



## Full Steam Ahead!

# Rotterdam Climate Initiative

## 2008 Report - Summary

Improving the climate for the benefit of people, the environment, and the economy; that is the challenge confronted by the initiators of the Rotterdam Climate Initiative (RCI): the Port of Rotterdam, the City of Rotterdam, employers' organization Deltalinqs, and DCMR Environmental Protection Agency Rijnmond. Following the start in 2007, in 2008 the RCI developed into a Rotterdam-based network of citizens, companies and organizations. The RCI provides encouragement and incentives to start up and implement climate-related activities in the city and the port, creating a movement in which government, organizations, companies, knowledge institutes, and citizens collaborate to achieve a fifty per cent reduction of CO<sub>2</sub> emissions, adapt to climate change, and promote the economy in the Rotterdam region.

## Introduction

The Rotterdam Climate Initiative (RCI) is the climate programme of the City of Rotterdam, the Port of Rotterdam, Deltalinqs, and DCMR Environmental Protection Agency Rijnmond. The main objective of the RCI is to achieve a fifty per cent reduction of CO<sub>2</sub> emissions in the city, the port, and the industrial complex by 2025 as compared with 1990. A second objective is to promote the economy in the Rotterdam region.

Additional tasks of the RCI include:

- To promote innovation and knowledge development in the area of sustainability.
- To promote sustainable energy production.
- To generate commitment and support among citizens and the corporate sector.

Promotion of the economy in Rotterdam is emphasized as part of the ambition. If we take action now, we can ensure that Rotterdam preserves its attractive image as a residential city and an excellent location for modern, sustainable industry. This will help the port district to strengthen its competitive position. The global economic crisis makes the RCI projects that combine the theme of sustainability with advantages in the area of job creation even more relevant. At the start of the RCI in 2007, the overall CO<sub>2</sub> emissions in Rotterdam amounted to approximately 29 megatons (Mton), compared to 24 Mton in 1990. If no measures were to be taken to reduce the emission of CO<sub>2</sub>, expectations are that the overall CO<sub>2</sub> emissions in the Rotterdam region would rise to 46 Mton in 2025. The main objective is to reduce CO<sub>2</sub> emissions to only 12 Mton by 2025, 50% of the level in 1990. This means that 34 Mton of CO<sub>2</sub> emissions need to be avoided in 2025. This objective is represented in Figure 1.

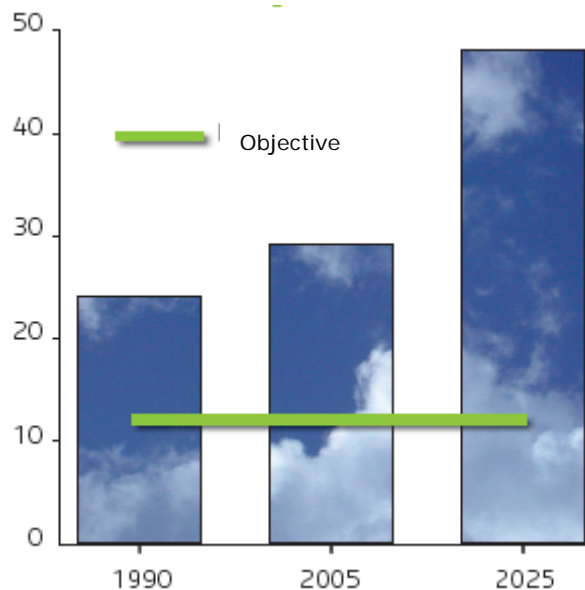


Figure 1: The RCI objective and overall CO<sub>2</sub> emissions

By the end of 2008, preparations were made to accommodate also the climate adaptation programme 'Rotterdam Climate Proof' with the RCI. Preparing for and adjusting to the consequences of climate change were added to the list of RCI ambitions early in 2009. In the 2008 Report, we focus on the mitigation programme, aimed at the reduction of CO<sub>2</sub> emissions.

## Five-pillar approach

The RCI programme is implemented by the four participating organizations in a five-pillar approach. The objectives of this approach include a reduction in energy consumption and more efficient energy consumption, an increase of the share of sustainable energy, and capture and storage of CO<sub>2</sub>.

### 1. Rotterdam Sustainable City

By 2025, the emission of CO<sub>2</sub> of all homes and buildings in the city should be reduced by at least 50%.

### 2. Rotterdam Energy Port

Over 85% of CO<sub>2</sub> emissions in Rotterdam can be attributed to industry. Increased energy efficiency and the use of low-CO<sub>2</sub> energy sources and products will change this situation.

### 3. Rotterdam Sustainable Mobility

Cleaner fuels and alternative vehicles will make transport more sustainable, resulting in improvement in air quality.

### 4. Rotterdam Energizing City

The goal of a clean and sustainable city of Rotterdam cannot be achieved on our own. For this reason, we seek the support, collaboration and commitment of citizens, companies, and organizations.

### 5. Rotterdam Innovation Lab

By giving innovation a chance and a boost, Rotterdam can develop into a leading metropolis in the area of energy-related knowledge and developments.

These pillars form the foundation for a large collection of projects and activities. A number of these projects were assigned top priority in 2008, leading to the following results.

## CO<sub>2</sub> capture, transport, and storage (CCS)

Essential to achieving the RCI objective is the capture, transport, and storage of CO<sub>2</sub>. The aim is to store 20 Mton of CO<sub>2</sub> per year in underground storage, starting from 2025. Until this time, two interim targets have been defined: 3 to 5 Mton of CO<sub>2</sub> per year starting from 2015, and 15 Mton starting from 2020. In addition to national and EU financing, CCS requires adjustments of legislation and regulations. Efforts in 2008 included the preparation of a detailed list of the overall supply chain expenses and of possible adjustments of legislation and regulations that could support the realization of CCS.

### CATO

An important milestone in 2008 was the opening of the first pilot installation for CO<sub>2</sub> capture from waste gases at electricity production plant E.ON. The installation is a subproject of the CATO programme, the Dutch acronym for CO<sub>2</sub> capture, transport, and storage. TNO (the Netherlands Organization for Applied Scientific Research) is the coordinator for this pilot plant.

### CCS capital

On an international level, it was significant that the Clinton Climate Initiative (CCI), founded by former President of the United States Bill Clinton, declared Rotterdam to be one of the three main CCS locations in the world, together with Pennsylvania (US) and Victoria (Australia). CCI operates in close collaboration with the RCI.

## C40 World Ports Climate Conference

In July of 2008, the Port of Rotterdam gave an extra impulse to the international cooperation with other ports by organizing the C40 World Ports Climate Conference. At this conference, 55 ports signed the 'World Ports Climate Declaration'. Thus, Rotterdam gave momentum to the international collaboration of ports in the area of climate change mitigation.

### **Environmental Ship Index**

One of the projects initiated as a result of the conference is the Environmental Ship Index (ESI), which focuses mainly on emission reduction of CO<sub>2</sub>, NO<sub>x</sub> (oxides of nitrogen), SO<sub>x</sub> (oxides of sulphur), and particulate matter (PM). In this project, the Port of Rotterdam collaborates closely with other European ports. They will apply the index as a quality mark and reward ships that operate in a clean and efficient manner.

### **Reduction of CO<sub>2</sub> emissions in built-up environment**

In 2007, a cooperation agreement was signed with housing association Woonbron to invest in energy saving in rented houses. The implementation phase was started up in 2008, consisting of ten specific projects. One example concerns the installation of wind turbines on the roofs of new rented homes in Schiemond, Heijplaat, and Pernis.

### **Energy transition platform**

Furthermore, 2008 saw the setup of partnerships with several other housing associations, as well as the foundation of the Rotterdam Energy Transition Platform for housing associations. In June of 2008, a collaboration agreement was signed with approximately forty developers, constructors and investors concerning sustainable new developments. Targeted energy measures will enable the collective housing associations to realize an annual reduction of 90 Kton of CO<sub>2</sub> emissions starting from 2025. This means a 25% reduction of CO<sub>2</sub> emissions starting from 2009, and a 50% reduction of CO<sub>2</sub> emissions starting from 2011. Moreover, these measures will result in improvement of the air quality.

### **Sustainable lighting**

In the area of sustainable public lighting, various activities were started up in 2008, including pilots in the centre, in residential districts (e.g., Hoogvliet and Kralingen) and in parks (Kralingse Bos). In addition, a lot of experience was gained with dimming the public lights at times when traffic and safety standards permit to do so.

### **Heat distribution company**

Using residual heat recovered from industry to heat houses, offices, and hospitals, for instance, will allow for an annual reduction of 60 to 70 Kton of CO<sub>2</sub> emissions. The plan is, therefore, to utilize the available residual heat properly and to ensure that by 2020, some 50,000 existing and new homes will be connected to the community-based residual heat system. In 2008, efforts were devoted to a successful business case, in which residual heat recovered from AVR Brielselaan is used for the Rotterdam heating network. Newly developed property is currently being connected, and the connection of existing property is in the process of further development.

### **Improvement of energy efficiency in industry**

In view of the fact that over 85% of CO<sub>2</sub> emissions in Rotterdam can be attributed to industry, improved energy efficiency is an important tool when it comes to reducing CO<sub>2</sub> emissions. RCI partner Deltalinqs is trying to create support for an annual 2% energy efficiency gain in the industrial sector. For this purpose, the Deltalinqs Energy Forum (DEF) was set up, which organized eight workshops and master classes for the industrial sector in 2008. During these events, external experts presented the latest technological insights for improvement of energy efficiency.

### **Steam pipe**

In 2008, Deltalinqs, the Port of Rotterdam, and a number of companies in the Rotterdam-Botlek area studied the feasibility of the 'Stoompijp' (steam pipe) project, a communal supply system for sharing steam. This

system would help companies to realize considerable savings in energy consumption. The study revealed that the 'Stoompijp' is feasible for all participants from a commercial point of view. The environmental advantages are very interesting as well, as less gas consumption is combined with better use of residual heat. This involves a potential for reduction of 400 Kton CO<sub>2</sub> emissions per year. The final collaboration agreement for the installation and operation of the steam network Botlek-west is planned to be signed in 2009.

### **TechnoPark**

In 2008, Deltalinqs took significant steps together with the Port of Rotterdam to realize a TechnoPark to demonstrate and test sustainable innovations. At the site of Huntsman in the Botlek district (port number 5210), they found a suitable location in the form of an industrial building where all connections and facilities required for pilots on an industrial scale are available. Provided a number of preconditions are met, TechnoPark Rotterdam can actually be started up in 2010.

## **More sustainable energy through biomass programme**

Biomass admixture in electricity generating plants results in significant reduction of the burning of fossil fuels, and therefore of CO<sub>2</sub> emissions. Accordingly, the aim is to use this method to achieve a reduction of 4.5 Mton of CO<sub>2</sub> emissions in 2025. In 2008, pioneer AVR commissioned a biomass (low-grade timber) powered combined heat and power station.

### **Biofuels**

In 2008, two biodiesel plants were erected in the Rotterdam region, and preparations were made at the Maasvlakte for yet a third highly advanced biodiesel plant. In addition, a large bioethanol plant is under construction in the Europoort district. In order to stimulate the supply and use of biofuels, the RCI organized the first Biofuel Barbecue (Dutch abbreviation: BBBBQ) in 2008, a meeting for entrepreneurs trading in sustainable mobility. The RCI reached agreements with people including owners of large fleets, car dealers, and filling station owners in Rotterdam.

Furthermore, 2008 saw the startup of the Biodiesel for Freight Traffic project, aimed at motivating carriers and shippers to switch to biodiesel. In addition, a subsidy scheme was set up for biofuel filling stations, awarding petrol station owners a grant for the installation of a biofuel pump.

## **Participation campaign**

Making the city of Rotterdam clean and sustainable requires the participation of all parties involved. This is why citizens, companies, and organizations are actively involved in the planning process and the implementation of sustainable measures. In 2008, the publicity campaign entitled 'Ik teken ervoor' (I subscribe to the goals) was launched. The objective of this campaign is to familiarize the wider public with the efforts Rotterdam expends for the benefit of the climate, and to encourage the residents of Rotterdam to adopt a positive attitude towards climate-related goals.

## **Good start**

In 2008, the Rotterdam Climate Initiative developed into a widely supported movement in Rotterdam that serves as a propeller for the startup and implementation of climate-related activities in the city and the port. It consists of a network of citizens, companies and organizations. The 2008 Report shows that we are making good progress: many initiatives have been launched and excellent results have been achieved.

And even though we can say that we are off to a good start, it really is only a start. In the next few years, a great deal more needs to be done in order to realize our climate ambitions. The Rotterdam Climate Initiative will continue to build up the image of Rotterdam as a climate city. In this respect, it aims to achieve 50% reduction of CO<sub>2</sub> emissions, full climate change resilience, and sustainable economic development.

## Colophon

The complete version of the 2008 Report can be downloaded from the RCI website ([www.rotterdamclimateinitiative.nl](http://www.rotterdamclimateinitiative.nl) under Press & Publications), or you can request a copy from the administration office.

### Postal address

Rotterdam Climate Initiative  
OntwikkelingsBedrijf Rotterdam  
P.O. Box 6575  
3002 AN Rotterdam  
The Netherlands

### Visiting address

World Trade Center  
5<sup>th</sup> floor, room 521-525  
3011 AA Rotterdam  
The Netherlands  
Telephone +31 (0)10 205 37 66

[info@rotterdamclimateinitiative.nl](mailto:info@rotterdamclimateinitiative.nl)  
[www.rotterdamclimateinitiative.nl](http://www.rotterdamclimateinitiative.nl)  
[www.iktekenvoor.nl](http://www.iktekenvoor.nl) (public site)