisch verwertbar zu machen, gibt es in der beiliegenden CD Rom sämtliche Formulare und Arbeitshilfen im Microsoft Word-Format, damit alle, die mit diesem Manual arbeiten wollen, einen leichten Einstieg in die Vorbereitung ihrer Arbeitshilfen haben. Das ist sehr Nutzerfreundlich gemacht. Gleichfalls sind die vielen Diagrame auch sehr hilfreich, um Faziltatoren des partizipativen Prozesses zu orientieren. Die hier vorgestellten Instrumentarien könnten wohl auch im städtischen Sektor ähnlich eingesetzt werden, mit Ausnahme der auf natürliche Wasser-Ressourcen bezogenen Fragestellungen, da im städtischen Sektor dies selten relevant ist.

Nur schade, dass dieses Buechlein so trocken gestaltet ist, ohne jegliche Illustration oder Photographie, welche die Praxis partizipativer Planung dem Leser als real genutztes Instrumentarium, und nicht als theoretische Möglichkeit, vorstellen könnte.

Florian Steinberg

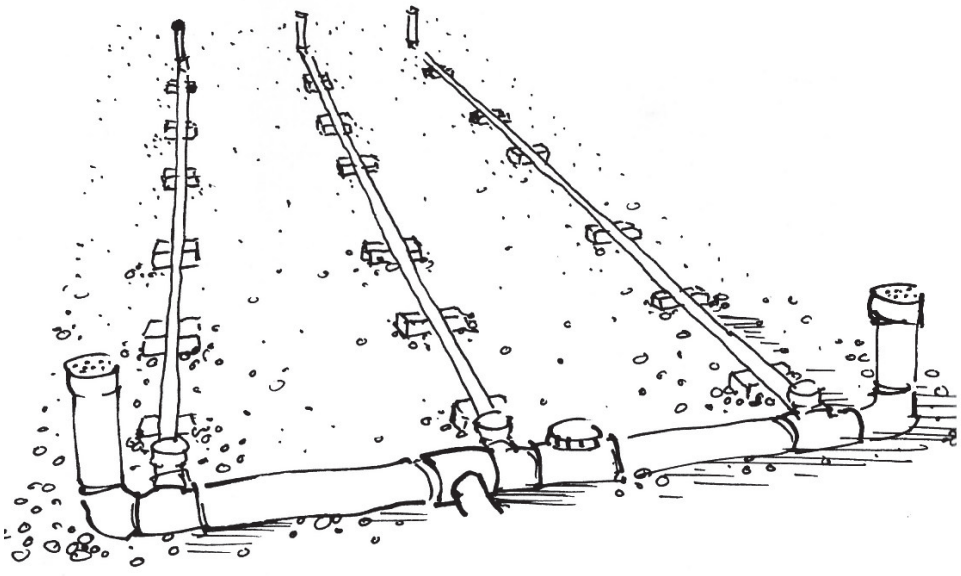
Infrastruktur

Walter Lack. Abwasserreinigung mit Pflanzen. 206 Seiten, ISBN 3-936896-24-0. 2006. € 29,-. Ökobuch Verlag Staufen. www.oekobuch.de

Seit rund 25 Jahren wächst das öffentliche Interesse an den sogenannten Pflanzenkläranlagen als nachhaltigere Alternative zu den konventionellen zentralen Abwasser-Klärsystemen. Die Nachfrage kommt oft genug aus der Gruppe der Nutzer und Laien, und seltener aus der Fachbranche. Diese erarbeiten sich das notwendige Grundwissen mit großem Eifer und sind bereit, ihr Wissen anschließend selbstlos weiterzugeben, was auch dem Autor dieser Publikation lobend anzurechnen ist. Jedes Detail wird genau in Wort und endlosen Farbfotos erklärt, wobei dem Leser leicht der Überblick darüber verloren gehen kann, was denn nun grundsätzlich notwendige Elemente eines solchen Klärsystems sind und was als optionales Extra anzusehen ist. So beginnt das Buch mit Komposttoiletten – deren Zusammenhang mit Pflanzenkläranlagen unerklärt bleibt, denn eigentlich sollten sie ja Kläranlagen ganz überflüssig machen. So leidet der Band sowohl im Text wie an der Aufmachung an einem Zuviel des Guten – dennoch sei die Lektüre insbesondere deswegen empfohlen, weil sie konkrete Erfahrungen und die Daten über die quantitative Bemessung solcher Anlagen preisgibt.

Dieter Frick; Theorie des Städtebaus. Zur baulich-räumlichen Organisation von Stadt; Ernst Wasmuth Verlag, Tübingen/ Berlin (ISBN 3 8030 0654 6 x) 216 S. 25,- €

Die Schlüsselfrage einer jeden Theorie des Städtebaus ist - in den Worten des Autors - die nach den Auswirkungen von „Interventionen in den Vorgang der sozialen, ökonomischen, ökologischen und baulich-räumlichen Entwicklung von Stadt und Region". Diese grundsätzliche Frage formulierte als erster wohl Ildefonso Cerdá in seinem 1867 erschienenen Planungsbericht für Barcelona. Wie die Mendozas in ihrem jüngst auf Deutsch erschienenen Band „ Barcelona - eine Stadt erfindet die Moderne" zeigen, waren damals gerade in dieser Stadt die Konstellationen für steuerbares Stadtwachstum besonders günstig. Mit Cerdá fand sich offenbar eine Persönlichkeit, die angemessene Konzepte



der Steuerung erfinden, entwickeln und so erfol - greich durchsetzen konnte, dass sie noch heute gültig sind und in den aktuellen Entscheidungen weiter fortwirken.

Der Mainstream der Städtebautheoretiker, von denen der Autor im Weiteren Christopher Alex - ander, Françoise Choay, David Lynch, Amos Ra - poport und andere heranzieht, beschränkt sich auf „erklärende Theorien" aus der Sicht unbeteil - igter Beobachter. Besonders eingehend wird der umfassende Ansatz Bill Hilliers dargestellt. In diesem wird von Entscheidern und reflexiv han - delnden Subjekten in einem Grade abstrahiert, dass er als „erklärende Theorie" auch von Insek - tenforschern auf die Analyse von Termitenhügel angewandt werden könnte.

Die Einseitigkeit dieses Ansatzes in Rechnung stellend skizziert Dieter Frick eine kompensator - ische „normative Theorie" des Städtebaus. Diese versteht er als Komplex von Zielvorstellungen und Handlungsfeldern im Feld einer baulich-räumlichen Prozesssteuerung, skizziert an Hand einiger Schlüsselkonzepte in abgeklärt knap - pen Formulierungen. Cerdá war es vergönnt, diese normative Seite zu exemplifizieren. Dieter Frick muss sich mit der Formulierung allgemein - er Forderungen begnügen. Immerhin legt er konzise Definitionen vor, die Praktiker in die Lage versetzen, Konzepte und Entscheidungen selbst abzuleiten. In ihrer Allgemeingültigkeit wären diese dann auch nicht an den europäischen Kon - text gebunden.

Jürgen Oestereich

Bonillo,J-L, Massu,Cl, Pinson,D.eds. (2006) La modernité critique, autour du CIAM 9 d´Aix-en-Provence - 1953; Editions Imbernon, Aix-en-Provence 2006, (ISBN 2 9516396-4-3) 301 S.; € 45.00

Zumindestens was die Architektur betrifft, verfügte die Bewegung der Internationalen Mod - erne über eine Art höchste Instanz, den oder die CIAM. Dem publizistischen und organisator - ischen Genie Siegfried Gideon war es gelun - gen, fast alle wichtigen Köpfe der Szene, vor allem Gropius und Le Corbusier einzubinden. Pierre Vago, bevor er selbst eingeladen wurde, beschrieb die Methode mit der Übersetzung der Abkürzung CIAM in „Collectif international de l´admiration mutuelle" (Kollektiv für Be - wunderung auf Gegenseitigkeit).

Wie immer, wenn man genauer hinschaut, ist alles viel komplizierter. CIAM, Acronym für „Congrès International de l´Architecture Mod - erne" wurde als Mehrzahl verstanden, als Folge von Zusammenkünften, die höchst unterschied - lich, locker und kontrovers abliefen. Wurde die ersten drei Kongresse (La Sarraz 1928, Frankfurt 1929, Brüssel 1930) von den Teilnehmern als von nord-, mittel- und osteuropäischer „funktion - aler Sachlichkeit" dominiert empfunden, wollten Le Corbusier und José Louis Sert ihnen „die Poesie des mediterranen Lichtes" entgegens - tellen. Aber ausgerechnet der poetischste aller Kongresse, der von 1933 dem auf dem Traum - schiff von Marseille nach Athen brachte DAS Manifest des Funktionalismus hervor. Diese „Charte d´Athène", eher eine Art Gedicht des Multitalentes Le Corbusier, von den Kongressteil - nehmern nie gegengelesen oder gar autorisiert, erschien dann zehn Jahre später im von den Na - zis besetzten Paris. Obschon nie als Rezept ge - dacht, wurde es von vielen Epigonen als autori - tativ angesehen. Nach dem Krieg immer wieder aufgekocht und aufgewärmt oft aus Billigzutaten zusammengerührt führte es zur Diskreditierung der gesamten Bewegung der Moderne.

Nach den zeitbedingt um technische und soziale Fragen des Wohnungsbaus kreisenden CIAM-Kongressen von Bridgewater (1947), Ber - gamo (1949) und Huddesdon (1951) plante das PR-Genie Le Corbusier den 9.-Kongress in Aix-en-Provence für die Einweihung seiner Unité d´Habitation im nahen Marseille als Apotheose des nachkrieglichen Wohnungsbaus zu nutzen. Da die Fertigstellung des Baus sich aber ver - schob, zog sich der Meister verschämt ganz zurück und selbst eine Party auf dem Dach der unfertigen Unité fand ohne ihn statt. In die so entstandene Leerstelle hinein kamen mit Michel Ecochard, George Candilis und anderen die Ent - wicklungsländer in das Blickfeld, vor allem aber mit Peter and Alison Smithson eine konkurri - erende, anglo-sächsiche Spielart des Betonbru - talismus.

Die Beiträge des vorliegenden Bandes be - handeln einerseits die Geschichte der CIAM bis 1953, andererseits aber auch die nunmehr sichtbar werdenden Entwicklungslinien in die Zukunft. Dabei werden nun auch außenstehe - nde Protagonisten der Moderne einbezogen wie Louis Kahn, Oscar Niemeyer, Kenzo Tange, Has - san Fathi, Christopher Alexander, Lucien Kroll und andere. Von hier ist es kein großer Sprung zu John Turner bis hin zu den Obdachlosenprob - leme auf der Welt und auch in Europa, auf die Abbé Pierre bereits 1954 hinzuweisen begann. In dieser Linie liegend werden auch die UN-Konferenzen Habitat I in Vancouver (1976) und Habitat II in Istanbul (1996) gesehen mit ihrer Thematisierung des Rechtes auf Wohnen und auf die Stadt.

Jürgen Oestereich

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Veranstaltungen / Forthcoming Events

May 22, 2007 in Paris, France

Young researchers conference on housing and habitat as objects of study. Organised (in french) by G.I.S. Socio-économie de l'habitat (Université Paris I Panthéon Sorbonne - INED - CNRS) and Research Center LADYSS CNRS. Contact: Noria Lenouar or Lucie Bonnet, G.I.S. Socio-économie de l'habitat, 13, rue du Four, 75006 Paris, France. Phone: (+33-1)43263788, Fax: (+33-1)43263384, <resohab@univ-paris1.fr> http://resohab.univ-paris1.fr

May 29 – 31, 2007 in Cairo, Egypt

International conference: "Towards low cost housing". Exchange of knowledge and experience in the field of low cost housing at the local and international levels. Organised by Housing and Building National Research Center (HBRC) in collaboration with the Ministry of Housing, Utilities and Urban Development. Contact: HBRC, 87 El-Tahrir St., Dokki-Cairo, Egypt. Phone: (+2-2)3356722/3356853, Fax: (+2-2) 3351564, <LCH_HBRC@hbrc.edu.eg> www.hbrc.edu.eg

June 12 – 15, 2007 in Munich, Germany

Velo-city 2007: "From Vision to Reality". Velo-city is a biannual international forum to discuss strategies to promote bicycle transport. Organised by Velo-city and the City and Traffic Planning Office, City of Munich. Venue: Gasteig Conference Centre. Contact: Velo-city 2007 Office, c/o SVK - Kaulen City and Traffic Planning Office, Deliusstraße 2, D-52064 Aachen, Germany. Phone: (+49-241)33444, Fax: (+49-241)33445, <info@velo-city2007.com> www.gasteig.de or www.velo-city2007.com

June 25 – 28, 2007 in Rotterdam, NL

ENHR international research conference on sustainable urban areas. Organised by ENHR and the Delft Centre for Sustainable Urban Areas / OTB Research Institute for Housing, Urban and Mobility Studies. Contact: Organizing committee ENHR Conference, OTB Research Institute, Jaffalaan 9, NL-2628 BX Delft, The Netherlands. Phone: (+31 -15)2783005/ 2787951, Fax: (+31-15)2784422, <info@enhr2007rotterdam.nl> www.enhr2007rotterdam.nl/home.htm

June 27 – 29, 2007 in Glasgow, Scotland, UK

International conference on whole life urban sustainability and its assessment: "Sustainable Urban Development: Meeting the Challenges of Whole Life Assessments". Organised by SUE-MoT, a consortium of Dundee, Glasgow Caledonian, Loughborough and St Andrews Universities. Contact: Marianne Halforty, Conference Administrator, Glasgow Caledonian University. Phone: (+44-141)2731366, <M.Halforty@gcal.ac.uk> www.sue-mot.org.uk/content/view/86/89/

August 5 – 10, 2007 in Berlin, Germany

International congress for environmental planning and management: "Planning the Urban Environment: Visions – Implementation – Results". Interdisciplinary Exchange of Planners and Planning Executives. Contact: Prof. Dr. Hartmut Kenneweg, Technical University of Berlin, Str. des 17. Juni 135, 10623 Berlin. Fax: (+49-30)31425674, <Kenneweg@ile.TU-Berlin.DE> <uwe.troeger@tu-berlin.de>, organizing office: <urbcongress@tu-berlin.de> www.urbenvironcongress.tu-berlin.de/

August 22 – 25, 2007 in Vancouver, Canada

Conference on urban justice and sustainability. Organised by the Research Committee 21 on Sociology of Urban and Regional Development of the International Sociological Association. Venue: The University of British Columbia (UBC), Vancouver, British Columbia, Canada Contact: Brian Elliott <Brian.Elliott@ubc.ca> www.shakti.uniurb.it/rc21/

August 30 – Sept. 1, 2007 in Seoul, Korea

APNHR Conference 2007: "Transformations in Housing, Urban Life, and Urban Policy". Organised by the Korea Chapter of the Asia-Pacific Network for Housing Research (APNHR), the Korean Housing Association (KHA) and the Korea National Housing Corporation (KNHC). Contact: Conference Secretariat, Seoul National University, 39-513, San 56-1 Shinlim-Dong, Kwanak-Gu, Seoul, Korea 151-742. Phone: (+82-2)8808869, Fax: (+82-2)8758483, <sec@apnhr2007.or.kr> www.apnhr2007.or.kr/

September 6 – 8, 2007 in London, UK

N-AERUS conference on grassroots-led urban development: achievements, potentials, limitations. Organised by Development Planning Unit (University College London) and the International Institute for Environment and Development (IIED). Call for papers; deadline for abstracts: June 1, 2007. Contact: Eleni Kyrou, DPU, 9 Endsleigh Gardens, London WC1H 0ED, UK, Phone: (+44-20)76791111, Fax: (+44-20)76791112, <e.kyrou@ucl.ac.uk> www.naerus.net/sat/workshops/2007/london_2007_en.htm

September 4 – 7, 2007 in Melbourne, Australia

XXXV IAHS world congress on housing science. Organised by International Association for Housing Science (IAHS). Contact: The Meeting Planners, 91 – 97 Islington Street, Collingwood, Victoria, Australia, 3066, Phone: (+61-3)94170888, Fax: (+61-3)94170899, <housing2007@meetingplanners.com.au> www.housing2007.org.au

September 10 – 23, 2007 in Berlin, Germany

Asia-Pacific weeks 2007 / Asien-Pazifik-Wochen zum Thema „Asien-Pazifik verändert die Welt".

Venue: Berliner Rathaus, 10871 Berlin, Phone: (+49-30)90262270, Fax: (+49-30)90262846, Contact: <APW@SKZL.Verwalt-Berlin.de>, www.berlin.de/apforum/apw/index.html

September 23 – 26, 2007 in Copenhagen, DK

IFHP world congress: "Futures of Cities: Impacts: Indicators: Implementations". Organised by the International Federation for Housing and Planning (IFHP). Contact: Futures of Cities, IFHP 2007 Copenhagen, Realdania, Nicolai Eigtveds Gade 28, 1402 Copenhagen K, Denmark, Phone: (+45-32)88 5241, Fax: (+45-32)885297 <info@ifhp2007copenhagen.dk> www.ifhp2007copenhagen.dk

October/November 2007 in Cottbus, Germany

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