

*Copenhagen — Sept 19th–20th 2013*

**A City**

*Exploring sustainable*

**We**

*city solutions*

**Like**



## Welcome to A City we Like!

Dear participant, welcome to Copenhagen! This study trip has been conceived as part of A world you like – the European Commission flagship communication initiative on climate action. The campaign demonstrates that the transition to a low-carbon society comes with a number of co-benefits such as cleaner air, comfortable homes, better health, lower energy bills etc.

Over the last year, the campaign has reached millions of Europeans. We have organised citizen and stakeholder events in more than 10 Member States. Almost 200 organisations across Europe support the campaign with separate actions and events. And the campaign has been covered in European media with an aggregate reach of over 100 million people. The aim of A world you like is to involve stakeholders and citizens by delivering genuine added value – direct dialogue, access to decision-makers and sharing of best practices.

Last year, Copenhagen won the 2014 Green Capital Award because of its bold plan to become carbon-neutral by 2025 and because it already has an abundance of sustainable solutions to show.

I hope this trip will inspire you and help demonstrate that intelligent climate action can improve our quality of life and help us build cities we like.

Connie Hedegaard  
European Commissioner for Climate Action

# Programme

## Thursday 19.09.2013

**19.00 – 22.00** **Welcome Dinner and Networking**  
House of Industry hosted by Hans Peter Slente  
Director, Confederation of Danish Energy Industries

## Friday 20.09.2013

**8.30 – 9.10** **Welcome**  
House of Green by Finn Mortensen,  
Executive Director, State of Green

**Keynote Speech**  
by Connie Hedegaard,  
European Commissioner for Climate Action

### Green Solutions Exhibition

**9.45 – 10.30** **Visit, Amager Resource Centre (ARC)**  
Amager Resource Centre by Ulla Röttger, CEO, ARC

**11.15 – 12.00** **Visit, HOFOR, District Cooling**  
HOFOR, District Cooling by Lars Therkildsen, CEO, HOFOR  
and Henrik Bøgeskov, Manager, District Cooling

**12.15 – 13.45** **Lunch and Visit, The Royal Playhouse**  
The Royal Playhouse by Henrik Schmidt, partner Lundgaard & Tranberg  
and Søren Nylin, technical consultant, The Royal Danish Theatre

**14.00 – 14.45** **Sea View of the City from an Electrically Powered Boat**  
Canal Tours by Jørgen Abildgaard,  
Executive Climate Project Director, City of Copenhagen

**15.15 – 15.45** **Visit, Vildrosen, housing**  
Vildrosen by Søren Rasmussen, architect and owner, ONV

**16.15 – 17.00** **Visit, Rambøll Head Office**  
Rambøll by Lars Ostenfeldt Riemann,  
Group Market Director, Buildings, Rambøll

**17.15 – 18.00** **Visit, the 8 House, Housing**  
8 House by David Zahle, architect and partner, BIG

**18.30 – 21.00** **Reception**  
Danish Architecture Centre hosted by Gustavo Ribeiro,  
Head of Presentation & Debate, Cities Danish Architecture Centre

**Lecture: Hedonistic Sustainability  
as Designed by BIG**  
by David Zahle, architect and partner, BIG



## CPH 2025 Climate Plan

In August 2012 the CPH 2025 Climate Plan was adopted with the goal that Copenhagen would achieve carbon neutrality by 2025. The plan contains four main areas of action; energy consumption, energy production, mobility and City Administration initiatives. Becoming the world's first carbon neutral city is not only a gain for the environment. The initiatives will have positive effects on Copenhageners' lives in general as well as on everyday basis. The climate adaption plan just received the Index Design Award.

A harbour clean enough for swimming was achieved through a broad range of initiatives. Reservoirs with connecting conduits store wastewater until there is capacity in the sewage system. Landowners connected to the sewage system are reimbursed if rainwater is decoupled and derived locally. In new urban districts a three-tiered sewage system is established dividing the water into roof water, road water and black waste water. Finally 55 overflow channels have been closed. The initiatives combined make the harbor one of the trendiest spots in the city.

With the climate plan, the Danish capital combines growth, development and a higher quality of life with a reduction in Carbon emissions of around 1.16 million tons.

Copenhageners can look forward to saving DKK 4,000 on their electricity and heating bills each year when the climate plan has been implemented.

The climate plan has been developed in close cooperation with businesses, the citizens of Copenhagen, NGOs and knowledge institutions.

[www.kk.dk](http://www.kk.dk)

## An Electrical Bus

Like in many other cities, economic growth in Copenhagen has worsened traffic congestion, increasing the need for better solutions for public transportation and cycling. The City of Copenhagen has invested heavily in uninterrupted cycle lanes and 'green waves' so that cyclists can travel non-stop. As a consequence the amount of cyclists in Copenhagen is increasing every year.

Furthermore, by investing in efficient, reliable and highly integrated public transportation systems it has been possible to create a well-connected city, where it is easy to move around.

Arriva Denmark runs 11 electrical busses in inner Copenhagen. The busses can carry 9 sitting and 12 standing passengers. Arriva Denmark has a prominent focus on sustainability. Arriva continuously strive to be innovative and first movers on new initiatives supporting 'green' transport solutions in public transport.

In 2009 Arriva Denmark installed a telematics system in all of our 1,300 regular busses (called GreenBox). The system records each bus drivers driving style and fuel consumptions and has been a strong contributor to reduce carbon dioxide emissions, increase road safety and improve the customer satisfaction.

The electrical busses operated by Arriva Denmark are produced in Italy and were originally a wish from the Municipality of Copenhagen that was looking for sustainable transport solutions to the old, narrow and densely visited streets of Copenhagen.

Arriva Denmark began operating the 11 electrical busses in 2009. They run silently through the streets of Copenhagen carrying passengers to central places around the inner city. The technology is under constant development and in the fall of 2013 Arriva Denmark will be test-driving a new generation of the electrical busses.

[www.arriva.dk](http://www.arriva.dk)



## House of Industry

The Confederation of Danish Industry's (DI) headquarter, the House of Industry, has re-opened in 2013 after having undergone a total refurbishment to become a state-of-the art modern, open and green building. Among the green features are the building envelope, district heating and cooling, solar panels, intelligent control of power, light and heating as well as water management including utilization of rain water. The new headquarter is designed by the architect firm Transform.

The new façade of the House of Industry has been made in two layers. An inner sealed unit keeps the heat in while the outer glass layer shields against wind and weather while also keeping out the traffic noise from one of the busiest intersections in the country. From an energy point of view, the double façade has the advantage that the inner, insulating part is not affected by wind and, consequently, will not be cooled down to the same extent as the outer façade. During the summer period, the heat from the outer façade will be removed by natural ventilation by simply opening a hatch at the top of the space between the two façades.

### About DI and DI Energy

On the behalf of 10,000 member companies, DI works to promote the optimal business climate for Danish enterprises and to foster a society in economic growth with social and environmental balance.

The Danish Energy Industries Federation (DI Energy) organizes the energy industry in Denmark; technology providers, engineering companies and utilities. DI Energy promotes the ambitious energy transformation in Denmark and Europe, promoting the development and deployment of efficient technological solutions throughout the energy system. The vision is to ensure that the different goals concerning business competitiveness, a clean environment and energy security are utilized to create the foundation for at long-term and sustainable growth – green growth.

[www.di.dk](http://www.di.dk)  
[www.energi.di.dk](http://www.energi.di.dk)  
[www.transform.dk](http://www.transform.dk)



## State of Green

House of Green is an interactive showroom and visitors' center funded by the Danish Industry Foundation. In the House of Green you can explore already available sustainable solutions within energy, water, climate and environment.

House of Green uses a combination of guided storytelling and self-exploration to showcase Danish integrated solutions and scenarios across the landscape of energy, water, climate, resources and environment. The showroom guides the visitor through the landscape of green Danish solutions through a combination of storytelling and self-exploration. The showroom also houses a permanent, interactive installation that highlights the potential and possibilities nested in the green Danish business sector.

The virtual universe tells coherent and dynamic stories about Denmark and the Danish industry's green capabilities on many levels – from the Danish vision of becoming fossil free by 2050 over cross-sector stories to branch specific solutions. Furthermore, visitors are able to explore solutions based on their own interests through a combination of stories, facts, photos and videos.

### About State of Green

Denmark has decided to lead the transition to a green growth economy and will be independent of fossil fuels by 2050 as the first country in the world. As the official green brand for Denmark, State of Green gathers all leading players in the fields of energy, climate, water and environment and State of Green is your gateway to learn more about the ambitious Danish plan and the innovative solutions which are essential to make it happen.

State of Green is a public-private partnership founded by the Danish Government, the Confederation of Danish Industry, the Danish Energy Association, the Danish Agriculture & Food Council and the Danish Wind Industry Association. H.R.H. Crown Prince Frederik of Denmark is patron of the State of Green Consortium.

[www.stateofgreen.com](http://www.stateofgreen.com)





## Amager Resource Centre

With the construction of Amager Bakke, Amager Resource Centre (ARC) is creating a multi-functional waste-to-energy plant with an emphasis on hedonistic sustainability. At the new plant, ARC will exploit 25 % more energy from the waste. NOx emissions will be reduced significantly and as of 2017 there will be a reduction in CO<sub>2</sub> emissions by more than 100,000 tons.

In the coming years Copenhagen will – as it is the case in many large cities around the world – experience an increase in the number of inhabitants. That means a shortage of recreational areas and sports facilities. Amager Bakke represents an ambitious idea on how to combine a green energy facility with recreational areas that encourage adventure, fun and play.

### About ARC

With a central location in Copenhagen, ARC's goal is to contribute to a healthy, clean and attractive city. ARC manages the resources of the waste and provide the city with recycled materials, electricity and district heating. ARC receives and processes waste from approximately 550,000 residents and 45,000 businesses. In return, ARC delivers electricity and district heating to approximately 150,000 households. ARC's 15 recycling-stations throughout the city make it easy for the inhabitants to sort and recycle materials, thus being of benefit to a better environment and climate.

[www.a-r-c.dk](http://www.a-r-c.dk)

## HOFOR, District Cooling

Copenhagen has two cooling plants, which use the naturally cold seawater during the winter and electric compressors as well as steam from waste incineration in the summer months to produce cold air, is, among other things, to ensure comfortable temperatures and cool server rooms in Copenhagen.

### Facts About District Cooling

- District cooling is the distribution of cold water through a pipe from a station and to the customer, at which the water, by means of an exchanger, cools the air in the customer's air-conditioning
- Customers who choose district cooling can save up to 80 % on electricity compared to conventional cooling systems, and reduce their carbon dioxide emissions by up to 70 %
- A great part of the year, HOFOR produces zero-carbon cooling, in which cold water from the harbour constitutes a natural and continuous resource
- It is estimated that the need for cooling, on European levels, will increase with 50 % up until 2020

### About HOFOR - Greater Copenhagen Utility

HOFOR is Denmark's largest utility company: Water supply, district heating, town gas, waste water handling, district cooling and renewable energy (solar and wind).

Every day, HOFOR provides for more than 1 million customers in the Greater Copenhagen Area with cost effective and sustainable solutions. We play a crucial role in ensuring that Copenhagen becomes the world's first carbon neutral capital by 2025.

HOFOR is co-owned by 8 municipalities, the largest owner being the Municipality of Copenhagen. By combining our efforts in a strong inter-municipal alliance, we develop better economic and environmental solutions to the benefit of our owners and customers.

[www.fjernkoel.dk](http://www.fjernkoel.dk)  
[www.hofor.dk](http://www.hofor.dk)



## The Royal Playhouse

The Royal Playhouse was inaugurated in 2008 and was from the very beginning an example of how to integrate sustainable solutions in a socio-cultural, a commercial and an ecological way.

Socio-culturally, The Royal Playhouse takes form as a respectful completion of the surrounding urban structure. The theatre embraces the harbour, opens to theatregoers and those passing by, and becomes the new pivot along the waterfront.

The ecological sustainable solutions are integrated in the entire building. By using thermo-active construction, the cold water from the harbour and the cold night-air cools the building. The heat from the passive solar heating through the glass facades and the warmth from the audience and the projectors are recycled. The total reduce off energy is 40 %.

With the architectural quality and aesthetics, the Royal Playhouse has proven its commercial sustainability. The building with its geometric composition creates the optimal conditions for the meeting of the public and the theatrical spectacle and has already proven itself as a popular building for people from the entire world.

### About the Royal Danish Theatre

The Royal Danish Theatre is Denmark's national stage. The Royal Playhouse is the third of the Royal Danish Theatres three different scenes: the Old Stage, located by Kongens Nytorv, mainly for ballets, The Opera House, inaugurated in 2005, designed by architect Henning Larsen and the Royal Danish Playhouse designed by architects Boje Lundgaard and Lene Tranberg.

Like many of Lundgaard Tranberg Architects' buildings, The Royal Playhouse has won several international awards.

[www.kglteater.dk](http://www.kglteater.dk)  
[www.ltakitekter.dk](http://www.ltakitekter.dk)



## Electrically Powered Boats

Canal Tours has two electrically powered boats in service in Copenhagen harbour and canals. Smoke- and noiseless tour boats, powered by electrical engines with power coming from batteries which charge at night (Certified sustainable energy).

The vision of Canal Tours is to build more electrically powered boats, which corresponds to the borough of Copenhagen's goal of being a CO<sub>2</sub> neutral city in 2025.

Operational experiences and economics:

- Running up to 10 hours/day
- Great comfort (No noise or pollution)
- Fast preparation routines before the daily operation
- Energy efficient propulsion
- No additional training requirements for the staff
- 1 hour roundtrip with diesel = approx. 36,- DKK
- 1 hour roundtrip with electric motor = approx. 10,- DKK
- Maintenance costs significantly lowered
- Rigging and unrigging time reduced by approx. 30 min./day

### About Canal Tours

Since 1904, the company has been offering harbour- and canal tours. Canal Tours A/S has formerly been known as DFDS Canal Tours A/S, Canal Tours Copenhagen A/S, Havne- og Kanalrundfarten A/S, Havnens Motorfærge A/S and HMF A/S. Today Canal Tours A/S is a part of and owned 100 % by Strømme Turism & Sjøfart AB. In 2012 Canal Tours had approx. 800,000 guests a board our boats.

[www.stromma.dk](http://www.stromma.dk)



## Prefabricated Row Houses

This housing scheme was selected as a pilot project for the use of new industrialized building methods to build inexpensive housing based on the low-cost Housing Fund's concept.

The low-cost housing concept implies a maximum degree of factory production under controlled conditions at a low cost. The flats design is based on the factory's production system, but inspired by modern and traditional Danish architecture. Everything is built on the basis of a highly insulated, prefabricated wood construction with plaster board as wall and ceiling covering. The windows and doors are of wood, and the outer climate screen is black painted horizontal wood siding.

The scheme consists of 38 row houses in two stories – all with private terraces in front and behind the building. The size of the flats varies from 85-127 m<sup>2</sup>. Everything is constructed in prefabricated high isolated wood-constructions. Plasterboard is used on walls and ceiling. Windows, doors and the horizontal cladding are all in wood painted black. Shutters are also in wood. Roof lights are covered with sun-collectors. The foundation is made on site.

The flats are constructed according to energy class 2, and the residents have been installing solar energy. Flexibility, variation in size and different lighting has been the main theme in the creation of the row houses. The houses are gathered around a common lawn and two streets to create an optimal relationship between neighbors, and lots of free areas.

Architects: ONV Architects in corporation with Tegnestuen Mejeriet.

[www.onv.dk](http://www.onv.dk)

## Rambøll

Rambøll Head Office is situated in the new urban area of Ørestad. Inaugurated in 2010 and a case study within the field of sustainable solutions. The building is connected to the Copenhagen District Heating System and the efficient heating system in the building, including a large floor heating system, returns the water at a low temperature. Situated close to the Metro, trains and airport, the head office uses and contributes to the intelligent infrastructural design of the area. Rambøll Head Office is well integrated into the greater Copenhagen transport network. Favorable conditions for bikers are installed, and there is access to biking routes.

The building has installed a sophisticated groundwater cooling system and the building has an effective building envelope controlling temperature and indoor climate. Effective and intelligent lighting and ventilation ensure that electric light only comes on when required, and a comfortable indoor climate adjusted to season and outdoor temperature.

The Atrium is integrated into the overall ventilation of the Head Office, thus significantly reducing the energy consumption – in summer as well as winter. The building is designed to collect, carry and recycle rainwater. The overall energy consumption of the day-to-day running of the Head Office is reduced by a number of energy-saving solutions on each workstation. In order to pass the criteria of the building regulations, the building do not need local production of renewable energy. The head office is designed by the architect firm Mikkelsen Arkitekter.

### About Rambøll

Rambøll is an international engineering and design consultancy and provider of management services to both the public and the private sector. A significant player, with more than 10.000 employees all over the world. Rambøll is a value-based company that emphasizes strong ethical standards, responsibility towards society, and satisfied employees. The ambition is to be recognized as the leading sustainable society consultant.

[www.ramboll.dk](http://www.ramboll.dk)  
[www.mikkelsengroup.dk](http://www.mikkelsengroup.dk)





## 8 House

The 8 House, designed by Bjarke Ingels Group (BIG), is a big house in the literal sense of the word. The bow-shaped building creates two distinct spaces, separated by the center of the bow which hosts the communal facilities. The building is penetrated by a 9 meter wide passage that connects the two surrounding city spaces: the park area to the west and the channel area to the east. Instead of dividing the different functions of the building - for both habitation and trades - into separate blocks, the various functions have been spread out horizontally. The apartments are placed at the top while the commercial program unfolds at the base of the building. As a result, the different horizontal layers have achieved a quality of their own: the apartments benefit from the view, sunlight and fresh air, while the office leases merge with life on the street.

Two sloping green roofs totaling 1,700 m<sup>2</sup> are strategically placed to reduce the urban heat island effect as well as providing the visual identity to the project and tying it back to the adjacent farmlands towards the south; The apartments are placed at the top while the commercial programme unfolds at the base of the building. As a result, the different horizontal layers have achieved a quality of their own: the apartments benefit from the view, sunlight and fresh air, while the office leases merge with life on the street. This is emphasized by the shape of 8 house which is literally hoisted up in the Northeast corner and pushed down at the Southwest corner, allowing light and air to enter the southern courtyard - optimizing the daylight and natural heating for all inhabitants and users of the building and providing natural ventilation; Rainwater is collected in a storm water management system. The 8 House was completed in 2010.

[www.big.dk](http://www.big.dk)  
[www.8tallet.dk](http://www.8tallet.dk)



## Danish Architecture Centre

Danish Architecture Centre (DAC) is Denmark's national centre for the development and dissemination of knowledge about new architecture, urban development and innovation in the built environment. The goal is to create broad interest in architecture, to clear the way for new ideas traversing traditional boundaries and to show how architecture creates cultural and economic assets for people, the industry and society. Our activities include exhibitions, talks & debates, networking activities, seminars, guided tours in the city, educational activities, workshops, etc. aimed at a professional and cultural audience.

DAC's core funding is provided by a public-private partnership between RealDania and the Danish government represented by: the Danish Ministry for Business and Growth, the Danish Ministry of Culture, the Danish Ministry of the Environment, and the Danish Ministry of Climate, Energy and Building. Danish Architecture Centre is located in an old, renovated warehouse with a front-row view of the harbour front of Copenhagen.

### Sustainable Cities™

Sustainable Cities™ is a website developed by DAC which aims to inspire people and communities all over the world and help cities become more sustainable in the future. Sustainable Cities provides a direct and easy access to knowledge about sustainable planning and development of Danish and international cities for the benefit of politicians, planners and interested citizens. Through best-practice-cases, articles, expert interviews, blog posts, videos etc. you can be inspired to work with sustainable development in your city.

A sustainable development deals not only with environmental issues, but also the perspectives of economic and social welfare. This is why the cases in Sustainable Cities is categorized after different themes from Green city, Energy, Water, Waste, Food, Transport, Buildings, Master plan and Economy to Education, Health and Social city. In each case you will find background information - including key learning points from the projects, links to further information available, parties etc.

[www.dac.dk](http://www.dac.dk)  
[www.dac.dk/cities](http://www.dac.dk/cities)

# List of Participants

## **BIALY, Ryszard**

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## Practical Information

The trip is organised and co-financed by the European Commission, the City of Copenhagen, the Danish Architecture Centre and the Confederation of Danish Industry.



Participating companies:



### Where Will I Stay?

The Crowne Plaza Hotel is built in accordance with the EU Green Building Programme standard and has established a new precedent for sustainability in modern hotels. Solar panels supply around 10% of the hotel's annual energy consumption – the remainder of the energy being supplied from sustainable sources. The hotel is the first in Denmark to be certified as complying with the Danish standard for social responsibility DS 49001, and the international environmental management standard ISO 14001.

Crowne Plaza Hotel  
Ørestads Boulevard 114 – 118  
DK-2300 København S  
+45 88 77 66 55  
[www.cpcopenhagen.dk](http://www.cpcopenhagen.dk)

### Where to Meet Friday Morning

The programme begins at:  
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