



Rotterdam

Rotterdam Climate Proof Adaptation Strategy 2010

Category

Water

City

Hong Kong

Population

587,161

Project Start Date

End 2008

Annual CO₂ Reductions

Goal: 50% CO₂ reduction compared to 1990 by 2025

Initial Investment

The overall budget of the programme is €30 million for the time frame 2009-2012. Of which €20 million is allocated for investments in physical pilot projects. Rotterdam Climate Proof started out in 2008 and is currently in full progress under the coordination of the Rotterdam Climate Initiative.

Project Status

Ongoing

Contact

Marijn Kuitert
Communication advisor,
Rotterdam Climate Proof
00 31 10 267 24 87
Climate Office
City of Rotterdam
P.O. Box 70012
3000 KP Rotterdam
m.kuitert@bsd.rotterdam.nl
For more information, visit <http://www.rotterdamclimateinitiative.nl>.

What is it

Rotterdam Climate Proof, The Rotterdam approach of the water management and climate adaptation challenge.

Issue

Our climate is changing. The consequences of climate change will be felt also in Rotterdam. Rain showers are growing heavier as it is, presenting the city with the challenge of excess water or flooding. In the long run, our low-lying delta city will also be confronted with rising sea levels and exceptionally high or low river levels and flows. Furthermore, the temperature in the city will rise, and heat stress will affect increasing numbers of people.

In order to confront the challenge of climate change as an opportunity rather than a threat, the City of Rotterdam has set up the Rotterdam Climate Proof programme. Rotterdam Climate Proof will make Rotterdam climate change resilient by 2025. Permanent protection and accessibility of the Rotterdam region are key elements. The central focus of the programme is to create extra opportunities to make Rotterdam a more attractive city in which to live, work, relax – and invest.

Trendsetting research, innovative knowledge development and a dynamic and decisive implementation of the suggested measures will result in strong economic incentives. Collaborating with prominent partners, Rotterdam will become an important innovative water knowledge city in the world, and an inspiring example to other delta cities.

How does it work?

Goals and Objectives

Rotterdam Climate Proof will make Rotterdam fully climate proof by 2025. Responding to climate change will enable us to keep the city safe, accessible, and attractive, now as well as in the future. This will benefit both the people who live and work here, and the businesses and corporations established in the area. This substantial ambition will be realized on the basis of three guiding principles:

- Rotterdam will develop into and present itself on a national and

international level as a leading centre for water knowledge and climate change expertise.

- Investments in climate solutions will enhance the attractiveness of the city and port for residents, companies, and knowledge institutes.
- Innovations and knowledge are developed, implemented, and marketed as an export product.

Implementation - The Rotterdam Approach

Climate adaptation and spatial development are inextricably intertwined in Rotterdam. This approach allows urban planners to create designs that effectively address the issue of climate change. At the same time, the necessity to invest in climate adaptation will create and sustain the momentum needed to enhance the city's attractiveness.

Adaptation to climate change is more than just a necessity for Rotterdam. Perhaps even more importantly, it offers an economic opportunity. This approach is characteristic of Rotterdam Climate Proof. Gaining knowledge and experience fast in combining water management and spatial planning will allow the corporate sector to build a powerful competitive advantage.

Rotterdam's Climate Adaptation Strategy (RAS)

Climate change resilience in Rotterdam will first and foremost involve sustainable protection against flooding in the areas inside and outside the levees. In addition to flood management, the city will have to focus on other ways to prepare for the consequences of climate change as well, such as higher incidence rates of heat waves, increased heavy precipitation, groundwater salinization, changing options for transport by water, and increased volatility of groundwater levels. What is essential for an adaptive strategy is that it is implemented proactively and that it can be adjusted to changing circumstances. The Rotterdam Climate Adaptation Strategy (RAS) clearly defines the measures that can be taken to climate proof the area.

The implementation of this proactive strategy requires knowledge and tools. In concrete terms, RAS consists of four clusters:

- The trajectory: Which specific objectives and milestones can we define on the road to climate change resilience? This involves both a substantive definition and planning. Subproject: developing a climate atlas and a route planner.
- The specific activities: Keeping in mind the trajectory and the milestones to be attained, the question can be answered as to what project managers can do specifically to climate proof their areas. Subproject: developing a climate tool box.
- The procedure: This involves embedding climate adaptation into current work processes. Eventually, the issue of climate proofing will have to be included in the early phases of all spatial planning,

policy-making, implementation and management. Subproject: incorporating climate adaptation.

- The state of affairs: What is the current state of affairs for the projects of Rotterdam Climate Proof; which interim objectives have been achieved so far? How can we make them manifest?
Subprojects: monitoring climate adaptation, and developing a barometer.

Three pillars

Rotterdam Climate Proof nourishes high ambitions. Their realization requires decisiveness, knowledge development, space to test and experiment, and new partnerships and alliances. For this purpose, Rotterdam has decided to adopt a clever way of combining policy and implementation, considerations and execution. Innovative solutions will enhance the safety and the quality of life in the city, while at the same time offering substantial economic potential for the entire region. Rotterdam thus becomes an inspiring example to other delta cities.

1. Knowledge: Rotterdam is developing into a leading national and international water knowledge and climate city.

Trendsetting research in the area of theoretical and applied delta technology enables Rotterdam to create the basis for groundbreaking innovations and international collaboration. Within the national research programme entitled 'Knowledge for Climate', Rotterdam has been named a hotspot in this field. In concrete terms, this means that a fund of over 5 million euros is available for the 50% co-financing of research efforts. Accordingly, most of the knowledge projects are included in this programme.

Knowledge development also takes place through knowledge exchange. For this reason, Rotterdam has set up the international knowledge network called 'Connecting Delta Cities'. In addition, Rotterdam cooperates intensively with Rotterdam University (water management) and Erasmus University Rotterdam (EUR). New educational programmes focused on water management and delta issues are currently being developed, and students are given a chance to work for Rotterdam Climate Proof. Whereas the study programmes in Rotterdam focus mainly on applied knowledge, the cluster with Delft University of Technology predominantly addresses theoretical knowledge. The province of Zeeland serves as a testing ground in this respect where natural elements are used in construction work. A powerful region is thus created, where knowledge development is linked with the application of water management and delta technology, allowing the results to be marketed through the knowledge and innovation cluster as part of Clean Tech Delta.

2. Actions: Rotterdam is developing into a global testing ground in the field of delta technology and adaptive building.

Investing in a climate proof city contributes to the realization of a safe, healthy, and attractive living environment and a strong economy for the residential and business communities. Innovations and knowledge are developed and applied for use in Rotterdam. Especially the *Stadshavens* district will be the recipient of substantial investments, for instance in terms of adaptive building and floating constructions (such as the floating pavilion), and the National Water Centre. This will help *Stadshavens* to become the showcase of Rotterdam for 'urban delta technology'.

3. Positioning: Rotterdam is an inspiring example to delta cities around the world.

Rotterdam positions itself as a delta city with a world port that approaches future climate change in an unassuming, safe and innovative manner. Not only on a local level but also on a national and international level, Rotterdam projects an image of innovation, reliability, and decisiveness. In 2010, Rotterdam will be represented at the World Expo to show the world how this metropolis manages to keep the city and port protected against flooding, despite climate change. Establishing international knowledge agreements and partnerships, Rotterdam takes up a prominent position among the leaders in the field. These leaders in the international field of water management and delta issues will attend the conference entitled 'Deltas in Times of Climate Change', which will take place in Rotterdam between 29 September and 2 October 2010.

Results

1. Knowledge

- 5.2 million euros obtained from the national Knowledge for Climate subsidy programme (period between 2009 and 2013).
- Definition study adaptive building completed.
- First Dutch water management curriculum at Rotterdam University started up.
- First elaboration of the Veerman Committee recommendations (Lockable Open Rijnmond) delivered.
- Rotterdam coordinates the knowledge exchange between the C40 delta cities.
- Various publications, symposiums, films, and dissertations.

2. Actions

- 20,000 m² of green roofs and a subsidy scheme.

- Design of the first water plaza is completed, and the participation programme has been started up.
- A total of 25,000 m³ of additional water storage space has been realized.
- 5,000 m³ of additional water storage space in Tjalklaan is currently under construction.
- 10,000 m³ of additional water storage space in Museumpark is currently under construction.
- Lepelaarsingel has been extended, extra water reservoir has been dug in Hordijkerveld.
- The first terraced levee has been designed (Hilledijk).
- The design for the Blue Connection is finished, the agreement has been signed.
- The construction of the floating pavilion has commenced in September of 2009.

3. Image projection/marketing and spin-off

- Contract with World Expo Shanghai, pavilion construction commenced.
- Rotterdam acclaimed as SMART Delta City (Berlin).
- Connecting Delta Cities set up within C40. The delta cities Tokyo, Jakarta, Hong Kong, Shanghai, New York, and London have expressed their commitment, and this commitment has been formalized by now with Ho Chi Minh City and Jakarta.
- Rising turnover is achieved in consultancy services on water management and climate change adaptation in Rotterdam and the surrounding region.
- IBM invests in Rotterdam by means of IT programmes and top talent.
- Rotterdam appointed as Champion City (World Water Forum Istanbul).
- Rotterdam sets an example in the National Water Plan.
- The number of water management and climate-related conferences and delegations in and to Rotterdam has increased explosively.
- Rotterdam now enjoys national and international recognition in this arena.
- Strategic marketing plan called Water and Climate has been delivered.
- 2009 study by Deloitte reveals: water management/climate is the most promising economic growth sector in Rotterdam.
- Television series entitled 'Mulder & Sno' and '010 water' broadcast on RTV Rijnmond.
- Rotterdam designated as the location for the new National Water Centre in 2012.

Results and evaluation

Changes effected and results evaluated are part of the Rotterdam Adaptation Strategy and are secured in the following instruments:

Climate atlas: This involves an outline of the region-specific impact of climate change, scenarios, and the measures that have already been implemented. Region-specific climate change predictions will be laid down in a climate atlas. The final design will be developed in 2010, based on the input of the users of the information.

Barometer: The climate barometer is a communication-oriented monitoring tool that will provide insight into the level of climate change resilience of the city of Rotterdam. In 2010, we will focus on translating the concept into a mature instrument.

Monitoring: Physical measures that are taken are monitored, and their effects on the speed and scope of the expected climate change are recorded. In addition, this allows us to assess the positive spin-off for the objectives of Rotterdam Climate Proof, such as enhancing the attractiveness of the city and adding economic value. Subsequently, we will create a comprehensive overview of the progress of the Rotterdam Climate Proof projects and their implementation. To get a good impression of the progress and the correlation between all programme elements, we will assess whether it is useful and possible to develop a dashboard for this purpose. This is also part of the Smart Delta City Concept.

Route planner: Defining the milestones, actions and options for each theme in the course of time, the route planner is the backbone of Rotterdam's adaptation strategy. The road to climate change resilience may vary for each theme, and they may be interdependent. In 2010, this route planner will be elaborated in further detail for all of the themes, including a description of their interdependence.

Climate tool box: This involves area-specific adaptation options in support of a proper balance in measures to be taken. In 2009, climate adaptation was incorporated in the *Stadsbavens* case. In 2010, the emphasis will be on the implementation of the methodology in several areas.

Assurance: Climate change resilience will be embedded in spatial planning, area development, implementation and policy guidelines. Existing instruments and methods will be tested for possible alignment (e.g., Structural Concept, Water Test, EIA, Rotterdam Style). Proper organizational incorporation within 'Rotterdam corporate' is crucial in this respect, as is a clear representation of all of the consequences,

opportunities, instruments, and expenses involved. Finally, research will be conducted into the question as to whether it would be effective to provide assurance for the climate ambitions and objectives in the form of a policy framework.

Next steps/ timeframe

See Rotterdam Climate Proof Adaptation Programme 2010 (see downloadable report).

