

Interdisciplinary Dialogue on Urban Futures

What impact does migration have on the sustainable development of residential areas of rapidly growing cities?

Migration into cities is a dynamic reality that varies in form from city to city but exists on a global level. Despite the undeniable presence of migration into cities, differences remain between migrants' access to basic human needs and requirements of sustainable urban development. From a migrant's perspective there is limited access to adequate shelter and subsistence in a city. Therefore the migrants are vulnerable upon entering the city. When viewed from a city's perspective, migration into the city creates an increased demand on social and environmental services and resources.

The system knowledge necessary for approaching the issue of migrants and cities was addressed with two basic questions:

- What are the existing conditions for migrants in a city?
- What current problems in a city are created by migration?

The workshop group determined numerous migrant needs as compared to requirements of sustainable urban development. Upon entering a city, migrants are most immediately faced with finding a place to live and means of subsistence, but also require a social network, participation, and recognition. Basic requirements of a sustainable city faced with massive migration are proper sanitation, functional infrastructure, security, and economic growth. An example of conflict between migrants' needs and sustainable city requirements is seen throughout the developing world in large shantytowns. While these shantytowns offer housing, a social network, and even subsistence to migrants, they create large sanitation problems for the cities.

The experience of migrants is highly variable depending on the nature of the city they inhabit. In cities with largely formal economies it is challenging for migrants to find basic human needs and become integrated into the city. Conversely, cities with informal economies are easily accessed by migrants, yet have many social and technical problems. Cities with only informal economies do not have the resources to develop sustainably, while cities with only formal economies offer limited opportunity for the vulnerable. The solution for this problem must balance the individual needs of migrants and the common good of a city.

Once the system knowledge was outlined, the target knowledge was identified as:

- How can cities respond to the needs of migrants while also addressing the requirements of a sustainable city?

The philosophy behind research into migration in cities is the need for diversity among and balance between migrants' access and cities' development requirements. From further development of the system and target knowledge, a transformation question was developed:

- How can technical, political, and social solutions be optimized considering the diversity of lifestyles?

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Optimization of a complex solution is not a destination but a continuum. To achieve this, it is necessary to determine a solution which integrates migrants' individual needs and common goods with consideration for diversity.

The group identified a large number of stakeholders who should be involved in developing and implementing necessary changes, ranging from planners, engineers, and economists, to citizens, migrants, and social organizations. Inclusion of various disciplines will allow consideration of diversity and construction of a higher level of common good that also meets household level cultural problems. Interdisciplinary research and cooperation among stakeholders are also critical for developing and implementing effective management tools.

This approach to addressing migration into cities uphold the principles of sustainable urban futures by transforming perspectives to include diversity-friendly technical, social, and political tools and mechanisms. This approach is successful in part because it includes the three pillars of sustainability. It addresses the dynamics of formal and informal economies through considering livelihood and subsistence. It includes consideration of the health and diversity of the environment. And by addressing equity, security, and diversity, it upholds the social pillar.

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How can cities provide for the basic needs of their populations: What are the obligations/roles of public (city and local government), private and civil society actors?

There are many ways to define basic human needs. From the perspective of improving living conditions of poor urban populations, the workshop group decided that a rights-based approach, meaning that individuals have an implied right to having their basic needs met, was the most sensible. They focused on the basic needs defined by the United Nations: food, clean water, shelter, health, and education.²⁴

Kibera is a very large shanty town in Nairobi, Kenya. The workshop group to used Kibera as an example of the challenges a city faces in providing basic human needs to its inhabitants. In Kibera, 12% of a family's income is spent on housing, 84% of inhabitants live in one-room dwellings which they share with 4 to 6 others, and 58% of the population in Kibera rely on private water sources, 12% rely on public water, and the remainder rely on water vendors.²⁵ There are no public toilets and approximately 150 people use a single pit latrine. There is no electricity in Kibera.

Participants in the Basic Needs group:

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Photo courtesy of C. Lüthi, Sandec, Eawag

²⁴ United Nations (1966) International Covenant on Economic, Social and Cultural Rights. http://www.unhchr.ch/html/menu3/b/a_ceschr.htm

²⁵ World Bank (2006) Kenya- Inside Informality: poverty, jobs, housing and services in Nairobi's slums. World Bank publications, Report number 34367-KE.

The system knowledge pertaining to basic human needs is clear: despite attempts to improve circumstances, poor urban populations, like those in Kibera, still live in utterly inadequate conditions. Additionally, available technologies and projects intended to help improve health, education, and sanitation have limited impact, largely because of a lack of interdisciplinary action, effective implementation, and successful diffusion of the technology.

The principle research questions identified by this workshop group focused on target and transition knowledges:

- What are the key dynamics for upscaling and diffusion of successful technologies and process interventions?
- What are the barriers to success?
- What role can information and information management systems play in enhancing the impact of technologies related to meeting basic human needs?

Interdisciplinary action between experts is necessary, specific to the basic need addressed: this needs sociologists, cultural experts, economists, ecologists, and engineers, as well as local communities and authorities, NGOs, donors, and manufacturers. Cooperation and interdisciplinary investigation into specific problems of basic needs will help the research account for the complexity of the problem and ultimately have the greatest impact.

This approach to interdisciplinary research supports sustainable development in many fundamental ways. It addresses basic needs of the poor, reduces negative impacts on the environment, improves the urban poor's access to livelihood resources, and contributes to knowledge about the successful diffusion of new technologies, intervention processes, and information management to improve the livelihoods of the urban poor. Naturally, implementation of such a research project will have positive effects on all three pillars of sustainable development: social, economic, and environmental.

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What form might a future utopian sustainable city take and how can we optimize the sustainable resource use of newly-born cities?

This workshop group began with the question “How do cities function? How should they function?” This discussion led to clear outlining of the system knowledge. Metabolically, cities function linearly with inputs including food and water, non-renewable energy, processed goods, and building materials and outputs: sewage, exhaust gases, household and factory wastes, and wanton disposal. This model of metabolism is unlike most natural ecosystems, which process their resources cyclically. This linearity of urban metabolism is also linked to interconnectedness among cities and across the planet. Food, processed goods, and energy are largely not produced for local consumption, but are imported and exported from place to place. Environmentally and economically these elements of a city are extremely relevant. Cities are not only places where resources are exchanged. They are homes, social centers, geographical landmarks, and cultural and business centers.

A utopian city has a cyclic metabolism, is self-reliant, and is not more expensive than other cities. It fits within a geo-cultural context and has minimal transportation needs with maximum social exchanges, to encourage a sense of community. Government in a utopian city would involve monitoring and feedback mechanisms that connect decision-makers and citizens and provide nearly instantaneous results from feedback.

If the target knowledge is how to guide a city towards a utopian model or to create a utopian plan for a newly-born city, implementing a cyclic metabolism is necessary. Important factors in transitioning towards a cyclic metabolism include eating seasonally and locally, maximizing renewable resource use and energy and transport efficiency, recycling waste materials, and maintaining cities as a home for flora and fauna.

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Linear Metabolism



Circular Metabolism



Transitioning or developing a social utopian plan is also linked to the physical layout of the city. One model of a utopian city is a polycentric city, with a central city surrounded by numerous peripheral satellite cities. Such a model has been widely studied and addresses the more complex social and cultural diversity issues. This design may also be conceived in such a way as to optimize population density while maximizing diversity, leading to an increase in social exchanges. High-speed transportation would connect the satellite cities to the central city. Meanwhile lower-speed transportation would connect the satellite cities to one another. Transportation of resources could also be designed in a similar fashion to human transportation.

A third important element of developing a utopian city is the government. While many options are possible, it should include mechanisms for direct feedback from the population and nearly instantaneous response from the government. There should also be monitoring mechanisms for resources, quality of life and the economy of the city, so that a clear picture of the overall state of the city is always available.

Traditional disciplines involved in city planning and development, i.e., politicians, planners, engineers, and architects, do not satisfy development requirements for a utopian city. In order to achieve sustainable development in utopian city planning, additional stakeholders, such as sociologists, economists, natural scientists, and most importantly city users, must be included.

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How can we protect landscape and manage land use change for the needs of people and environment in the face of strong drivers for urbanization?

Landscape management is an interesting aspect of sustainable urban development because it is relevant to all areas of the world and is not limited to developing nations. In Switzerland, as in many industrial nations, a clear distinction is made between city regions and remote rural regions, which determines landscape management for these regions. However, there is a large amount of land between completely urban and completely rural, referred to as open landscape. These areas are susceptible to development for many reasons: proximity to urban regions, mediocre beauty relative to remote regions, and suitability for agricultural, industrial, and infrastructure development. Should this landscape be free for development? These various factors contribute to a complex problem and an unclear process for definitive landscape management. How can unspectacular landscapes be protected from overbuilding?

Currently, so-called valuable areas are protected and so-called unvalued areas are more or less free for development. While this has saved precious landscapes in urban and remote regions, it has led to pressure to develop open landscapes which are not as easily categorized.

An alternative approach to reaching the target of sustainably developing open landscapes is to assess a value for every landscape and region. Assigning a landscape value helps create regional identity and gives greater protection to unspectacular landscapes. Placing a value on a landscape or region includes consideration of the potential capacity of the land, such as agricultural and infrastructure development, as well as user needs. From these values, a common agreement can be reached that optimizes the landscape’s potential.

The workshop group determined future research questions that attempt to define the methods for valuation of a landscape, or a regional identity. Key questions include how to define which characteristics contribute to value, and who determines the regional identity of a particular landscape.

As a complex problem requires, the research and application must involve interdisciplinary cooperation among scientists and experts. Additionally, people attached to the region should play an integral role in developing the value and regional identity. The workshop group emphasized the need for iterative communication between scientists and regional stakeholders for successful implementation of this strategy.

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