

# UN HABITAT

## CITIES AND CLIMATE CHANGE INITIATIVE

### NEWSLETTER

March 2014

## Compact cities to address climate change

Compactness is an important attribute of the most efficient and sustainable cities. Not only can there be environmental advantages such as cutting transport distances and encouraging citizens to use non-motorised transport, but social and economic benefits are also possible if expansion is managed carefully.

The current global trend of urbanisation is well established. The urban population has increased nearly fivefold between 1950 and 2011 (United Nations, World Urbanization Prospects), and by 2030 demographers project that over 60 per cent of the global population will reside in cities. However, inevitable though the general trend appears to be, the form that urbanisation will take can be guided by effective planning. Cities are human constructs and we possess, now more than ever, the knowledge and technology required to shape urban life to better support human development. This period of rapid urbanisation, particularly in developing countries, provides a unique opportunity to control the urban structures that will be with us for many generations. And all signs point to one broad type of urban form that we should promote: the compact city.

We should embrace policies that promote the compact city for various reasons, including to reduce global greenhouse gas emissions. Cities emit a substantial proportion of the world's greenhouse gases (GHGs) that come about through anthropogenic

causes. Depending on definitions as to what size of human settlement constitutes a city and whether one uses figures based on consumption or production, estimates of this proportion can vary from 30 to 70 per cent (UN-Habitat, Global Report on Human Settlements 2011 – Cities and Climate Change). While there are a range of policies available to reduce cities' emissions, one fundamental approach involves promoting compact urban development. There is a general correlation between higher urban density and lower emission levels (see figure on next page). A number of reasons can be given for this.

Firstly, dense urban settlements usually provide opportunities for lower emission forms of transport. Urban density is one of the most important factors influencing the amount of energy used in private passenger transport, and therefore has a significant effect on GHG emissions. If all other variables are controlled, one study found that an increase in density of 1,000 housing units per square mile leads to a 1,200-mile reduction in vehicle miles per household per year (Brown et al, cited in UN-Habitat, Global Report on Human Settlements 2011). A similar study found that a doubling of the average neighbourhood density was associated with a 20-40 per cent decrease in vehicle use per household, leading to a corresponding decline in GHG emissions (Gottdiener and Budd 2005, cited in Global Report on Human Settlements 2011).

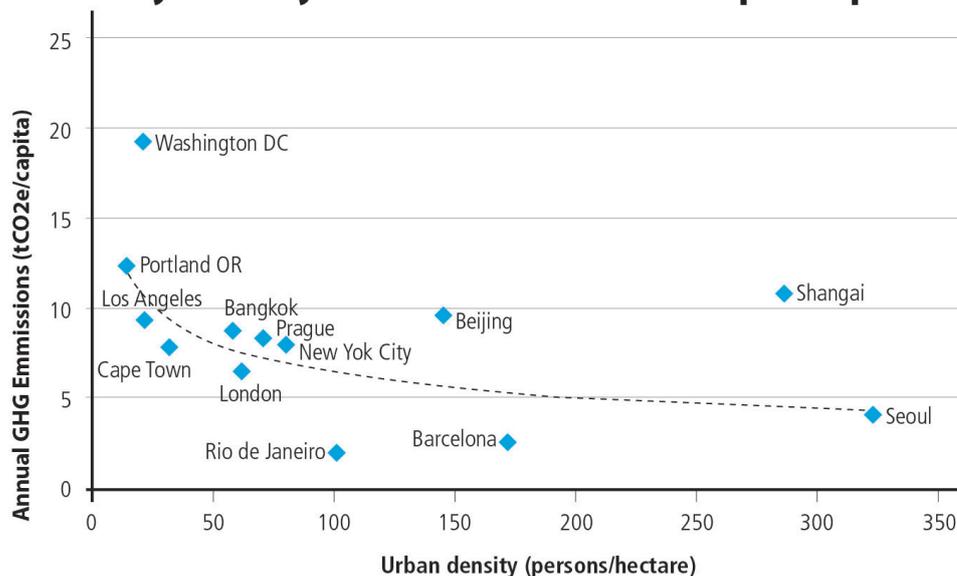


*Dr. Joan Clos, the Executive Director of UN-Habitat authored the present article. An expanded version appeared in the "Climate Action" 2013 edition.*

One reason that use of the private vehicle can decline with increased density is that higher densities make investment in urban transport infrastructure more viable. More sustainable modes of public transport such as bus rapid transit systems, light rail and non-motorised transport play an important role in reducing private vehicle dependency. These modes of transport generally become more feasible when they can service larger volumes of commuters over shorter distances. With such investment, then, the use of public transport can increase. Research by the Neptis Foundation analysing 16 cities showed that compact cities such as Vienna and Madrid had significantly higher public transport use than lower-density cities such as Atlanta and Houston (cited in World Bank, Cities and Climate Change, an Urgent Agenda, 2010).

## Compact cities to address climate change (continued)

### City density versus GHG Emissions per capita



Source: World Bank (*Cities and Climate Change: An Urban Agenda*)

Another reason why compact development reduces emissions relates to land use change. As cities grow horizontally they consume surrounding green fields; previously vegetated areas (one form of 'carbon sink') are cleared for built environments. Compact development, therefore, may reduce the GHG emissions associated with land-use change as compared with urban sprawl.

The compact city also yields other environmental benefits. Preparation of land for buildings may reduce permeable surfaces, fragment ecosystems and alter micro-climates. Again, if done carefully (for instance with attention to geographical and environmental features such as ecosystems), compact development may reduce those negative impacts.

Compact urban form not only has positive environmental implications but also may yield social and economic benefits. Much of the growth in cities in developing countries is occurring as peri-urban informal settlements. UN-Habitat's State of the World's Cities Report 2012/13: The Prosperity of Cities suggests two benefits for the urban poor from compact development. Firstly, the compact

city may enhance livelihoods for the urban poor through better access to economic opportunities and affordable mobility within the urban environment. Secondly, a compact development pattern may reduce social segregation through closer proximity of affordable housing options to places of work. Ensuring that a variety of housing types are within the reach of basic services and infrastructure further helps to ensure the urban poor are not marginalised. Additionally, urbanisation has shown a powerful and positive correlation with economic development.

Despite the considerable benefits that thus can be derived from the compact city, the general trend in urban development over the past century has been away from density towards urban sprawl. The average density of built-up areas in both developed and developing country cities is declining, and some of the largest decreases can be seen in developing countries. It is estimated that the total population of cities in developing countries will double between 2000 and 2030, but their built-up areas will increase threefold over the same period, from about 200,000 to 600,000 sq km (World Bank, cited in UN-Habitat's Global Report on Human Settlements 2011). The post-

World War II era of cheaper fossil fuels, and growing automobile ownership in developed countries, encouraged less dense patterns of urbanisation. Now with the urgency of climate change and higher fuel prices, a compact urban form is critical to bring together employment and housing opportunities and to reduce commuting distances and associated GHG emissions.

A compact urban form must be balanced with appropriate provision of public space, particularly an efficient street network and public green areas. Streets facilitate the exchange of goods and the movement of people. They serve as the backbone of infrastructure networks including transport, drainage and electricity. Carefully planned street networks can facilitate efficiencies in these systems. Public green space is a way to maintain the liveability of a compact city, providing respite within a dense urban environment. Cities can be greened while remaining compact. An example of effective greening comes from Chicago, where the city adopted a comprehensive plan titled 'Adding Green to Urban Design' in 2008; and in 2009 launched an 'Urban Forest Agenda'. The Plan and Agenda include actions to improve the design of important green infrastructure areas in the city such as rooftops, building facades, landscaping around buildings and in parking lots, sidewalks, parkways and streets. Chicago recently reported 7 million sq ft (650,000 sq metres) of green roofs finished or under construction, 120 green alleys installed, and 6,000 trees planted in urban heat island communities - all achieved without decreasing density.

'Transit oriented development' is one way to achieve high density along with other positive outcomes. Under this approach, planners may concentrate dense development at certain points: along public  
(continued on back page)

## Myanmar Climate Change Alliance begins activities

Due to its vulnerability to the impacts of climate change, coupled with a low state of preparedness and constraints on capacity, UN-Habitat and UNEP are supporting the government of Myanmar through the Ministry of Environmental Conservation and Forestry to strengthen the institutional and policy environment to address climate change.

The Myanmar Climate Change Alliance (MCCA) project, funded by the European Commission, will be jointly implemented by UN-Habitat and UNEP. This project aims to mainstream climate change into the national policy development and reform agenda. The project aims to strengthen the government's climate change response by sharing technical knowledge and best practises, while providing training and institutional support. It will promote evidence-based planning and policy making through pilot integration of climate change into development initiatives. Increasing general awareness and preparedness amongst government, civil society, academia and the private sector is another necessary first step that will contribute to sustained results.

The project will support the development of a National Climate Change Strategy and sector action plans. The national strategy will be an overarching document that will define objectives and outline priority actions.

In order to prepare the national strategy and action plans, support will be provided to a climate change technical working group, with participation from core line ministries. However, as climate change is a cross-cutting issue, line ministries and agencies in climate sensitive sectors will also be engaged through sectoral technical working groups.

An initial stakeholder consultative workshop was convened in December 2013 to define the

scope, scale, timeframe and involvement of stakeholders necessary to develop the national strategy. In-depth stakeholder consultations will take place throughout the project implementation to ensure that the national strategy and action plans are representative and cross-cutting. An MCCA implementation unit housed within Ministry of Environmental Conservation and Forestry will provide expert advice and technical and administrative support for implementation of project activities.

The national strategy will define the framework necessary to mainstream climate change into development planning. It will also assist to identify the measures needed to access current and future climate finance. The action plans will identify specific actions including climate proofing, adaptation and mitigation opportunities and provide an economic analysis of the options with the estimated costs and timeframe for implementation. Initial consultations with stakeholders identified some of these potential actions. For example the Ministry of Construction requested assistance to review national building codes to ensure they are 'climate proofed'. Another example is from Yangon where the City Development Committee responsible for planning the future development of the city of 6 million inhabitants requested advice and support for a climate change vulnerability assessment to guide future urban planning and avoid expansion into vulnerable zones.

To help inform the strategy development process and provide practical experience, a pilot area will be selected in the coastal zone or delta region – priority areas identified in the National Adaptation Plan of Action (NAPA) – to demonstrate the steps necessary to assess climate change vulnerability and identify adaptation options that

result in increased resilience of communities to climate change. The pilot activities will be designed to link to local planning and administrative systems to ensure sustainability and highlight the importance of mainstreaming climate change into local planning processes. The pilot project(s) will focus primarily on adaptation, which at the local level is a more urgent consideration than mitigation. Pilot projects will be implemented in partnership with local government and with participation from NGOs and communities. The results of implementation will be fed back into the national level discussion to influence future policy direction. The types of adaptation interventions anticipated are likely to include activities such as local water management, mangrove restoration and alternative livelihoods.

The project looks to build on existing work and complement planned programmes. Other donors and actors involved in similar initiatives have been consulted in the course of project formulation and inception to maximise synergies and avoid overlaps. MCCA will support the government to form a high level committee, chaired by the Ministry of Environmental Conservation and Forestry, to ensure that all related work is coordinated and implemented effectively.

UN-Habitat has substantial experience of working in Myanmar, having established a presence since the early 1990s and opening a country office in 2008 to lead post-Typhoon Nargis recovery efforts. UN-Habitat supported the formulation of the NAPA and National Building Codes while working throughout the country with other UN organizations, communities, NGOs and local training institutions.

## Compact cities to address climate change (continued)

transport trunk routes, areas in or around urban nodes (such as interchanges, public transit stops, economic centres), and on the periphery of open spaces.

The scale of densification should be context-specific and take into account such issues as cultural perceptions, building standards, housing demand, land and building costs and the supporting infrastructure systems. While the exact policies thus may vary according to context, the focus

– particularly in the global South – should be on basic urban planning. Delineation of public versus private lands, and setting aside areas of green space, should be prioritised.

These plans can be developed without detailed and expensive urban planning processes. This focused approach is particularly appropriate for developing countries that may have fewer resources to draw upon in urban planning processes.

Encouraging compact development is just one strategy for creating more sustainable, liveable cities, but the current trend towards lower densities, combined with urbanisation and climate change, highlights the importance of this approach. To provide for expanding city populations and avoid uncontrolled urban expansion and its environmental impacts, urban planners should prioritise densification.

### RECENT AND UPCOMING EVENTS

#### National Adaptation Planning (NAP) workshop

UN-Habitat participated in a meeting of the LDC Expert Group (LEG) held in Dar es Salaam, Tanzania from 25 to 27 February 2014. The LEG provides technical guidance to Less Developed Countries in undertaking the NAP process, and UN-Habitat has

been requested to help the Group consider how local authorities can best engage in these processes.

#### World Urban Forum (WUF)

The climate change related events at the WUF to be held in Medellín, Colombia from 5 to 11 April 2014 include:

- CCCI Advisory Committee

#### Meeting

- UNEP / UN-Habitat Partnership on Greener Cities
- Preparatory Meeting with Compact of Mayors on UN Secretary General's Climate Summit 2014
- Guidebook Launch: Gender and Climate Change by GIZ
- Dialogue on Urban Resilience

### ABOUT US

Headquartered at UN-Habitat in Nairobi, the Cities and Climate Change Initiative (CCCI) involves the participation of more than 40 cities worldwide. It targets medium-sized cities in developing and least-developed countries and emphasizes good governance and practical initiatives for the municipalities and their citizens. The CCCI team has adapted participatory

processes developed previously by UN-Habitat so as to specifically address climate change issues within the city. A complementary set of tools is being developed to support cities in raising awareness on the impact of climate change and support mitigation and adaptation activities. Since 2008, CCCI has been generously supported by the Government of Norway, the United

Nations Development Account, the Cities Alliance and other sources of global, regional, national and local funding.

Newsletters of the Cities and Climate Change Initiative are periodically published electronically. For more information, or to be added to our mailing list, contact [ccci@unhabitat.org](mailto:ccci@unhabitat.org) or visit [www.unhabitat.org/ccci](http://www.unhabitat.org/ccci).

#### CCCI Cities and Countries

