

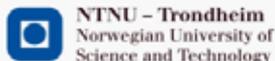



RAMSES
Science for cities in transition

RAMSES Stakeholder Dialogue

“Co-creating the resilient city – embedding adaptation into policy processes and strategies”

Workshop Report



Introduction

The RAMSES Stakeholder Dialogue took place in Brussels on the 11th of October 2013. The event was organised under the European Research Project “RAMSES, Science for Cities in Transition” with the aim to foster a dialogue between researchers and practitioners on urban climate change adaptation. The Stakeholder Dialogue served as a co-creational experience in which research results and questions were presented and discussed with an emphasis on collecting feedback to further shape the project outcomes. The Dialogue brought together around 25 participants from different European countries, including city representatives and regional actors, research and European institutions, international organisations and adaptation stakeholders from the private sector. The day was organised along the following three main topics:

- Resilient architecture and infrastructures indicators;
- The economics of resilience;
- Creation of a vision towards sustainability.

The event was structured according to three main presentations followed by interactive exercises fostering first-hand knowledge exchange between participants. This report will summarise the main outcomes of the day resulting from exercises and interactions with the participants.



Key messages

- **It is crucial to integrate adaptation into urban planning**, as it is a cross-cutting issue involving not only climate, but also economic, health and social concerns. One good way to kick-start this process is to update current policy documents and take into account adaptation considerations when designing new policies.
- Cost-assessments play a vital role in adaptation planning. In order to obtain political commitment, the overall importance and benefits of adaptation should be highlighted, taking into account savings deriving from a proactive approach, and not only the mere cost of implementing measures. **Models and tools to underpin this planning effort are much needed at this stage.**
- It is vital to make conscious decisions now that will influence the development of our city in the future. **A clear vision to strive to is of utmost importance to steer this development. In order to kick-start this process, present challenges need to be mapped and transition factors to tackle these identified.**

1. Resilient architecture and infrastructures indicators

Making our cities more resilient to climate change is crucial. It is therefore necessary to create a link between science and practice on how to achieve this goal. This necessitates a precise and shared understanding of some basic concepts. What does the word resilience actually mean? How do we measure and evaluate how resilient urban architecture and infrastructure are? Are indicators available and accessible to practitioners? What approaches can we apply to improve urban resilience and when is it appropriate to use one or the other? These are some of the questions participants were confronted with during the Stakeholder Dialogue.

Main outcomes

What is resilience?

A number of definitions of resilience were suggested, ranging from 'the ability to deal with change' to 'the ability to recover from stresses' to 'an approach combining mitigation and adaptation to render cities more sustainable', underlining its far-reaching nature.

Since climate change is often not politically prioritised, resilience needs to be assigned an independent space and a political agenda of its own in order to become a long-term goal. Particularly in countries where climate change action has not yet gained momentum, viewing this as a pure environmental issue may create barriers due to its abstract nature.

It is crucial to integrate different areas of work and to take different aspects into account when planning for resilience, since it encompasses "traditional" challenges, such as socio-economic and demographic challenges. Resilience is also linked to behavioural change and it therefore necessitates the active involvement of citizens in order to be effective and to create a shift in their perspectives (bringing them to think about consequences of extreme weather events and to consider the need to act). The link between resilience and social issues is particularly strong considering that the most vulnerable social groups are often the ones mostly affected by climate change.

Of course resilience requires technical expertise for planning and implementation, but most importantly it requires the involvement of key urban actors (e.g., electricity network owners) in developing a coherent vision. It may be recommended to use existing networks on risk management in cities that can act as a basis to connect different sources of data as well

as sectors and that can also convey important messages on adaptation.

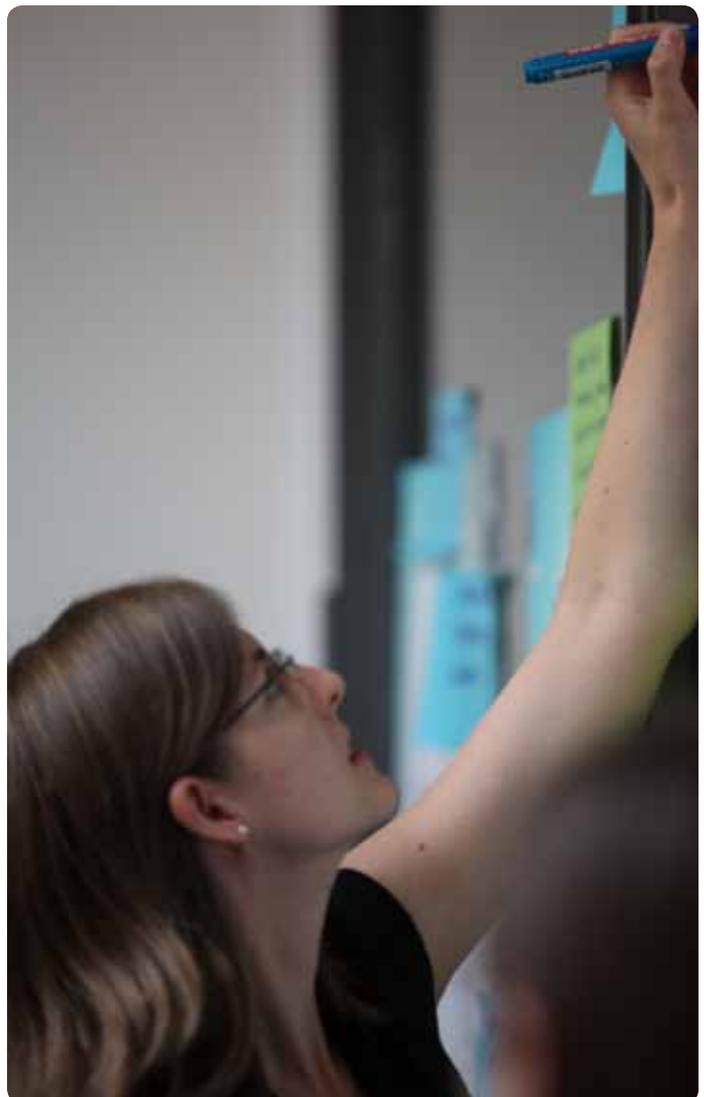
A vision is necessary to develop new perspectives on planning issues: it is normally challenging to define a clear path to be followed.

Resilience will indeed require investments for planning and implementation. At the same time, it is important to bear in mind the costs deriving from inaction. In this sense, climate change has increased the threshold of acceptable investment risks, and this has to be factored in when budgeting for measures.

What do we measure? What indicators need to be used?

General considerations:

Extreme weather events normally impact different city systems. Therefore, indicators have to be flexible



enough to take into account several issues at once. When managing risks, it must be taken into account that is impossible to cover all risks that might arise.

1. Indicators for green and blue infrastructures; Indicators for grey infrastructure (ICT, water, waste, energy, etc.)

Grey infrastructure

- A good indicator for efficient waste management can be the number of recycling facilities;
- To measure energy consumption, a comparison before and after renovation of building stock can be suggested;
- Robustness of ICT can be measured in terms of how much heat stress it does “absorb”;
- A possible social infrastructure indicator could be “single women walking in the street”, measuring security;
- Whether urban density is ‘positive’ or ‘negative’ for resilience depends on the risks a city is exposed to;
- Specific indicators need to be developed for different sectors and different risks (e.g., to decide whether to build in risk prone areas or not);
- Impacts can have many side effects, e.g., heat stress can indirectly affect rail transport.

Green infrastructure

- It is important to build a good mixture of green infrastructure (quality vs. area). E.g., green infrastructure that exists in cities should be connected: experience in Barcelona has shown that green corridors are of high importance;
- The location of green infrastructure is crucial for its effectiveness (e.g., green infrastructure in flood prone areas serves as a buffer);
- Green belts around the city can prevent an urban area from growing in an uncontrolled fashion (exploiting co-benefits and interrelation of climatic and non-climatic concerns);
- The benefits of green belts are incidental: these were originally planned to prevent urban sprawl but assumed new functions when climate change came into play;
- When calculating the total amount of green surfaces private gardens must be also included since they also provide a buffer function;
- Public accessibility to green spaces is of great importance to exploit co-benefits.

2. Indicators for architecture, public space and urban regeneration; Indicators for land use, mobility and urban-rural interface

- The separation of wastewater and rainwater is easy to control for new areas but nearly impossible for old districts;
- Upgrading city systems does not only relate to resilience to climate change. There are many other factors involved for why cities want to do it, e.g. financial incentives. It is always a smart strategy to embed resilience into broader plans;
- The concept of polycentric development implies decentralising concentration but can have the side effect of promoting urban sprawl. Cities need an identity; this is why a settlement hierarchy has to be set and can vary from case to case. Sometimes there can be the need for more concentration and not for new settlements.



Which are the most useful approaches to improve urban resilience?

Four different approaches to support resilience planning were presented during the Stakeholder Dialogue. All of these were deemed useful by participants but also not comparable, since each of them serves different purposes and responds to different stages of the planning process. In relation to improving urban resilience, it was noted that while it is easier to focus attention and resources on one severe impact, it is more difficult to take a small-scale and continuous approach on building resilience.

Also here, the need was flagged to include ‘adapta-

tion' within a broader concept; 'liveability' was suggested as a possible option. Some considerations by participants on the approaches presented can be found below.

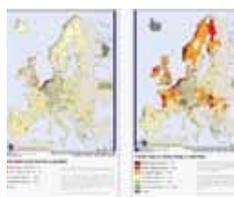
Quantitative indicators



- Give a very thorough overview of the state of play, but it is problematic to define benchmarks and it is crucial to reduce complexity in order to make them usable by city practitioners. There is the need for a 'filter' between science and end users;

- Which and how many indicators do you need to measure resilience? And how do they interact with each other?

Simulation, modelling and mapping



- Provides a much needed simplification of complexity and is crucial to raise awareness;

- It is nevertheless not always directly applicable on a city scale

and it doesn't tell which indicators were used to develop the models. A link between the macro and the micro-scale is needed;

- Models are incapable to predict unexpected events.

Simplified design guidelines



- These guidelines are easy to understand as they are very visual, but on the other hand they are very reactive, and only have the scope to mitigate prior system failures;

- While providing an illustrative representation of good examples, in order to make simplified guidelines applicable in a specific city your local risks need to be assessed first and a choice be made on which can be usable.

Schematic representation of complexity



- This approach is very useful to create a systemic understanding of adaptation and comprehend interconnections. Its strength is not represented by the information it provides but by the thinking it triggers.

- Since it allows understanding cross-sectoral synergies, this can represent a good exercise to initiate adaptation planning, prioritise measures and undertake communication with the right stakeholders. It is a valuable decision-making tool!

2. Assessing the benefits & costs of climate adaptation

Assessing costs of damages induced by climate change and of adaptation is crucial to correctly face upcoming threats and obtain political commitment. In order to correctly assess costs and benefits of climate adaptation, it is crucial for cities to have a clear picture of the hazards, impacts and uncertainties they will face in the future and of which planning options can best respond to their needs. To do so, cities will need to understand what the likelihood of extreme weather events and the related damage costs for their city will be. Also, it is vital to understand which departments will be dealing with such issues, given that climate impacts normally cause a cascade effect on many crucial city sectors. The main outcomes of these discussions are presented below.

Main outcomes

- It can be challenging to measure the severity of the impacts on city systems since these differ substantially within different areas of the same city. For example, in the case of flooding, the scale of damage caused would depend very much on the intensity, duration and location (raising the question if the city core systems will be affected), which makes it difficult to estimate the impact/cost of this risk for a whole city.
- Not only the likelihood but also the frequency of extreme weather events needs to be taken into account. Furthermore, costs and likelihood are very much dependent on the timescale that is applied. It must be also considered that higher likelihood does not always mean greater damage, since not all events will damage cities. In fact, the damage caused to cities can vary greatly depending on their responsiveness. For example, in cities with a high rate of sealed surfaces and a lack of green and blue infrastructure, impacts such as flooding, drought and heat waves are expected to come at a high cost.
- In order to correctly estimate costs for adaptation, co-benefits and synergies have to be taken into account. Prevention reduces the severity of impacts and therefore their cost for cities. Furthermore, it is important to take into account

how one impact will affect different city systems.

- It is at this stage challenging for cities to find knowledge and methodologies on how to develop and adaptation cost estimation. Losses and costs have to be considered cross-sectorally and a multilevel approach is needed to do so.
- In general, impacts such as heat waves are expected to increase and are hence expected to cause higher costs, also due to the indirect social and economic effects that they cause (e.g., lower labour productivity, higher mortality, higher car accident rate, etc.).
- Even in the case of events that are expected and most costly for cities (e.g., flooding), it is not certain if these can be attributed to a large extent to climate change, since there are often coincidental factors coming into play.

3. How to create urban strategies for transition

City planning and especially planning for resilience requires clear decisions to be made. In order to become resilient, cities will need to decide now on issues that will affect them in the long term. Be it a decision on how to plan and build infrastructure or on how to allocate funds for adaptation, a vision is necessary to set a clear direction towards the goals to be achieved and to understand how to get there. Building a vision requires a precise understanding of what challenges a city is encountering in the present. Climatic challenges intertwine with social and economic ones, they are consequently always context-specific (including climatic region, size of a city, economic and social situation, etc.). After challenges have been spotted, a vision to strive to and transition factors to reach this need to be identified. The results of the vision construction exercise carried out during the Stakeholder Dialogue are presented below.

Main outcomes

Baselines/Challenges

The present challenges identified for the case city include increases in road maintenance costs due to increased snow and precipitation, and the necessity to build reservoirs for water storage and to guarantee water supply due to longer and dryer summers. Further challenges include flooding of house dwellings and consequent damage to electricity grid and city core systems.

Conflicts between adaptation and mitigation can arise in relation to space. In fact, whereas mitigation normally profits from dense city areas, adaptation needs space in order to build city system protections (e.g., for example for water storage or green infrastructure).

All impacts considered lead to economic losses and to additional costs to restore core city systems.

Health problems are expected to rise due diverse climate impacts. This will have a social as well as an economic negative impact.

Vision

Depending on the challenges identified above, a vision for the city development in 30 years could include the following factors:

- The presence of multifunctional spaces;
- The presence of an efficient communication platform with society;
- A more efficient land-use and planning creating



an adapted city to climate change effects. This should include protection of critical infrastructure and strong inter- and intra-institutional relationships;

- Strengthened social services, an efficient energy system based on renewable sources, land-use depending on and in balance with eco-system services;
- A mix of centralised and decentralised solutions, resource efficiency (energy, space and water), and early warning systems for the population;
- Community based governance, a strong and biocompatible economy with carbon fixing and based on high-level education.

Main transition factors

In order to reach the goals presented above, the following actions and factors have been identified:

- Redefining not only land use but land ownership in order to be able to act effectively to prevent negative impacts;
- Market barriers need to be overcome and co-benefits of adaptation for citizens to be better exploited. Private funding has to be attracted to foster innovation: for that, a framework has to be set that includes cooperation with the private sector;
- The cost of ecosystem consumption needs to be factored in the decision making process;
- Education, information and social inclusion will play a key role in creating a strong economy that can lead a city to reach its goals. This will foster innovation and business experiments to facilitate the transition. Social participation will also have the advantage to create joint responsibility and contribute to changing consumption patterns.



Conclusions

The RAMSES Stakeholder Dialogue saw a fruitful exchange between researchers and practitioners. While it emerged during the day that practitioners have a clear understanding of how they should act in order to make adaptation a daily consideration and priority in their work and to advance it in political terms, a knowledge gap remains to be filled and tools need to be provided to support the structuring and implementation of this process. The information shared by participants will support the RAMSES research in order for the project outcomes to respond to cities' needs and challenges highlighted in this report.

For more information on the RAMSES Project please visit <http://www.ramses-cities.eu/cities/>

Sign up [here](#) to the RAMSES newsletter to receive further information on coming Stakeholder Dialogues, workshops and conferences as well as research outcomes.

Report drafted by [Alberto Terenzi](#) and [Astrid Westerlind Wigström](#), ICLEI - Local Governments for Sustainability.

