# Networking to increase the use of Green and Blue infrastructure to adapt to the effects of climate change - Europe

# 1. Policy Objective & Theme

- ADAPTATION TO RISK: Managing impacts of climate change and safeguarding resilience of coasts/coastal systems
- ADAPTATION TO RISK: Preventing and managing natural hazards and technological (human-made) hazards

# 2. Key Approaches

- Integration
- Participation
- Technical

# 3. Experiences that can be exchanged

Climate change is already with us, and the urban environment amplifies its impacts. Green and blue infrastructure has a substantial role to play in adapting our towns and cities to climate change, and, as this paper highlights, policy responses are needed at an international and European level, through to the national and local levels.

# 4. Overview of the case

A network of partners are promoting the use of Green and Blue infrastructure as a means to adapt to predicted levels of climate change. All the partners are bringing in their ideas so that measures can be incorporated in the planning process. Such an approach is needed by all community agglomerations however large or small, coastal or otherwise.

# 5. Context and Objectives

#### a) Context

Climate change is the greatest emerging humanitarian challenge of our time. It is causing 300,000 deaths a year and is affecting the lives of 325 million people, according to a report produced by the United Nation's think-tank, the Global Humanitarian Forum. The UN Climate Change Conference in Bali, in 2007, saw the adoption of the Bali Action Plan which placed significant importance on climate change adaptation. This was identified 'as one of the five key building blocks required (shared vision, mitigation, adaptation, technology and financial resources) for a strengthened future response to climate change to enable the full, effective and sustained implementation of the Convention through long-term co-operative action, now, up to and beyond 2012'.

At the European level, the European Commission (EC) recently published a White Paper, Adapting to Climate Change: Towards a European Framework for Action. The White Paper identifies the EU's vulnerability to the impact of climate change and sets out why an adaptation strategy is needed at an EU level. It looks at the impact of climate change on a number of sectors, including:

- Human health and well-being: As Europe experiences more extreme climate events, weather-related deaths and diseases could increase.
- Water: The quality and availability of water resources is a fundamental concern raised by a changing climate. Parts of Europe already experience high levels of water stress, with consequences not just for human health but also for food

production.

- Agriculture: Climate change will potentially impact on crop yields, livestock management and the location of production. Soil fertility will be affected by the depletion of organic matter resulting from climate change. Forests are also likely to be affected in terms of productivity and the geographic range of tree species. There will also be additional pressure on fisheries and aquaculture, with potentially severe impacts on coasts and marine ecosystems.
- Energy: Climate change will have a direct effect on both the supply of, and demand for, energy. Increasing summer temperatures will add to the demand for cooling, and the impacts of extreme weather events may affect electricity distribution.
- Infrastructure: Extreme climatic events have significant economic and social impacts, especially where infrastructure is damaged for example domestic and commercial buildings, transport, and energy and water supply.

#### b) Objectives

The network facilitates the much needed exchange of knowledge and experience and the actual transfer of good practice on climate change adaptation strategies to local and regional authorities.

## 6. Implementation of the ICZM Approach (i.e. management, tools, resources)

#### a) Management

The Town and Country Planning Association (UK) is an independent charity working to improve the art and science of town and country planning, inspiring government, industry and campaigns to take a fresh perspective on major issues. It is leading fourteen organisations, drawn from eight European countries, representing a broad spectrum of authorities and climate change challenges, all with varying degrees of strategic policy and experience, which are networking with each other to integrate climate change adaptation into regional planning and development.

#### b) ICZM tools

Regional and local spatial planning and urban design can provide solutions that will make our communities less vulnerable to climate change risks. Green infrastructure such as gardens, parks, productive landscapes, green corridors, and green roofs and walls, and blue infrastructure such as water bodies, rivers, streams, floodplains and sustainable drainage systems, play a vital role in creating climate-resilient development. However, this role is not sufficiently recognised at present and is consequently inadequately integrated into mainstream planning. There is also a strong business case for climate change adaptation. Adaptive measures are essential to help manage global economic losses due to climate change, currently amounting to more than US \$125 billion per year and predicted to rise to US \$340 billion annually by 2030. Adaptation technologies also provide an economic opportunity for 'green growth'.

Much green infrastructure – such as parks, for example – is multi-functional. Parks are important not only for climate change adaptation, but also for health and well-being – a park acts as a reservoir for storm water, a shelter from the sun, and a place in which to take exercise. In England, however, public parks and green spaces are chronically under-valued. A combination of historic cost accounting and depreciation causes most councils there to assign their public parks a notional asset value of just £1 each, making them financially invisible and leading to repeated under-investment. In reality, a single park's physical assets – excluding land value – can have a value well over £100 million and can offer huge environmental benefits. In a changing climate, the role of parks has never been more important. In seeking to deal with the challenge of climate change, the demands on planning and urban design have never been greater. New developments must be designed to cope with future rather than historical climates. Adaptation of the urban environment can be implemented through design and development at a variety of different spatial scales:

- Conurbation; solar control including shading, orientation and building morphology; evaporative cooling; ground water cooling; open water use and green infrastructure.
- Neighbourhood; increasing ventilation, cool or reflective building materials on roofs and facades, cool pavement materials.
- individual building; building envelope insulation, active or mechanical cooling, thermal storage or mass.
- the menu of strategies for managing high temperatures includes groundwater cooling using aquifers at a conurbation

scale; increased ventilation through orientation and urban morphology at the neighbourhood scale; and active or mechanical cooling at a building scale.

# 7. Cost and resources

The budget is €3,182,929 of which the ERDF is contributing €2,430,198.

## 8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

An independent consultancy organisation, ARCADIS, is to review all ideas concerning the social, economic and spatial conditions of Amsterdam's new district 'Geuzenveld' and catalyse these into a living visual presentation which will be on the GRABS website. The result will be used for further planning and action to enhance the resilience of other western garden cities.

## 9. Success and Fail factors

The network represents a spectrum of municipal authorities, with various climate change challenges, all with varying degrees of strategic policy and experience.

## 10. Unforeseen outcomes

None so far.

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### 13. Sources

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- Human Impact Report: Climate Change The Anatomy of a Silent Crisis. Global Humanitarian Forum, 2009.
- Making the Invisible Visible: The Real Value of Park Assets. CABE, 2009. www.cabe.org.uk/publications/making-the-invisible-visible/
- The case for climate change adaptation (2009) K. Henderson The Town and Country Planning Association
- <u>www.grabs-eu.org</u>



GRaBS Newsletter No 1 (5.37 MB)

The case for climate change adaptation (1.42 MB)