



ROTTERDAM.**CLIMATE**.INITIATIVE

# Connection

Report 2009



Energy efficiency



Sustainable energy



CO<sub>2</sub> capture, transport and storage



Adaptation

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# Summary

In 2009, the Rotterdam Climate Initiative was able to advance towards the objectives of 50% reduction of CO<sub>2</sub> emissions and full climate change resilience by 2025, in an economically prosperous city. Qualified optimism is therefore justified. Our climate-related efforts have proven effective: we have managed to reduce CO<sub>2</sub> emissions in 2009 as compared with the levels of 2008, although to some extent this reduction should be attributed to the economic recession. The RCI is an alliance, a network organization that serves as a springboard to launch various projects in order to reverse the trend of increasing CO<sub>2</sub> emissions. The results of these projects will often take a while before they show up in tables in terms of avoided CO<sub>2</sub> emissions, and many of the efforts expended today will yield significant results only later on. The same is true for the efforts to prepare Rotterdam for the consequences of climate change. Thanks in part to the RCI, Rotterdam is now firmly on the map of international climate, energy and water management.

## Reduction of CO<sub>2</sub> emissions makes headway

In 2009, the reduction of CO<sub>2</sub> emissions really gained momentum in the city, as more and more citizens, businesses, institutions and political factions rallied behind the cause. There is a growing perception of how measures to reduce CO<sub>2</sub> emissions contribute to a better (corporate) environment. This was an important connecting theme in the year 2009. The commitment among the various parties to implement existing agreements in practice is illustrated by dozens of examples.

## RCI approach is widened

The mitigation approach of the Rotterdam Climate Initiative is based on the Trias Energetica:

- Reduced energy consumption = energy efficiency
- Clean wind, solar and biomass energy = sustainable energy
- What we capture can be reused or stored = CO<sub>2</sub> capture, transport and storage

In addition to the mitigation approach, Rotterdam focuses on adaptation in the context of the RCI:

- Prepare for inevitable climate change

## Energy efficiency

In the city, housing associations are tackling the issue of heat leakage. The use of industrial residual heat for residential purposes made a real stride forward. The City made preparations for the greenification of its municipal buildings by

retrofitting them, starting off with swimming pools. DCMR Environmental Protection Agency Rijnmond provided the people of Rotterdam with tips on how to save energy, and expanded its role as environmental supervisor to include the tasks of an energy consultant in nonresidential building.

Where industry is concerned, Plant One will be developed into a testing ground for efficiency measures in large business parks, thanks to the network provided by Deltalinqs. The business case for the Steam Pipe is being elaborated. Deltalinqs Energy Forum facilitates knowledge exchange.

Companies in the port appreciate the fact that energy profit equals cost reduction. The RCI contributes to the production of a film on ship handling, lobbies for quay-side power supply and is busy establishing a Clean Shipping Index.

## Sustainable energy

Wind and solar energy. Agreements reached in the previous wind energy covenant are exceeded and replaced by new agreements: to double the capacity by 2020. One of the agreements is that the roof of the new Rotterdam Central Station public transport terminal will be equipped with solar panels.

Energy produced from biomass. Rotterdam lobbies for better opportunities for high-quality, sustainable biomass: favourable financial preconditions and admixture obligations (dictated by Brussels), and solutions to the practical bottlenecks faced by biomass producers. The port aspires to a position as the biomass port in Europe and has published a monitoring report listing the environmental contribution of the various types of biomass.

Transport. The cycle of producers and users waiting for the other one to make the next move, is broken. We bring fuel suppliers and users of petrol, gas and diesel cars together, both where freight traffic and passenger cars are concerned. The Power Surge Project aims to increase the number of electric vehicles in the city.

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

In 2009, the corporate sector and the government grew increasingly more enthusiastic about CCS. Companies joined forces in fleshing out the idea of a CO<sub>2</sub> hub. During an RCI inspiration tour to Japan, their enthusiasm proved infectious. The costs involved remain a matter of concern, though.

## Adaptation

The Rotterdam Climate Proof (RCP) programme was included as part of the RCI in 2009. The RCI now has a double focus: on mitigation as well as adaptation. As a result, Rotterdam became the first city in the Netherlands to tackle the entire climate file in one single organization.

Knowledge development, networks and visibility are the characteristic features of the adaptation efforts. The objective, once again, is to capitalize on the economic opportunities that the climate change issue has to offer. RCP has five key themes: adaptive building, flood management, the urban water system, the urban climate and accessibility. Each of these themes has its own focus, varying from research to exposure in the international arena. Numerous foreign delegations visited Rotterdam. Together with its partners, the RCI organized a delta climate conference. Thanks to the city's raised profile, the National Water Centre selected Rotterdam as the seat for its headquarters.

## 2009 and beyond

Much has changed in 2009 within the Rotterdam Climate Initiative. As from 1 January, the Climate Office has a new Programme Director (Wiert Jan de Raaf) and a new Chairman of the Board (Mayor Aboutaleb). Alderman Mark Harbers (responsible for the port, the economy and the environment) stepped down and Alderman Rik Grashoff (responsible for participation, culture and the environment) took office, and Rotterdam Climate Proof proved to be a successful addition to the organization. Two new members joined the management team: Paula Verhoeven (Director of Climate Affairs for the City of Rotterdam) and Pieter van Essen (Project Director for Port Affairs for the RCI and the Port of Rotterdam).

The municipal elections in March 2010 cast their shadow ahead, with different parties taking different perspectives on sustainability. The role of the RCI, however, remains indispensable. The newly installed City Council expressed their intention to reserve 30 million euros for the continuation of the RCI. Also in the world around us, a lot of interesting new developments took place. The Copenhagen Climate Summit, even though it failed to yield the desired immediate results, brought an inspirational alliance of large cities in the 'Cities Act', showing a lot of local-level commitment and a great desire to cooperate.

The economic downturn has a severe impact. Nevertheless, there is general consensus that investments in sustainability are a necessity rather than a luxury.

# Connection

## The Rotterdam Climate Initiative in 2009

In 2009, the Rotterdam Climate Initiative (RCI) continued to pursue its ambition: 50% reduction of CO<sub>2</sub> emissions by 2025 as compared with the levels of 1990 in the city as well as in the port and industrial complex. The present report describes how we intend to achieve this and what the results are of the various initiatives. For the first time this year, the Rotterdam Climate Proof (RCP) adaptation programme was part of the RCI.

This expresses the RCI focus on two important climate change issues, which are also the main objectives of the programme:

- 50% reduction of CO<sub>2</sub> emissions by 2025 as compared with the levels in 1990 (mitigation)
- Full climate change resilience by 2015 (adaptation)

In combination with:

- Promotion of the Rotterdam economy

### Approach

The RCI approach consists of four themes:

- Energy efficiency
- Renewable energy
- CO<sub>2</sub> capture, transport and storage
- Adaptation

The RCI is a network. The partners involved, the City of Rotterdam, the Port of Rotterdam, DeltaInq and DCMR Environmental Protection Agency Rijnmond, work together as well as with many other parties to realize the RCI objectives. The RCI binds initiatives together, provides exposure for them as part of the Rotterdam approach, shows unwavering commitment to secure (national and European) subsidies for Rotterdam-based projects, engages in collective lobbying, looks for technical solutions and creates favourable preconditions. None of the projects described in this report are single-party projects. An essential feature of the RCI is that it involves a partnership between government, companies,

citizens and the world of science in a collective effort to reduce CO<sub>2</sub> emissions by all means available. In order to emphasize this collaboration, this report is designed to offer a platform for all those concerned.

### Rotterdam, world city

Rotterdam does not operate in a vacuum, and by now, the city has earned its leading position in the international arena as a centre of climate change and water management expertise. Developments on all levels impact the Rotterdam approach. Climate change attracted a lot of attention on a global scale, particularly around the United Nations Climate Summit held in Copenhagen late in 2009. Rotterdam attended the Cities Act during this conference, the summit for mayors that was held in conjunction with the UN Climate Change Conference.

On a European level, subsidy programmes are set up and the regulatory framework is high up on the agenda, with an increasing impact on climate policy in the various regions. Rotterdam monitors this process and engages in active lobbying in Brussels to ensure that experts and policy-makers are aware of what is going on. In February, Mayor Aboutaleb signed the Covenant of Mayors, consisting of the formal commitment of European cities to the 20-20-20 energy objectives: 20% reduction of greenhouse gas emissions, a 20% share of renewable energy sources, and 20% energy savings by 2020.

### Rotterdam in the Netherlands

On a national level, the cooperation concerns the central government as well as other municipalities. Rotterdam was already operating on a G4 level, and in December, Rotterdam and Amsterdam signed a declaration of intent to intensify their collaboration in the field of sustainable area development and mobility. In addition, Rotterdam cooperates with the Northern Netherlands, where, like in the Rijnmond region, large-scale CO<sub>2</sub> capture and storage is an important focus of attention.

What was important on a local level was a programme by the name of 'Rotterdam offers prospects for a sustainable future' (Rotterdam biedt perspectief), consisting of a set of measures presented by the City Council early in 2009 to promote the economy in Rotterdam. Reduction of CO<sub>2</sub> emissions, energy conservation and clean energy are important elements in this respect. The city invests nineteen million euros in energy-saving measures in schools, swimming pools and municipal buildings, and nearly eight million euros in energy efficiency in terms of public lighting and traffic lights.

Furthermore, the city wants to raise its profile in sustainability and innovation. In 2009, the innovation chain was launched: Dnamo was established with the support of the RCI, a 'breeding ground' for first-time entrepreneurs with sustainable and innovative ideas to turn to for support in the establishment and development of their businesses.



Alderman Rik Grashoff, responsible for culture, participation and the environment in Rotterdam, departing for the Copenhagen Climate Conference in the company of his counterpart from Amsterdam, Marijke Vos.



The people in Rotterdam are encouraged to show their commitment. Serving as an example was the Energy Battle, a competition between students' residences competing for the highest level of energy saving. Alderman Hamit Karakus, responsible for housing and spatial planning in Rotterdam, presented the award. In 2009, this concept was awarded the GasTerra Transition Prize, to the amount of € 75,000. This money was used for the elaboration of the online competition.

### Connection

The key theme for the year 2009 was 'connection'. The corporate sector has embraced the climate topic, and it is no longer predominantly the RCI who initiates and motivates, as to an increasing extent, companies and citizens work towards the goals on their own initiative. The network has grown stronger. Projects have been launched and realized, and they are described in this report as well. Not until later will the full effects of these projects become manifest in terms of reduced CO<sub>2</sub> emissions. To start up a climate approach and motivate community-based organizations and market parties to participate requires strenuous efforts in the early phases on the part of a connecting organization such as the RCI. As time goes by, more and more organizations will join in and develop activities. This will help to reduce CO<sub>2</sub> emissions faster and faster. Expectations are that the reduction of CO<sub>2</sub> emissions will also lead to increased investments in sustainability. In the period leading up to 2025, these amounts could well run up to as much as about thirteen billion euros (towards reduction of CO<sub>2</sub> emissions alone). This concerns predominantly private investments, supported by the central government and the

European Union. At the same time, this will benefit the region in terms of sharply rising employment, resulting in approximately 4,000 additional jobs [source: Boston Consulting Group, March 2010].

The year 2009 was also a year in which we continued to experience the challenges presented by the economic downturn. The recession had a cushioning effect on CO<sub>2</sub> emissions. Energy, the climate issue and water management remained the focus of attention, though, even in the face of the economic downturn, and Rotterdam managed to become even more attractive to companies looking to establish in the region. The reason why companies and institutions decide in favour of establishing in Rotterdam is that Rotterdam is the centre of innovation and new developments in the field of energy, the climate issue and water management. Rotterdam's climate-related ambitions play a significant role for companies and institutions for whom sustainability is an important (economic) factor, as well as for industrial corporations. Air Products, for instance, decided to establish their new hydrogen plant in Rotterdam in view of the city's efforts to solve the CO<sub>2</sub> issue.



Prince Willem-Alexander visiting the underground Museumpark water storage facility.

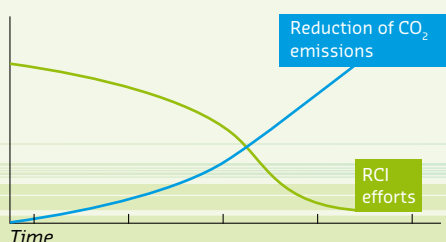
Rotterdam emphasizes that it regards the themes of energy, our climate and water management as a catalyst for economic growth and a growth sector for the city. In this context, the City of Rotterdam decided to participate in the new Clean Tech Delta initiative in 2009. One of the objectives of this initiative is to transform the newly to be developed Stadhavens district into a testing ground for sustainable area development, sustainable construction and mobility.

### 50% reduction of CO<sub>2</sub> emissions

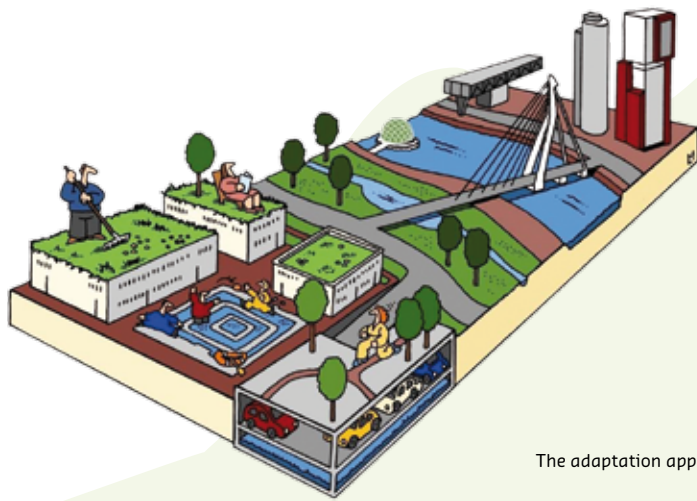
In 2009, overall CO<sub>2</sub> emissions were lower than the levels of the previous year: 27,216 kilotons (preliminary assessment) against 28,475 kilotons in 2008. The RCI distinguishes between three sectors:

- Built environment: CO<sub>2</sub> emissions from homes, municipal buildings, offices and small and medium-sized businesses decreased slightly: 1,357 kilotons against 1,378 kilotons in 2008. Residential renovation by housing associations contributes to this effect, in addition to the trend to increase energy efficiency in homes.
- Traffic and transport: CO<sub>2</sub> emissions in this sector remained fairly constant: 2,033 kilotons against 2,034 kilotons in 2008. While fuel-efficiency in cars is improving, the volume of road traffic is still increasing. RCI projects concerning CO<sub>2</sub> emissions, such as the use of biofuels and electric vehicles, will yield

Figure 1: Sketch of the development RCI efforts and reduction of CO<sub>2</sub> emissions



When he took office as Chairman of the RCI Board, Mayor Aboutaleb signed the climate principles endorsement. Since that time, approximately 7,500 people from Rotterdam have followed his example.



The adaptation approach



The water pavilion in Shanghai 2010 (artist's impression)

significant results only in the longer term, when they are used on a larger scale. No local figures are available for shipping industry emissions, and assessments were used for this sector.

- Industry and power generation: Industry shows a decrease of over 1,200 kilotons: 23,826 kilotons against 25,063 kilotons in 2008. At the time of publishing this report, not all of the annual environmental performance reports had been submitted yet, and the figures we did receive were of a preliminary nature, which is why these figures are not final. Refineries show a clear decrease. An old installation (boiler house plant) was decommissioned. The power required is now supplied by a new CHP (combined heat and power) plant. Although this replacement leads to higher local CO<sub>2</sub> emissions, at the same time it results in improvement of the air quality as well as extra electricity production. Moreover, production showed a slight decrease compared with the levels of 2008. Due to an approximately 15% decrease in electricity production, emissions from the coal-fired plant at the Maasvlakte decreased by about 1 megaton. Overall, the economic downturn resulted in a

decrease in production and, accordingly, a decrease in CO<sub>2</sub> emissions.

### Full climate change resilience

In 2009, Rotterdam proceeded expeditiously towards the goal of achieving full climate change resilience by 2025. Concrete projects were launched in Rotterdam, knowledge was developed and the city invested in raising its profile in this area. The success of these activities is evidenced by the fact that Rotterdam was selected as the city where the National Water Centre will be established. Rotterdam is seen as a model and an example, as we can see from the large number of delegations that visited the city. On a national level, Prince Willem-Alexander demonstrated his interest when he visited the excavation site of the underground water storage facility of the Museumpark car park. In addition, the Dutch Minister for Development Cooperation, Koenders; the Dutch Minister for Housing, Spatial Planning and the Environment, Cramer; and the Dutch State Secretary for Transport, Public Works and Water Management, Huizinga, expressed their specific interest. On an international level, among the prominent guests

who visited Rotterdam were US Senator Mary Landrieu of Louisiana and Lisa Jackson, Advisor to President Obama, as well as Jakarta Governor Fauzi Bowo. Rotterdam's visibility as a water management city received an impressive boost when the start of construction was announced of the floating pavilion and of the Rotterdam pavilion at the 2010 World Expo in Shanghai.

### Outlook

In 2010, the RCI will continue to work on the defined key objectives as well as on a vision and a plan of approach for the medium term. This will address the period between 2011 and 2014, which is the new term of office of the City Council. We have received confirmation by now that sustainability is a priority target in the new coalition agreement, and that the RCI will be continued.

The four partners and the parties working in a related context will continue to cooperate. The ambitions with respect to adaptation and the reduction of CO<sub>2</sub> emissions will remain unimpaired. The RCI seeks to broaden the coalition and to ensure that sustainability becomes deeply rooted in the daily lives of our citizens and in the management of organizations.

Figure 2: Overall CO<sub>2</sub> emissions since 2005

Whereas the figure for 2009 is not yet final, the figures for previous years are.

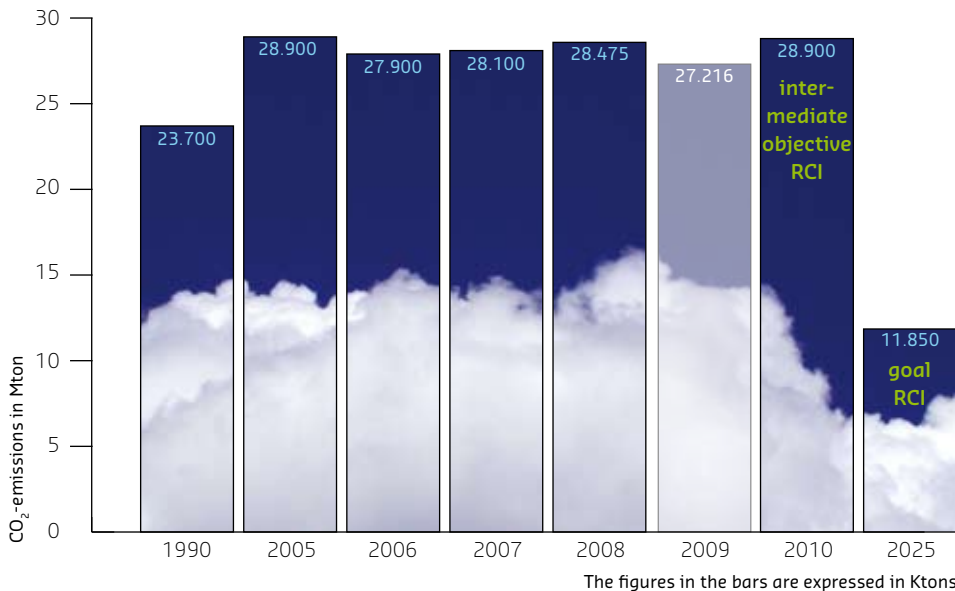


Figure 3: Share of CO<sub>2</sub> emissions categorized per sector, in 2009

