

Urban Adaptation Planning Framework: Linking Climate Change Action with Planning for Sustainable Urban Development in Ho Chi Minh City

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Abstract: After decades of scientific debate about global warming and a dramatic increase of public and political awareness in the last five years, the notion of climate change and the need for action has finally arrived on the desks of Ho Chi Minh City's (HCMC) administration. City officials are now obliged by the national government to set up adaptation measures. The prevailing urban development practice leading to environmental hazards and increased exposure to climate change is now likely to be reconsidered. The Megacity Research Project HCMC "Integrative Urban and Environmental Planning Framework – Adaptation to Climate Change" aims to use this window of opportunity to develop, implement and institutionalize innovative planning instruments for an urban development, which is better adapted to the local environment. This paper shows the interrelation of current urban development challenges and future climate change impacts and gives an introduction to the Megacity Research Project HCMC. Hereby, barriers and opportunities will be discussed towards the implementation of climate change response measures.

Key Words: Urban Adaptation Planning Framework; Sustainable Urban Development; Climate Change; Ho Chi Minh City

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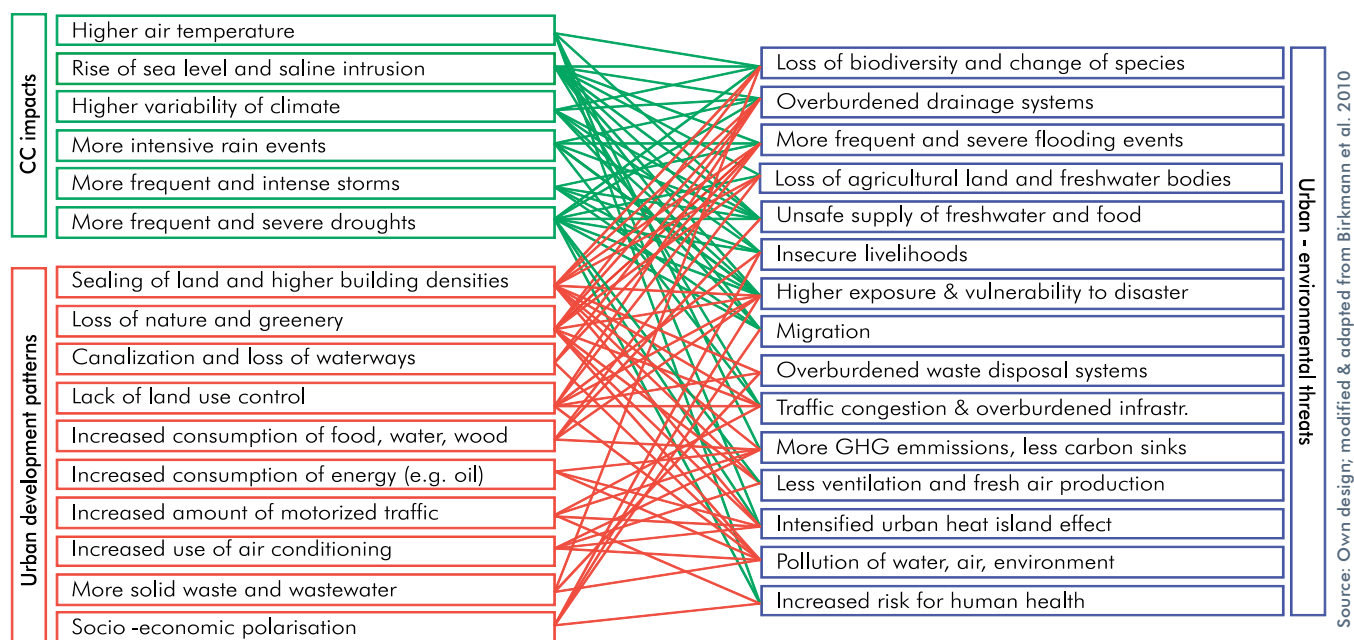
In terms of population exposed to climate change impacts HCMC is considered being one of the ten most vulnerable cities in the world (ADB 2010). This vulnerability is of particular concern because of HCMC's economic and demographic significance in Vietnam. With a de facto population of more than eight million inhabitants, the city accommodates 10 % of the national population, generates about one quarter of the national GDP, and receives one fifth of Vietnam's FDI (ibid.; GSO 2010). Growing beyond its administrative boundaries "a mega-urban region is in the making" (Waibel 2009a), accounting for about half of the total FDI volume and more than 15 million inhabitants.

Climate change versus urban development

Located on the north-eastern edge of the Mekong Delta and 50 km inbound from the South China Sea, HCMC is built mostly on low-lying and marshy land. Over 60 percent of the administrative urban area is situated below 1.5 m a.s.l. and 40-45 percent below 1 m (Long Phi 2007). Thus, with the predicted sea level rise of one meter un-

til the end of this century almost half of the administrative area of HCMC would be permanently flooded, the tidal range of about three meters adds to this (Van Trung 2009). The rising sea level also threatens fresh water supply and harvests, both already affected by saline intrusion (MoNRE 2010). Another predicted local climate change impact is the higher climate variability leading to droughts as well

as more intense rain events, which are more and more frequently disturbing the operability of the city (cf. Vietnam News 2010). Flood risk and loss of agricultural productivity threaten livelihoods and already cause environmental migration in the densely populated Mekong Delta region (Warner et al. 2009). Also, with a further increase in temperature, health and comfort of urban living will deteriorate while de-



Source: Own design; modified & adapted from Birkmann et al. 2010

Figure 1. Urban-environmental threats deriving from both climate change (CC) impacts and urban development patterns

mand for cooling will increase. The main cause for increasing temperatures in HCMC, however, lies not with global warming but rather with local urban development (Storch et al. 2009; Waibel 2010). Higher building density, less air convection, reduced water surface, less greenery, as well as increased production of waste heat add up to the so called urban heat island effect. As a result, temperatures in the city centre are up to ten degrees higher compared to the rural periphery of HCMC (Thi Van et al. 2009).

The interrelatedness between urban development and climate change issues becomes even more apparent with regard to the frequency and severity of floods. While, historically, HCMC developed mostly on elevated grounds, it is now rapidly expanding on low-lying marshlands towards the sea. The most ambitious large-scale urban expansion projects in the South (Saigon South, see picture on p. 18 above) and East (Thu Thiem) of the city centre already experience severe problems with flooding and erosion. Some parts of these new urban areas, although being developed for higher income groups with massive infrastructure investments, are flooded two times a day due to high tide. The 'hardening' of the cityscape with the extensive sealing of land and the channeling of natural waterways lies at the heart of the city's flood-problem (Carew Reid 2009). The loss of local water retention space and natural drainage capacity leads to higher water levels and flooding not only in

new urban areas, but also in consolidated areas that were considered flood safe in the past. Climate change impacts such as sea level rise and increased intensity of rain events simply add to this problem of overburdened drainage systems (see fig. 1).

Urban planning: Key to climate change action

Effective urban and regional planning is considered to have a key role for a city's adaptation to climate change (UN-Habitat 2009). The constant endeavour to integrate different sectors, stakeholders, and administrative entities as well as the combination of long-term thinking with short-term action make urban planning an essential element of climate change response – clearly being a cross-cutting and long-term issue. The core function of urban planning – the steering of land use patterns – is a basic tool for adaptation, allowing for an energy-efficient and climate change adapted distribution of settlement structures, or the preservation of a network of green corridors for ventilation and flood protection (ARL 2009).

However, while scholars widely agree on the key role that urban planning could have, the critical point seems to lie in the lack of effectiveness and the implementation deficit (cf. Bulkeley & Betsill 2003). This is particularly true for a rapidly developing metropolis such as HCMC. Here, market forces and informal dynamics constantly outweigh conventional statist master plan-

ning. To prepare HCMC's urban planning system for the threats related to climate change therefore must include measures to improve its effectiveness (Birkmann et al. 2010).

One of the basic challenges for effective climate change action is the dominant growth-paradigm that serves as legitimization of the authoritarian ruling regime. Planners and decision-makers mainly get rewarded for the acquisition and facilitation of investments. If they prevent real estate development in water retention areas along rivers for example, they get not rewarded. Discussions with local planners revealed that even if they were (publicly) instructed to implement climate change action, these instructions lacked commitment and the underlying policy directive remained the rather unconditioned acquirement of investments. As a result, some planners in HCMC state that the legal framework needs to be more stringent and clear regarding environmental concerns. In fact, they miss legal procedures which enable them to classify respective projects as not adapted to changing environmental conditions and finally to refuse approval.

If such legal procedures lack, adaptation measures are more likely to get implemented if they fit within the overall development path (O'Riordan & Jordan 1999). This means that no-regret options are required in which climate change response does not compromise (other) development objectives. Adaptation and mitigation measures therefore should link to exis-



A new urban area under construction within an area prone to flooding

ting problems that need to be solved such as urban flooding, or they should encourage investments/save resources, e.g. a tax exemption for solar water heaters.

Another major barrier for effective climate change action is the top-down orientation of the planning system in Vietnam. Often, planners on the local level do not feel competent to push adaptation measures as long as they are not instructed to do so. The general lack of horizontal integration leads to overlapping competencies and competition among agencies, such as between the Ministry of Natural Resources and Environment (MoNRE), in charge of land use planning, and the Ministry of Construction (MoC), in charge of construction planning (Webster & McAlwee 2009). Each sector develops its own climate change action plan, although effective flood protection, for instance, would afford a more concerted response. The introduction of the HCMC Climate Change Steering Committee in 2008, however, gives evidence of a gradual change in this regard. This working group brings together all relevant departments, including the sectors of construction and planning, to discuss challenges of and response to climate change.

Climate change action is also impeded by a lack of capacity, which is most prevailing in peripheral institutions. While national and municipal authorities in Hanoi and HCMC are well trained and often in constant exchange with national and international experts, other province administrations as well

as district and sub-district levels in the HCMC metropolitan region are rather left behind. A survey across provincial administrations in the HCMC region revealed that local authorities are "confused" about climate change and related policy demands. It is not surprising that the Department of Planning and Architecture of HCMC is the only planning department in the region currently working on climate change policies. Further, solely the environmental departments of HCMC and Ba Ria-Vung Tau began to physically prepare the climate change action plan that was requested by MoNRE in 2009. Other barriers such as uncertainty, lack of funding and overburdened administrations are also more prevailing in less developed provinces and districts.

Experiencing more and more environmental hazards, HCMC's urban planners and decision-makers as well as the general public have become highly aware of threats deriving from global and local environmental change. This, however, did not lead to a modification of urban planning and project approval procedures. More recently, with reference to the "National Target Program to Respond to Climate Change" issued in December 2008 (MoNRE & Prime Minister 2008), laws and directives are being promulgated which oblige the local administration to set up action plans and implement measures. These governmental instructions, the frequency of urban-environmental hazards as well as the public awareness created a certain pressure to act in local administrations. As a result, the de-

mand for international cooperation, research, and new approaches in the field of climate change policy has risen abruptly in the last two years.

The project approach

Considering the congruence of problems deriving from climate change and those deriving from urban development, this demand for climate change action creates a valuable window of opportunity for making urban planning more adaptive to local environmental conditions. To use this opportunity is a basic motivation of the Megacity Research Project. It is aimed to develop, implement and institutionalize planning instruments, which ensure the long-term integration of climate change response and urban-environmental policy into plan- and decision-making processes.

After a thorough analysis of the planning system and a series of workshops with urban planners and decision-makers in the HCMC metropolitan region, certain administrative procedures regarding urban planning and construction have been identified where the effective application of environmental criteria is lacking. To fill this gap, the project applies a dual strategy: On the one hand, a formal top-down oriented approach is being followed concerning the re-adjustment of the legal framework that frames lower order decisions and decision-making processes. On the other hand, a bottom-up strategy is adopted, which aims to build capacity in the urban planning and construction sector. To achieve this, a diverse set of measures is being applied.

Regulatory measures

The regulatory approach relates to the top-down oriented planning system of Vietnam in which the national government and other national institutions define the general content of local plans. Guidelines for resource efficient and climate change adapted urban structures are being developed in cooperation with partners in administration, private sector, and research institutions in HCMC. Opportunities for their legal integration, e.g. into the new urban planning law, were identified and the implementation of guidelines is now examined in cooperation with the MoC and related national institutes.

The implementation of guidelines is

pursued on different spatial levels. At the overall level of the city, guidelines will mainly be related to environmental vulnerabilities, general strategic development, and metropolitan management. The steering of large-scale land-use patterns with the preservation of green corridors, the determination of water retention areas or the sustainable distribution of settlement structures is a central issue. These guidelines will act as a blueprint for the adjustment of the HCMC Urban Construction Master Plan and the Regional Development Plan. Regarding the neighbourhood level guidelines should relate to zoning and detailed plans. Sustainable urban design solutions must allow for high densities while at the same time prevent urban flooding and urban heat island generation. At the building level specific consideration has to be given to aspects such as durability, ventilation and openness, thermal insulation and energy saving. In the latter case, the MoC is being consulted regarding the revision of the building code.

The development and implementation of guidelines provides a promising opportunity to mainstream climate change response across levels and localities nationwide. However, this formal top-down oriented approach does not ensure the effective application of these guidelines on the local level. In fact, the fundamental problem of the Vietnamese planning system seems to lie not in the lack of formal regulations, but rather in the correct application and implementation of these. For this, capacity building among the local administration is necessary, among other. The regulatory top-down approach therefore has also to be complemented by a bottom-up strategy implying a diverse set of activities. Here different measures are applied on the different levels.

Bottom-up measures

In a region as closely interlinked as the HCMC region – in terms of environment, economics and social issues – the cross-cutting challenge of climate change requires regional coordination; especially when land-use competition and institutional fragmentation are among the basic elements constituting the vulnerability of the agglomeration (Waibel 2010). Therefore, response capacity – here understood as the ability to undertake both adaptation and mi-



Regular flooding due to high tide at a middle class settlement near Thu Thiem

tigation (Tompkins & Adger 2005) – is built on the *conurbation* level through workshops with roundtable character, which bring different stakeholders, sectors and/or provinces together. Structural barriers for an integrative adaptation approach, such as the competition between provinces, will not be overcome by workshops. Horizontal learning and improved communication between departments, however, are key elements of good regional governance that can be facilitated.

On the neighbourhood-level planning studies are being drawn serving as a showcase to test, evaluate and demonstrate the potentials of climate change adapted and energy efficient urban designs. Considering the development pressure HCMC is facing now and in the near future, these studies must allow for high densities, particularly in elevated and less flood-prone areas. This need for compactness in mind, the challenge is to provide for enough water storage, infiltration and run-off, as well as prevention of urban heat generation. The results will be promoted to relevant stakeholders in the real estate market. In addition, a community based adaptation (CBA) scheme focuses on low-income neighbourhoods, which are considered particularly vulnerable. CBA-measures range from community mobilization and capacity building to community driven adaptation strategies and actions. To achieve this, the project team is closely cooperating with the non-governmental organization Environment and Development in Action Vietnam (ENDA).

On the building level a design catalogue on climate-adapted and energy-efficient housing has been developed as part of the promotion of sustainable building practice. The development of the design catalogue is based on a representative survey of more than 400 “new consumers”, members of the rapidly emerging urban middle class population, which is currently in the process of taking over more and more resource-intensive lifestyles (Waibel 2009b). The design catalogue focuses on the most popular house typology in Vietnam, the shophouse (*nhà phố*). It will inform about technical solutions including recommendations on functions and space composition, construction and material, shading and lighting, ventilation and cooling, energy and water supply, as well as energy-saving behaviour. By providing sustainable design solutions the catalogue will empower and encourage future home owners, architects, developers, companies as well as architecture students to design and construct houses more climate change adapted and energy efficient.

Summary and outlook

HCMC is confronted with severe urban-environmental threats deriving from urban development not adapted to local environmental conditions. Climate change impacts such as more frequent and intense rain events simply add to the environmental hazards the city already is experiencing. Adaptation measures therefore should apply to current challenges resulting from

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View of HCMC's skyline from Thu Thiem peninsula

urban development. Moreover, mitigation measures have to be targeted at those sectors of the urban society whose contribution to global greenhouse emissions is already becoming noteworthy, e.g. those of the emerging urban middle class.

The Megacity Research Project aims to link climate change action with sustainable urban development. Innovative planning instruments are being developed that target at planning and decision-making processes rather than outcomes. The planning system shall be enabled to make decisions and plans, which are better adapted to local environmental conditions. The project thereby applies a dual strategy with both top-down and bottom-up measures: Whereas a regulatory approach provides good opportunities to institutionalize climate change policy nationwide, bottom-up measures are needed to build local capacity and test innovative planning approaches. The final objective of the project is to link top-down and bottom-up processes and to create an adaptive "learning system" that integrates both contrasting concepts.

Effective climate change response in the urban planning and construction sector in HCMC is largely missing, although local planners and decision makers already became aware of the need for action some years ago. Hence, this paper argues, climate change response of the planning system is to a large extent dependent on institutional and political frameworks. Awareness only matters if the institutional setting in which (effective) decisions are made allows actors to make the respective decisions. To provide this framework implicates not only new or revised regulations, laws and instructions from the national government, but also political commitment.

Most recently, local governments were obligated to set-up climate change action plans. This provides a great opportunity for the urban planning system to modify towards a more adaptive governance approach. However, one has to bear in mind that the pro-growth urban development path of HCMC is not likely to change in the near future. A recent economic study revealed HCMC (along with Hanoi) to become one of the world's top two

cities based on projected average yearly GDP growth from 2008-25 (PricewaterhouseCoopers 2009). This perspective gives evidence that adaptation measures must apply to the growth paradigm, otherwise they are not likely to get implemented.

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