

ROTTERDAM.**CLIMATE**.INITIATIVE

# Sustainable growth

2010 Report • Summary



# Sustainable growth

In 2010, RCI continued to pursue two main objectives: 50% CO<sub>2</sub> emissions reduction by 2025 as compared with the 1990 levels, and full climate change resilience for the entire region. As a corollary, the objective of strengthening the Rotterdam economy was a topical theme in 2010. More than ever before, the City and the corporate sector were aware of the economic advantages that sustainable development has to offer for the port and city of Rotterdam.

RCI had the economic impact calculated and measured of the projects that RCI supports in order to make the transition to sustainability. A real commitment to sustainability is demonstrated to attract economic activities and investments. Projects aimed at reducing CO<sub>2</sub> emissions will require investments of an estimated 11 billion euros between 2011 and 2025. Given the current economic parameters and within the current legislative framework, a total worth 3.5 billion of these investments can be commercialized profitably by the private sector even today. As a result, approximately 4,000 new jobs will be created. Climate proofing Rotterdam will generate an additional 4 to 5 billion euro economic boost and another 3,600 new jobs.

## Our approach

The four main themes of the RCI approach are:

1. Energy efficiency
2. Renewable energy
3. Carbon capture, re-use and storage
4. Adaptation

Another goal that is actively pursued is to build broad public support and commitment for these ambitions. Buoyed by the input of individual companies and citizens, Rotterdam's new City Council set up the Rotterdam Programme on Sustainability and Climate Change, entitled 'Investing in sustainable growth'. A special campaign targeting citizens was launched, entitled 'Getting there'

('Eropuit') to entice them to take action. This campaign emphasized sustainable mobility themes and culminated in the 'Grand Départ, New Energy' event at the start of the Tour de France. Our sustainability approach was the deciding factor in the selection of Rotterdam as the city to host the start of the Tour de France in 2010.

Start of the Tour de France in Rotterdam ▶



Public open day: 'Buoyed up by innovation' ('Drijvende krachten') ▼



## Reducing CO<sub>2</sub> emissions by 50%

Reducing CO<sub>2</sub> emissions by 50% will require a 27 to 34 megaton reduction in 2025. As a result of increased industrial activity, completion of the Second Maasvlakte and completion of new power stations, CO<sub>2</sub> emissions will initially increase substantially in the next few years. The effect of the measures will not become manifest until a few years from now, when a number of large-scale, innovative projects will be realized. Overall CO<sub>2</sub> emissions in 2010 amounted to 29.3 megatons (provisional figure), as compared with 27.8 megatons in 2009. This increase matches the nationwide increase. Following a reduction of CO<sub>2</sub> emissions in 2009, partly due to the economic crisis, emissions resumed their global upward trend in 2010.

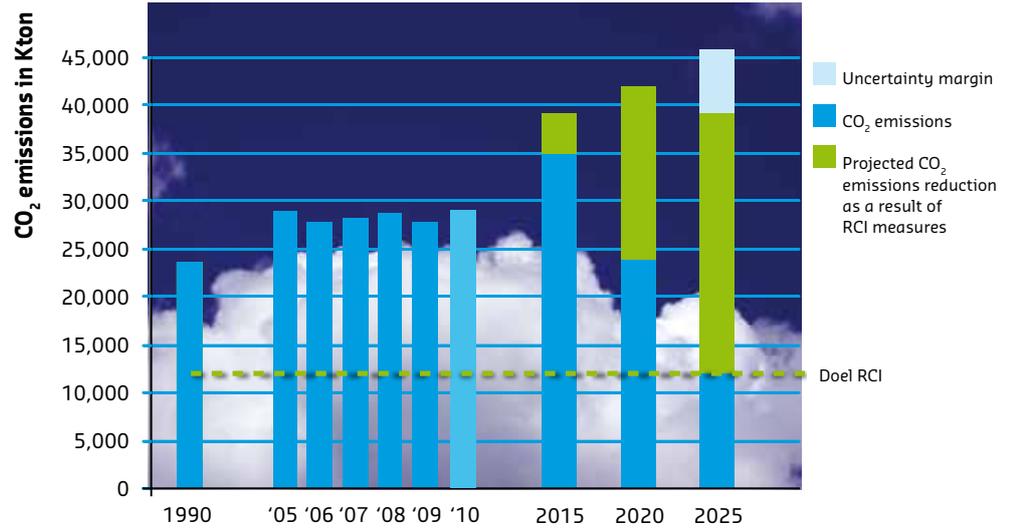
## Energy efficiency

The first step towards reduction of CO<sub>2</sub> emissions is to limit energy consumption. Urban planning and area development projects in the city are geared towards this goal. The City of Rotterdam forged an alliance with a number of property development companies entitled 'Rotterdam 2010 Sustainable Development', and the Heijplaat Climate Neutral project was launched funded by a grant under the Climate Neutral Cities Innovation Programme. Companies and organizations showed growing commitment. In 2010, the Heat Distribution Company started its operations, and the first heat supply contracts were signed.

In the port and industrial complex, companies strive to achieve a 2% annual average energy efficiency increase. Deltalinqs Energy Forum supports companies by providing business park scans, feasibility studies, and knowledge exchange workshops. A key element in this respect is the area and chain approach.

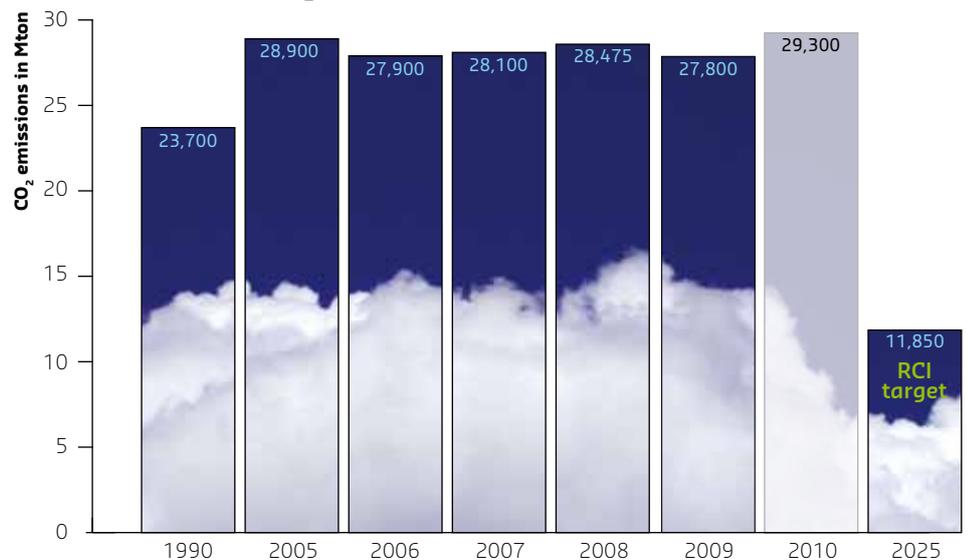
Plant One, the industrial innovation laboratory, was officially established in an existing factory building in the Botlek area. A speedy refurbishment was enabled by an innovative 'umbrella permit' granted as a result of special agreements with DCMR Environmental Protection Agency Rijnmond. Pilot testing will begin in 2011.

## Targets and forecast



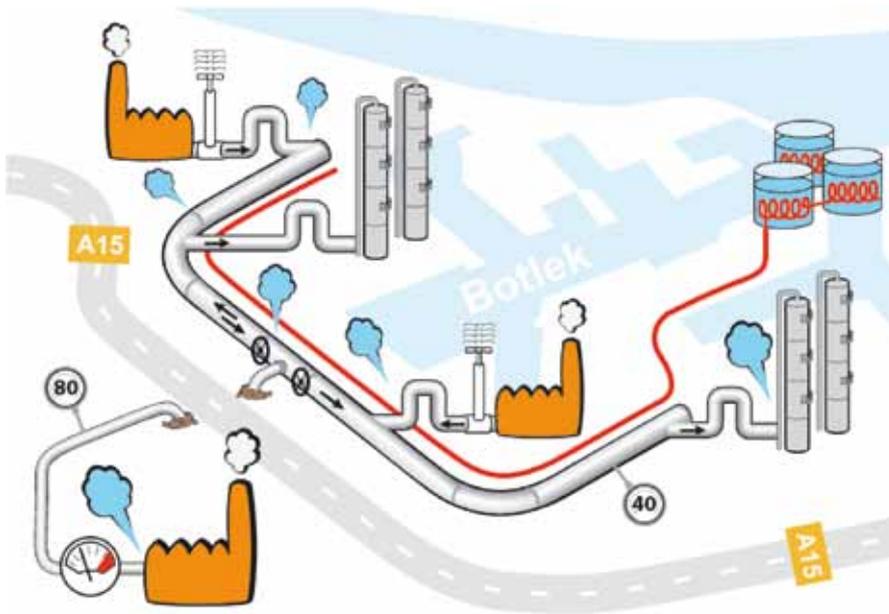
Projected CO<sub>2</sub> emissions and the effects of the RCI measures, based on the CO<sub>2</sub> emissions forecast until 2025, reviewed in 2010 by the Energy research Centre of the Netherlands (ECN) and DCMR Environmental Protection Agency Rijnmond. The uncertainty margin is included in view of the fact that a number of developments after 2020 is hard to predict at this point. The figure for 2010 is not yet final.

## Overall CO<sub>2</sub> emissions starting from 2005



The figures in the columns are stated in Kton. The figure for 2010 is not yet final.





The business case for a joint steam network for companies, the steam pipe, was further elaborated and will eventually result in a 0.4 megaton reduction of CO<sub>2</sub> emissions.

### Mobility

The mobility approach consists of three elements: clean use, clean vehicles and clean fuels. Appropriate renewable fuels will be used for each type of vehicle. Biodiesel produced from residual animal fat is tested by 35 lorries. RET has two buses of the e-Busz model, an innovative passenger bus with an electric wheel hub motor, as well as plans to

operate two Mercedes-Benz hybrid buses. Electric transport benefits from a myriad of initiatives, including a grant scheme for electric vehicle charging stations for private clients.

### Renewable energy

The Netherlands has set a target of covering 14% of its energy demand from clean, renewable sources in ten years' time, whereas Rotterdam's target is 20%. Biomass and wind energy can contribute significantly to the achievement of this goal. The port of Rotterdam offers excellent opportunities in



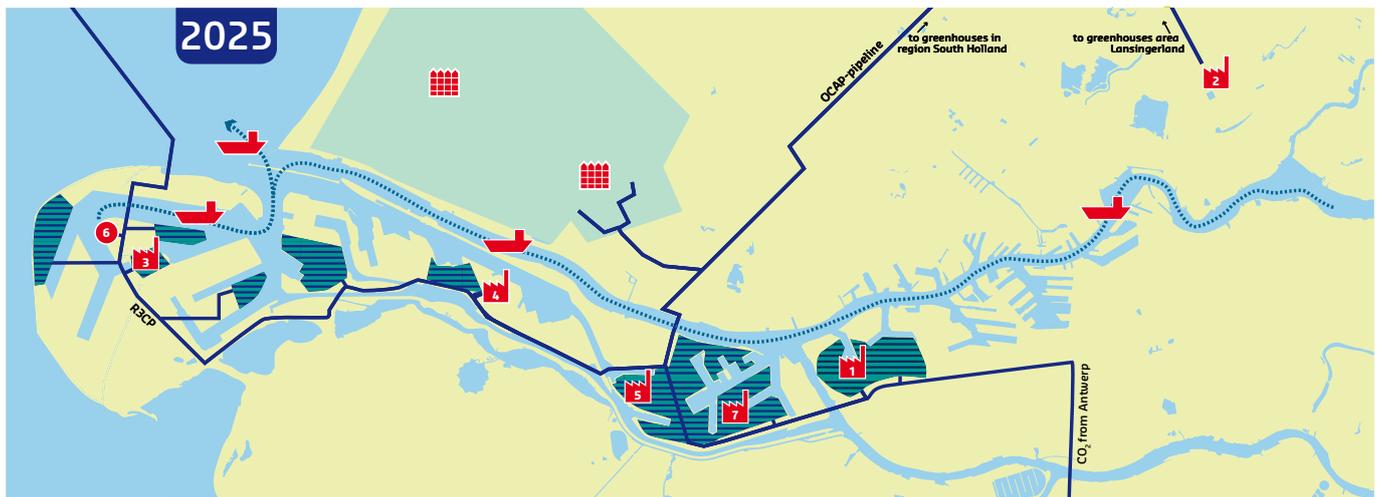
CO<sub>2</sub> released in industrial processes is re-used in greenhouses

this respect. The Rotterdam Bioport programme was launched focusing on the use of biomass to generate energy, to produce transport fuels and as a feedstock for the chemical industry. The 2009 wind energy covenant is currently in effect. The possibilities of solar energy are being explored.



The e-Busz



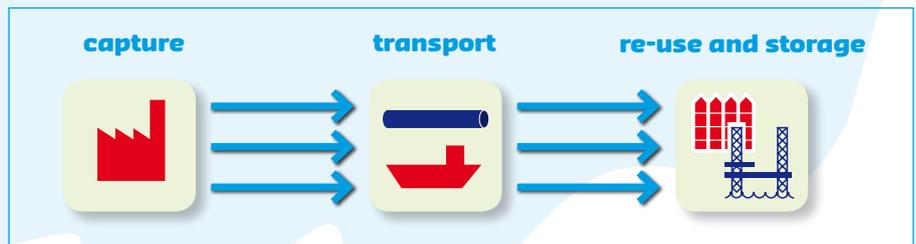


CCS network outlook for 2025

- |  |  |                             |
|--|--|-----------------------------|
| 1 Shell Pernis   | 6 CO <sub>2</sub> Hub CINTRA                                       | — Transport by pipeline     |
| 2 E.ON-ROCA  | 7 Air Products   | ↘ Transport by ship         |
| 3 E.ON CO <sub>2</sub> -Catcher (CATO-2 pilot project) | ■ Connecting industry to CCS network (not just large scale demo's) | 🏭 CO <sub>2</sub> capture   |
| 3 ROAD   |  | 🏠 Green houses              |
| 4 Abengoa  |  | 🏭 Energy intensive industry |
| 5 Air Liquide  |  | ● CO <sub>2</sub> Hub       |

## CCS

CO<sub>2</sub> capture and re-use or underground storage is important in order to reduce CO<sub>2</sub> emissions. Rotterdam's focus in this respect is on storage under the sea bed. RCI is building a CO<sub>2</sub> network that will serve as a valuable platform for the participating industry and energy companies. Large-scale pilot projects, such as the ROAD project and the Green Hydrogen Project, serve as a springboard for the CCS network. Both projects are scheduled to commence operations by 2015, capturing 1.6 megatons annually. The hub concept that was launched in 2009 will be further elaborated under the name of CINTRA.



## Adaptation

Rotterdam aims to secure a position for itself as a global centre of innovative water management expertise, providing a platform for international knowledge exchange, collaboration and exposure. The floating pavilion in the Rijnhaven was built in just over eight months, in a pilot for sustainable floating constructions in Rotterdam. Two events dominated the year 2010. Over 825,000 people visited the Rotterdam Water City pavilion at the World Expo in Shanghai. And the international 'Deltas in times of climate change' conference in Rotterdam attracted 1,200 participants from 62 countries.

## Follow-up in 2011

With a number of major projects well under way, RCI is heading towards a 4 megaton CO<sub>2</sub> emissions reduction by 2015. The initial RCI phase was completed by the end of 2010. Starting from 2011, RCI will proceed as part

of 'Investing in sustainable growth', the Rotterdam Programme on Sustainability and Climate Change. The objectives will remain unchanged, and the alliance between the public and private sector will remain unimpaired.



Opening ceremony of the Rotterdam Water City pavilion at the World Expo 2010 in Shanghai



Opening ceremony of the floating pavilion ▶



 City of Rotterdam



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### Colophon

The complete version of the 2010 Report (in Dutch) can be downloaded from the RCI website, [www.rotterdamclimateinitiative.nl](http://www.rotterdamclimateinitiative.nl).

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