

## Societal aspects

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### 1. Relevance of the research programme for national and regional adaptation policies

Dutch research and policy development on adaptation to climate change has so far mainly been concerned with flood protection with no specific focus on urban issues. However, it is increasingly recognized that cities are highly vulnerable to climate change. Local adaptation measures are required in order to prevent or reduce negative effects at present and in the future, or to make use of the opportunities offered by a changing climate. Consistent climate adaptation policies for Dutch cities have not yet been developed. This is mainly caused by the fact that information for proper problem description, for the choice and prioritization of actions and for the means to implement them, is lacking.

By delivering the scientific foundation for developing and setting priorities in urban adaptation policies, this research programme will have a significant impact on how stakeholders in the cities will be dealing with climate change, and the efforts in sustainable urban development on local, regional and national level. To achieve this, the programme will provide insight in the actual and expected changes and impacts of climate change in urban areas, adaptation measures and strategies that can be applied, and develop tools and knowledge about how to apply or implement these measures. The aim of the programme is to deliver these components and disseminate the knowledge to stakeholders in such a way that climate adaptation becomes a fundamental part of urban development.

By means of integrative research into the effects of climate change on the urban climate and the resulting impacts at different levels, the programme will provide quantitative and qualitative information about threats and risks that cities are facing. This information can support creating awareness at public, private and policy levels about the urgency of certain adaptation measures. In addition, the programme will provide a better understanding of the vulnerability of physical and social (and economical) elements of the urban system, which allows policy makers to set priorities. Information on the vulnerability of the various neighbourhoods to the impacts of future climate change could lead to geographically specified priority setting.

Key for developing adaptation strategies is sound knowledge on the applicability, effectiveness and efficiency of various adaptation measures and strategies. Currently many measures are being suggested without a proper underpinning of their effectiveness in cities in the Netherlands. This programme will, for a

wide range of measures, provide this information. With this body of knowledge, adaptation strategies can be developed, also allowing choices with regard to the timing of implementation.

Important for implementation will be the knowledge on the possibilities to integrate or couple measures with other (ongoing) developments in the urban area. The programme will show how adaptation policies can be mainstreamed with and integrated into other policies (e.g. Randstad 2040), including local mitigation strategies.

Existing plans for redevelopment of buildings, neighbourhoods and business parks offer great opportunities for the incorporation of climate proof elements. The consortium does not only provide the technological knowledge to do this, but it will also provide the methods to accomplish this.

Timely interaction with stakeholders (cf. 4B) will enhance the relevance of the outcomes. In the budget a reserve has been included to be able to respond to new questions of stakeholders that will become important during the execution of the research programme.

## 2. Involvement of stakeholders

The main stakeholders will be represented in the KfC Steering Committee that will form a sounding board for guarding the main orientations and coherence of the programme, and the translation of the programme results into practice.

Hands-on involvement of the stakeholders will be organized along the lines of the case studies (see Figure 2 and Section 3C), building on the meetings that have been organised so far. For each case study a stakeholder group will be established, consisting of a selection of representatives of the involved hotspot(s). In order to ensure direct and regular communication, there will be minimally two meetings per year for each case study between this guidance committee and researchers involved. Depending on the case the timing and frequency may vary. Of course, more regular communication or cooperation will be established with stakeholders that are directly involved, depending on the set-up of individual research projects. Effective knowledge transfer can also be achieved by inviting stakeholders to participate in the research team. Currently discussions are ongoing with the hotspots and other cities involved on their active participation in the research in a number of cases.

Besides these closed meetings, two types of workshops will be organized to involve a broader group of stakeholders. The first type of workshops is related to particular case studies. These workshops are open to a wide range of stakeholders (local governments, developers, housing corporations, local enterprises etc.) and will take place approximately three times during the research programme. The first meeting in the beginning of the programme is focused on the fine-tuning of the case studies and ensuring that the expected results can be used outside the specific local context of the case. A second meeting (or two) halfway is used to present first results and ideas, and to discuss them with the stakeholders and identify possible implications. At the end of the programme, a final meeting will take place to discuss the end results.

The second type of workshops that will be organized throughout the programme, is related to specific „themes“ that might be relevant for several case studies and are related to several workpackages. Themes might include Buildings, Urban Design and Water & Energy systems (and as such are part of the proposal to establish Communities of Practice for dissemination - see below under 4C). These workshops are open for all stakeholders mentioned above, but they are also meant for researchers from other related themes in the KfC programme (Figure 3) and external parties. An important external party stakeholder in this respect are representatives of the building and installation business, which can be approached through organisations such as Bouwend Nederland and Uneto-vni.

### 3. Knowledge transfer and valorisation

An important focus of this proposal is the applicability of results in practice and effective implementation of adaptation measures and strategies through urban governance. Therefore, the consortium recognizes the value of stakeholder involvement and effective knowledge dissemination to ensure the social relevance of the research programme. The participating knowledge institutes (TNO, Deltares, KWR and UNESCO-IHE) play an important role in accomplishing this, each in their own competence area. They are capable of bridging between science and society, and transferring knowledge between the consortium researchers and the stakeholders that will have to implement urban climate adaptation. Via their extensive networks and their collaboration with (local) governments, companies and other stakeholders in the built environment, they will disseminate knowledge during the execution of research and stimulate its application in practice, also in the long term. Through UNESCO-IHE lessons learnt in this project are directly transferred to the third world. The knowledge institutes will also play a role in the dissemination of the findings through (special issues) of professional journals.

Specific efforts undertaken to further stimulate knowledge dissemination throughout the programme include the establishment of „Communities of Practice“, which enable knowledge exchange related to specific themes (Buildings, Urban Design, Water & Energy systems). These „knowledge platforms“ will promote the interaction between researchers and end users, via workshops (see also 4B Involvement of stakeholders) and web based tools that will be accessible for all relevant stakeholders. The themes covered by the „Communities of Practice“ can be wider than single workpackages or case studies, as they aim to address specific groups of practitioners that are not automatically involved in climate adaptation or the specific topics of this research proposal.

Furthermore, the research programme will make use of existing knowledge dissemination and strategic networks like CROW (National Information and Technology Platform for Transport, Infrastructure and Public space), NICIS (Knowledge Institute on Cities), NIROV (Network for Physical Planning), KEI (Expert Centre Urban Regeneration), WssTP (European Technology Platform for Water), COST (Intergovernmental framework for European Cooperation in Science and Technology), ICLEI, Eurocities and C40 cities (Climate Leadership Group).

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Recently the first Knowledge and Innovation Communities of the EU Institute of Innovation and Technology have been designated. Several consortium member participate in the Climate-KIC, which offers opportunities to insert the results of this programme into European research on „low carbon resilient cities“.

Since most of the research is done by PhD students from universities, results will, as a matter of practice, be disseminated via the various (international) academic channels during the execution of the research; e.g. peer-reviewed publications and conferences. In addition, the knowledge obtained through this programme will be used in the education programmes of universities. In this way, the integration and continuous development of knowledge on climate adaptation in the various disciplines involved is ensured.

Partners in this proposal have extensive links with the international community, with scientific journals and with universities and institutes in other countries. These contacts will be used to disseminate the findings outside the Netherlands. In this respect the foreign partners in the consortium have also the role to disseminate the outcomes of this research programme in their networks. Regular international workshops dealing with topics in one or maybe several workpackages are expected to become a regular practice. A „summerschool“ or a final conference to disseminate knowledge is part of the dissemination plan, whereby the most effective form still needs to be elaborated.