Sustainable Urban Transformation and the Green Urban Economy

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Abstract This chapter explores the connections between the concepts of sustainable urban transformation and the green urban economy, proposes a framework for understanding how these concepts 'fit' together, and makes some practical suggestions for local governments and for national and international policy.

Keywords Sustainable urban transformation • Green urban economy • Sustainable development • Green economy

1 Introduction

The concepts of sustainable urban transformation and the green urban economy have emerged as key themes on the international political and economic agenda in recognition of the increasingly important role of cities in global development (UNEP 2011). In fact, the twenty-first century has been called the 'urban century' (UN-Habitat 2008). The purpose of this chapter is to explore the relationship between sustainable urban transformation and the green urban economy. What do these concepts actually mean and how do they relate to each other? An initial observation is that the green urban economy and sustainable urban transformation are overlapping concepts. However, this chapter suggests that the green urban economy

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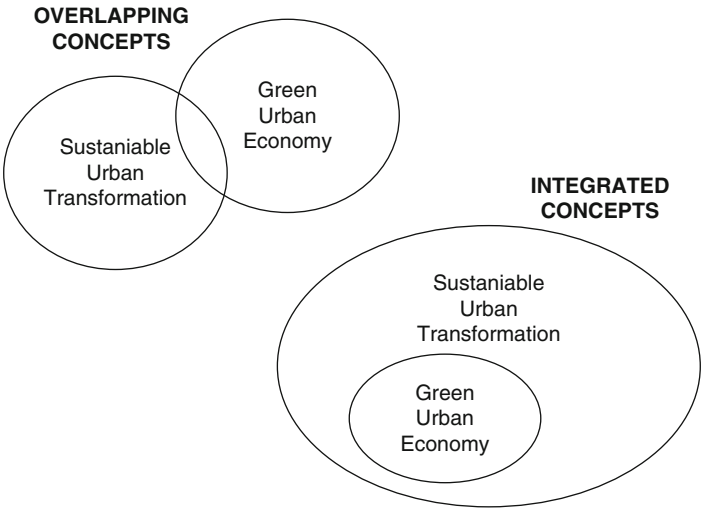

Fig. 1 This figure shows different ways to understand the relationship between sustainable urban transformation and the green urban economy – depicted as either overlapping concepts or integrated concepts

can be considered as an integrated part of the broader transformation of cities and urban areas towards sustainability (see Fig. 1). Furthermore, this chapter presents a basic framework for understanding sustainable urban transformation, which involves two interconnected dimensions – drivers of change and sustainable urban structures. This chapter concludes with reflections and 'food for thought' on advancing sustainable urban transformation and the green urban economy.

2 Background and Discussion

The strategic importance of cities in relation to sustainable development and the green economy has been increasingly recognized (UN-Habitat 2008; UNEP 2011). After two centuries of urbanization spreading around the world, the majority of the global population currently lives in urban areas, and urban centers will continue to grow. Cities play a dominant role in global consumption, production and pollution (Sukhdev 2009). The importance of cities is generally expected to increase due to the role of metropolitan areas as growth centers of the emerging globalizing service economy. For this reason, policies formulated by international bodies and national governments need to be implemented at the community and city level (Roseland 1997). The local level has therefore been identified as a key for sustainable development and there is a general agreement that effective and integrated solutions can only be found and efficiently implemented at the local level (UN-Habitat 2010; ICLEI 2011; Wheeler and Beatley 2010).

Cities are often associated with social and economic problems such as poverty and segregation, tensions between different groups, and economic vulnerability, as well as ecological problems related to pollution, resource use, congestion and spatial competition (Legner and Lilja 2010). They are also associated with economic and cultural wealth, and a dynamic development that can provide opportunities for technological and social innovation (Sukhdev 2009). The concentration of population, activities and resource use in cities bring potentials for important efficiency increases as well as for multi-purpose solutions combining different sustainability goals. New urban technology and infrastructure may also be replicable or useful in urban areas in different regions, as has historically been the case with district heating, wastewater treatment, and public transport systems (Wheeler and Beatley 2010). Larger cities also often have particular weight through their consumption, head office functions, or cultural influence. In particular, the populations in major cities can play an important role for developing new consumer cultures and attitudes.

Around the world cities have very different starting points and conditions for sustainable development or the green economy (Yang 2010; Tuts and Altinger 2011). Widespread poverty, over-population, unhealthy housing conditions, inadequate infrastructure, hygienic problems, poor water quality and uncontrolled pollution are examples of problems that still dominate cities in the developing world (UN-Habitat 2010). Many of these problems however have decreased in cities in industrialized countries in Europe and North America during the twentieth century. This has been primarily due to stable and more equally distributed economic growth, improved organization, town planning, and investment in infrastructure, construction and urban renewal. A similar development has taken place in parts of Latin America and Asia. In Europe today, urban sustainability problems primarily consist of segregation and growing social tensions, local traffic problems, continuous growth of solid waste generation, and the large and often inefficient consumption of energy and resources with linkages to climate change and global environmental problems.

Importantly, urban sustainability problems are not necessary characteristics of urbanization but can rather be considered as results of poor governance and planning (Rode and Burdett 2011). There are many possibilities to improve the situation. The design of cities plays a significant role in relation to the (positive and negative) impacts of urban development as well as how urban citizens interact and live together. Development opportunities for individual cities can also vary over time. Cities are constantly influenced by diverse processes of transformation – a changing structure of population, economy, culture, lifestyles and national policies that may lead to altered urban functions and new local needs and opportunities (UN-Habitat 2010). Interpreting these different development processes, responding to related demands, and identifying and realizing opportunities are constant challenges for urban governance and planning. Cities around the world are also influenced in different ways by large scale transformation processes, such as global economic development and downturns, but the vulnerability of and opportunities for specific cities may also differ due to internal factors, such as the local economic structure as well as external relations and geographic location.

Economic transformation provides opportunities that can be innovatively used for furthering sustainable development. After a long stagnation due to an often dramatic industrial restructuring, many major cities in Europe and North America have experienced renewed growth related to development of a profitable service economy, and related revitalization of inner city and harbor areas. Revitalization of older housing or former harbor and industrial areas can be used for creating attractive city areas, realizing the enormous potential for energy savings within cities, and developing distributed energy systems. The revitalization of buildings and districts also opens up opportunities for the development of public space and social inclusion. In recent years, the approach of economic development in the urban setting has gained attention, and cities are being highlighted as successful growth engines. Furthermore, the political leadership in many cities are now actively working with strategies to increase their attractiveness and competitiveness in the context of sustainable development and the green economy (ICLEI 2011).

Nevertheless, the increased awareness on global challenges and ambitions on sustainability have not translated into powerful initiatives that are decisively shifting urban development in a sustainable direction. A complex array of reasons are responsible for this situation, including: a lack of urgency for undertaking the 'radical' changes that are needed and therefore inadequate political, business or broader social support; fragmentation in research activities as well as in urban practice and planning; limited coordination between international, national and local levels; and a significant separation between science and practice. So, while there are experiences with sustainable city initiatives and urban transformation, there are few examples where transformative change has been adequately connected to sustainability goals to realize strategic potentials. A key contribution of the concept of sustainable urban transformation is to provide a structural focus on urban sustainability efforts.

3 Definitions and Frameworks

Sustainable development is an elusive concept with diverse definitions (Koglin 2008). But it is also a concept that has captured the attention and 'imagination' of the world. Straightforwardly, it means that current development should not harm the interests of future generations. It has been commonly depicted as an integration of economic, social and environmental spheres. Furthermore, institutional and time dimensions have also become more prominent in sustainability discussions, which highlight the importance of governance and democracy as well as processes and actions over time (Waas et al. 2011). The green economy can be understood as a new way of looking at the contribution or role of economic activities to sustainable development. A critical aspect of the green economy is to recognize and measure the value of ecosystems and natural resources as well as the economic benefits of a wider perspective on human, ecological and economic capital (UNEP 2011).

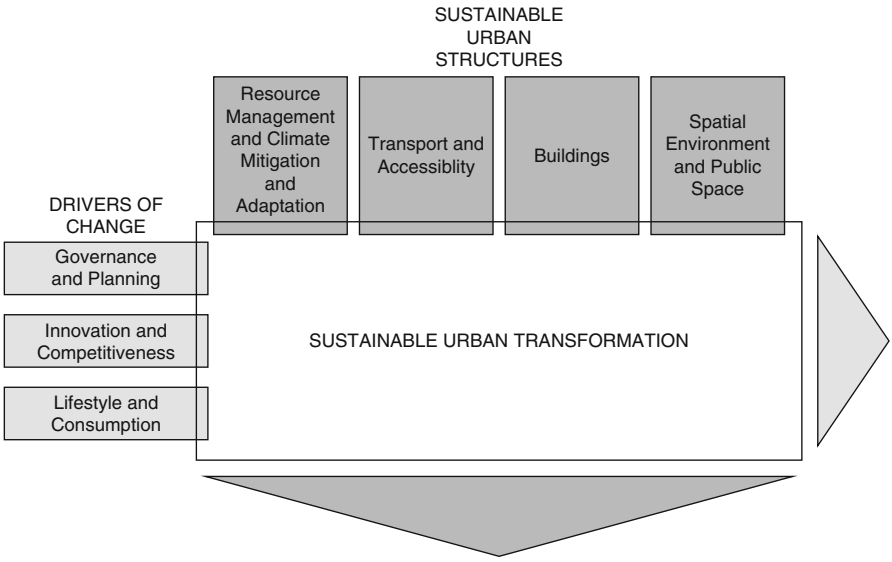

Fig. 2 This figure shows two dimensions of sustainable urban transformation – drivers of change and sustainable urban structures

The concept of sustainable urban transformation places the emphasis on understanding cities as a source of possibilities for sustainability, promoting active collaboration among diverse stakeholders, and integrating different perspectives and bodies of knowledge and expertise. A green urban economy can be defined as realizing "opportunities to enhance human well-being and local natural resources, while reducing future costs, ecological scarcities and environmental risks" (ICLEI 2011). As discussed in this chapter, the green urban economy and sustainable urban transformation are intimately connected and can be considered as integrated concepts. Furthermore, sustainable urban transformation can be defined in two dimensions – drivers of change and sustainable urban structures (see Fig. 2). There are two immediate points to make about this basic framework. First, it is the interactions between the different elements of the framework that is particularly important but this is difficult to represent in a diagram. Second, the green urban economy permeates through this framework.

It is important to differentiate between sustainable urban development and sustainable urban transformation. This is not simply a matter of semantics. Camagni (1998) provides a constructive definition of sustainable urban development as "a process of synergistic integration and co-evolution among great subsystems making up a city (economic, social, physical and environmental), which guarantees the local population a non-decreasing level of well-being in the long-term, without compromising the possibilities of development of surrounding areas and contributing by this towards reducing the harmful effects of development on the biosphere." The emerging concept of sustainable urban transformation places a stronger emphasis on structural transformation processes – broad, multi-dimensional and radical

change – that can effectively direct urban development towards sustainability. Sustainable urban transformation can therefore be considered an evolution of sustainable urban development.

3.1 Drivers of Change

The drivers of change (or processes) depicted within the framework for sustainable urban transformation encompass governance and planning, innovation and competitiveness, and lifestyle and consumption. Below are some short explanations of these key drivers and their relationships with each other.

3.1.1 Governance and Planning

For achieving ambitious targets for sustainable cities, there is a need to analyze and practice different strategies including effective strategic planning and integration of policy instruments. Such efforts should be interconnected across sectors and be adapted for specific urban and national policy conditions to ensure empowerment, engagement and collaboration of relevant stakeholders. Bugliarello (2010) identifies three key policy challenges: policies must be ambitious but politically and economically realistic in deciding on appropriate balances; policies must be developed quickly and with flexibility for rapidly changing urban conditions; and it is imperative to eliminate contradictory policies.

3.1.2 Innovation and Competitiveness

There are significant challenges facing cities and local municipalities with regard to reconciling economic growth and maintaining or restoring the local and global environment (Wheeler and Beatley 2010). Innovation and clean technology are considered as necessary for not only developing a green economy but also as keys to fostering urban competitiveness in a globalizing economy. Therefore sustainable urban economic development must encourage symbiotic relationships among industries, governments, universities and citizens to ensure sustainable management of human, ecological and economic capital, and turn density and urban systems into eco-efficiency (Simpson 2010).

3.1.3 Lifestyle and Consumption

Research related to socio-economic and cultural development in the urban setting is important and needs to be further developed to effectively support the planning and implementation of sustainable urban governance strategies. The negative implications of over-consumption are particularly evident in cities (Rode 2009). UN-Habitat

(2008) suggests that "harmony within cities hinges not only on prosperity and its attendant benefits, but on two pillars that make harmony possible: equity and sustainability". By defining an improved quality of life and creating visions of sustainable lifestyles it will be possible to outline how to design, support and govern more sustainable cities.

3.2 Sustainable Urban Structures

The sustainable urban structures highlighted within the framework for sustainable urban transformation include resource management and climate mitigation and adaptation, transport and accessibility, buildings, and spatial environment and public space. Below are some short explanations of these key structures and their relationships with each other.

3.2.1 Resource Management and Climate Mitigation and Adaptation

Sound resource management and design of urban structures that mitigate and adapt to climate change are major challenges for cities. Urban systems must be multifunctional and be able to integrate ecological, economic, recreational and aesthetic values (WWF 2010). Key areas include: shifting urban energy systems towards renewable sources; increasing energy and material efficiency; ensuring sustainable management of the quality and sufficiency of water supply; and transforming waste management into sustainable material and energy usage.

3.2.2 Transport and Accessibility

The transportation sector accounts for significant environmental and social impacts. Sustainable urban transport research and practice has focused on specific problems such as pollution, road safety and on various measures and their effects. However, in order to create sustainable mobility in the urban context, a more integrated approach is needed, which simultaneously addresses energy security, environmental and social impacts, accessibility issues, urban conditions, and equitable economic development (Sukhdev 2009).

3.2.3 Buildings

The challenge for the building and construction sector is to create affordable, attractive, comfortable and sustainable buildings, which help their occupants to mitigate contributions to climate change, utilize renewable energy, reduce excessive material consumption as well as incorporate principles of reuse, whilst adapting to changing

environmental realities (Rode et al. 2011). The efficiency of the proposed strategies also requires an understanding of human behavior and consumption in the context of the built environment.

3.2.4 Spatial Environment and Public Space

Urban development planning increasingly focuses upon the spatial environment in terms of the revitalization of districts and city centers, urban public spaces and the interconnection of fragmented urban landscapes, and to develop a continuous and welcoming web of humane livability within the urban experience (UN-Habitat 2008; Roseland 1997). This encompasses preserving existing 'green' spaces (such as parks and gardens) and 'blue' features (such as ponds and canals) and integrating new 'green' and 'blue' structures into cities in innovative ways that stimulate social interactions.

4 Reflections

Sustainable urban transformation can be thought of as a 'design' problem on a grand scale. In other words, intelligently designed cities can respond to the major environmental, social and economic challenges of the twenty-first century (Rode 2009). Ultimately, achieving these goals demands a structural transformation of urban 'systems'. As stated, the transformation of cities towards sustainability should be understood as being broad, multi-dimensional and radical change that equates to a significant shift in development paths. There is clearly an increasing emphasis on the role of cities in regards to sustainable development and the green economy. This chapter concludes with six main themes to further the discussion and action on sustainable urban transformation and the green urban economy – visioning, collaborating, sharing, learning, reconnecting and evaluating.

4.1 Visioning

Visions and ideas about the future, and how to change direction and move towards sustainability are vital for mobilizing individuals and organizations (Wheeler and Beatley 2010). Importantly, visions need to focus on creating a better world that is desirable and optimistic, and cities that are livable and exciting, rather than on the threat of climate change or economic disaster. In particular, Roseland (1997) argues that local communities must be deeply engaged in defining sustainability from their local perspective. Developing long-term visions and implementing short-term actions that are consistent with achieving such visions is therefore an underlying foundation for advancing sustainable urban transformation.

4.2 Collaborating

The processes of sustainable urban transformation and a green urban economy are to a large extent still divided and fragmented, power is unevenly distributed, and public engagement is more ad-hoc than strategic. There is a strong need for new innovative approaches and methods to traditional planning that focus on interaction and engagement between academia and practitioners in a fruitful way, and involve urban citizens and the business sphere. Achieving the transformative changes that are required in cities will depend on participation of local communities in planning and decision-making (Sukhdev 2009; Roseland 1997). Shifting from such rhetoric to reality will demand significant efforts by multiple stakeholders.

4.3 Sharing

While the context of sustainable urban transformation varies considerably from country to country, and city to city, many strategies are similar (Wheeler and Beatley 2010). It is therefore imperative that knowledge of and experiences with sustainability in cities is shared and utilized effectively to further develop visions and strategies, and most importantly, implementation and action. Additionally, showcases of sustainability in cities of different sizes, types, contexts and importance deserve attention. A comprehensive and dynamic database of all such cases is needed to show lessons from positive and negative experiences.

4.4 Learning

A necessary condition for sustainable urban transformation is to develop functional knowledge exchange, communication and learning processes around key aspects of ecological, social and economic sustainability. Knowledge resides in two main forms in cities – the first is hard data stored in documents or computers, while the second is soft data stored in professional and social networks that connect to a range of stakeholders in the community, not just within universities or local governments (Campbell 2009). Improving knowledge and learning around sustainable urban transformation therefore demands both individual learning processes and learning in social and organizational contexts.

4.5 Reconnecting

A major challenge underlying any move towards sustainable urban transformation is that urban life is totally disconnected with the environmental and socio-economic systems on which it depends (Camagni 1998; Legner and Lilja 2010). There is a

'desperate' need to reconnect people and communities with the design and management of sustainable urban structures, particularly through greater participation and engagement, but also through planning and designing cities in ways that connect people and their constructed 'environments' to natural ecosystems.

4.6 Evaluating

There remains a shortage of comprehensive and comparable evaluations on activities and initiatives that aim to promote sustainability in cities and urban areas. Evaluations are essential for the verification of results and impacts, and for learning about processes of change (Walton et al. 2005). Improved understanding and learning are vital for the modification and improvement of measures and, not least, for future decisions about how to realize sustainable urban transformation. While there is a great diversity of tools applicable to the assessment of sustainability in the urban context, there is a need for frameworks that can integrate these existing tools.

5 Conclusion

In conclusion, creating sustainable urban environments, integrating various goals and initiatives, and identifying and achieving synergy effects poses important challenges in terms of developing new approaches to city development. These must be strongly based on active collaboration between stakeholders, and the integration of different perspectives and bodies of knowledge and expertise (Rode and Burdett 2011). Methods for public participation, collaboration between practitioners and researchers, and the involvement of the business sphere are all needed as well as linking strategies for competitiveness with sustainability, and strengthening processes for more systematic learning. WWF (2010) concludes that "depending on how we develop and manage our urban infrastructures during the next three decades, they could become either a force for environmental destruction or a primary source of ecological rejuvenation". Cities therefore represent both a challenge and an opportunity.

References

Bugliarello G (2010) The future of sustainability: some urgent sociotechnological challenges. Sustainability 3:351–358

Camagni R (1998) Sustainable urban development: definition and reasons for a research programme. Int J Environ Pollut 10:6–26

Campbell T (2009) Learning cities: knowledge, capacity and competitiveness. Habitat Int 33:195–201

ICLEI (2011) Green urban economy. Available via: http://www.iclei.org/
Koglin T (2008) Sustainable development in general and urban context: literature review. Lund University, Lund
Legner M, Lilja S (2010) Living cities: an anthology in urban environmental history. FORMAS, Stockholm
Rode P (2009) City making as climate policy. In: Proceedings of the urban age conference, Istanbul, Turkey, 4–6 November 2009
Rode P, Burdett R (2011) Cities: investing in energy and resource efficiency. In: UNEP. Towards a green economy: pathways to sustainable development and poverty eradication. Available via: http://unep.org/greeneconomy/
Rode P, Burdett R, Goncalves J (2011) Buildings: investing in energy and resource efficiency. In: UNEP. Towards a green economy: pathways to sustainable development and poverty eradication. Available via: http://unep.org/greeneconomy/
Roseland M (1997) Dimensions of the eco-city. Cities 14:197–202
Simpson R (2010) A green economy for cities. Available via: http://www.stakeholderforum.org/sf/outreach/
Sukhdev P (2009) Green economy for an urban age. In: Proceedings of the urban age conference, Istanbul, Turkey, 4–6 November 2009
Tuts R Altinger L (2011) Towards a green economy: promoting sustainable urban development and green infrastructure investment. In: Proceedings of the UN conference for sustainable development, New York, 7–8 March 2011
UNEP (2011) Towards a green economy: pathways to sustainable development and poverty eradication. Available via: http://unep.org/greeneconomy/
UN-Habitat (2008) State of the world's cities 2008/2009: harmonious cities. Earthscan, London
UN-Habitat (2010) State of the world's cities 2008/2009: bridging the urban divide. Earthscan, London
Waas T, Huge J, Verbruggen A, Wright T (2011) Sustainable development: a bird's eye view. Sustainability 3:1637–1661
Walton JS, El-Haram M, Castillo NH, Horner RMW, Price ADF, Hardcastle C (2005) Integrated assessment of urban sustainability. Eng Sustain 158(2):57–65
Wheeler S, Beatley T (2010) Introduction. In: Wheeler S, Beatley T (eds) Sustainable urban development reader. Routledge, New York
WWF (2010) Reinventing the city: three prerequisites for green urban infrastructures. Available via: http://www.panda.org/
Yang Y (2010) Sustainable urban transformation: driving forces, indicators and processes. ETH, Zurich