



# Megacity Research Project TP. Ho Chi Minh – Integrative Urban and Environmental Planning Framework - Adaptation to Global Climate Change

In the “Megacity Research Project TP. Ho Chi Minh - Integrative Urban and Environmental Planning Framework - Adaptation to Global Climate Change” a successful starting phase of cooperation with the main Vietnamese administration has recently been completed. The project now also includes the urban and environmental development of the whole city aiming at climate-orientated implementation of concrete models. The project will be carried out within a 5 year period, in cooperation with international partners, and in a transdisciplinary dialogue of German and Vietnamese institutions and universities.



## Overview and Findings to Date

All global comparative country studies list Vietnam as a country which will be extremely vulnerable to impacts of climate change because of its topography. The metropolis and economic centre, Ho Chi Minh City (HCMC) north of the Mekong Delta, is particularly affected. Even today, HCMC has to struggle with climate-related problems. Their impacts are

brought about or intensified by shortcomings in managing rapid urban growth, in spatial urban planning and in urban infrastructure management. Against the background of climate change, it is necessary to carry out a well-founded examination of the consequences for urban development as well as develop substantial countermeasures on all levels of current urban development planning.

As a densely built-up urban area in a low-lying region, HCMC has been historically sensitive to climatic effects. However, the vulnerabilities of lives and livelihoods to climate-related environmental processes are primarily the result of inadequate and unsustainable urban development practices associated with complex natural settings and societal structures. This combination of factors results in a high degree of physical and social vulnerability in most parts of HCMC.

Vulnerability analysis of these climate-related natural processes and the enhancement of adaptive capacities are major challenges, as the areas prone to potential climate-related impacts vary and overlap with respect to their spatial scope, time and social environment.

Since the adverse impacts of climate change will affect the land-use structures, the population and the natural resources of HCMC, efficiently planned adaptation responses must be based on site-specific designations within the decision-making processes of urban planning and development in HCMC.

The current research will build upon the findings of the preliminary phase. These include, among others, the extensive knowledge of all aspects of urban development in HCMC and of the institutions and stakeholders involved. In addition, analytical tools such as the environmental information system developed in the work to date will be further developed for application in the main phase. Also the requirements

for sustainable neighbourhood models and building typologies from the first phase of the research project will be further developed with emphasis on energy-efficiency and climate-appropriateness.

### Objectives of the Project

The main objective of the research project is to develop strategies for adapting urban land, urban structures and urban development concepts to climate changes and to minimize or avoid impacts of climate change in the context of the megacity HCMC.

The principles of adaptation policies, as formulated by the International Panel on Climate Change (IPCC), will serve as the starting point for the research work in HCMC. In particular, the work will focus on improving the ability of decision-makers to manage the information relevant to adaptation and on evaluating the range of technological options for adaptation in urban planning and design.



The research project is divided into two Action Fields with their own respective thematic Work Packages (see below).

The Action Field “Urban Environment” will evaluate the local impacts of climate change as well as their spatial manifestations. The Action Field “Urban Development” will develop strategies for adapting the built urban environment.

With a transdisciplinary consortium of scientists from German and Vietnamese research and administrative institutions, adaptation strategies will be developed for climate-appropriate and energy-efficient urban development and housing provision.

### Expected Contributions to an Energy and Climate Efficient Development of Future Megacities

Both the analytical and the implementation-oriented aspects of the research project can serve as useful approaches to the energy-efficient and climate-appropriate development of other future megacities, not only in Southeast Asia. This includes analytical methods and tools to evaluate the future effects of climate change which can be applied in other megacities as well as model projects in settlement development and housing provision which, under consideration of the respective local conditions, can be emulated in emerging and existent megacities.

Due to the role of HCMC as a model city for the overall development of Vietnam, the successful implementation of innovative adaptation planning policies and climate- and energy-efficient model buildings here is likely to be emulated in other regions of Vietnam or to be integrated into national policy.

### Knowledge, Technologies and Performance

Due to the global nature of the problems caused by climate change, response has primarily elicited the launching of policies and strategies on the international and national levels. Efficient adaptation measures must, however, be implemented on all planning levels and in all sectors since dealing with the adverse effects of climate change on the environment and societies is also a profound issue of urban land-use planning. The process of adaptation needs a sound adaptation planning framework for incorporating vulnerability and resilience of land uses into urban policy and decision-making. This framework is to be based on specifically selected sustainability indicators and data resources and linked to available planning and assessment instruments, including strategic environmental assessment (SEA). Within the scope of the research project, such a framework will be developed to support site-specific decisions on locations and design of urban development with the objective of reducing the vulnerability of the urban system of HCMC to climate change.

### Applicable Instruments, Tools and Methodologies

The research on climate change has two main points of emphasis: environmental protection, the mitigation of further changes in the climate due to human influences, and protection from the effects of climate change, the adaptation to the consequences of climate change.

In the current phase, a multi-layered typological approach which was developed in the preliminary phase of research will be utilised to assess the sustainability of urban settlement developments. This “urban typology framework” will provide important environmental and social information which in turn will be drawn upon in the vulnerability assessment, based on strategic environmental assessment (SEA). SEA is both a valuable process and a response instrument for transferring scientifically well understood and documented problems of climate change to adapted planning systems and for selecting criteria to assess these in the context of complex planning systems.



In an interdisciplinary approach, the assessment criteria and methodology will be selected with the aim of assessing contents and objectives of the regional land-use planning system for their adequacy and efficiency in adaptation to climate change.

The Action Field “Urban Environment” encompasses the work packages: adaptation planning framework, urban flooding, urban climate, urban redevelopment and upgrading, urban energy and urban transport.

The Action Field “Urban Development” includes the following four work packages: precaution and adaptation strategies to climate change impacts on the regional and city level; integrative planning approach for new energy- and climate-efficient neighbourhoods; livable city, urban regeneration and community-based adaptation; and energy- and climate-efficient housing typologies.

The primary objective within Action Field 2 is to mainstream sustainable urban development strategies under the conditions of climate change into the urban system of HCMC. Based on the knowledge gained from the research in Action Field 1, small-scale projects such as building structures and prototypes will be conducted with the Vietnamese partners to promote best-practices for further appropriate responses.

### Socio-Economic, Integrative and Overall Sustainability Aspects

The research project aims first to identify potential impacts of climate change in HCMC and then to develop strategies to reduce the vulnerability of affected sites through urban planning decisions. The shift from risk research related to natural hazards to the more integrated view of vulnerability in climate change research includes two important aspects. Firstly, vulnerability assessment focuses on social and not only physical vulnerability. Secondly, it focuses more on factors related to societal development, institutional organisation and administrative decision-making. Because the concept of vulnerability not only relates to the exposure of property and humans or to the physical susceptibility of exposed elements, adaptive capacity is strongly related to development issues.

Within the scope of the conferences and workshops, a wide range of stakeholders involved in the urban environment and urban development will be included in the common discussions.

## Project Team

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- Department of Environmental Planning

### In cooperation with

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- University of Hamburg,  
Department of Geography
- GRI – Transportation Consultant, Berlin
- AG Goedecke & Welsch, Berlin

### Partners in Vietnam

- Ministry of Construction, Hanoi  
- Vietnamese Institute of Architecture and Planning
- Ministry of Natural Resources and Environment,  
Hanoi  
- Institute and Sub-Institute of Meteorology, Hydro-  
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- People's Committee of HCMC
- HCMC Institute for Development Studies  
- Institute for Economic Research  
- Institute for Social Sciences  
- Urban Planning Institute
- HCMC Environment Protection Agency
- Municipality of Ho Chi Minh City  
- Department of Urban Planning and Architecture  
- Department of Natural Resources and Environment  
- Department of Construction
- Support to Public Administration Reform in HCMC
- HoREA - Real Estate Association HCMC
- University of Architecture HCMC
- University of Transport HCMC

- Vietnam National University HCMC  
- University of Social Sciences and Humanities  
- University of Technology  
- Information Technology Park
- CEFURDS - Center for Urban & Development Stud-ies
- EnerTeam - Energy Conversation Center
- TERI Vietnam
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