



# City Profile

# Hamburg

## Introduction

Hamburg is located in the northern part of Germany with a population of 1.8 million. Hamburg is the second largest city in Germany and the seventh largest in Europe. The economic hub, the Hamburg Metropolitan Region, which includes parts of Lower Saxony and Schleswig Holstein, has a population of 4.3 million. Hamburg is well-known as a trading centre, this being rooted in its strategic location on the River Elbe between the North Sea and the Baltic Sea. It is the third largest port in Europe and one of the top twenty worldwide.

As a Federal State, Hamburg has its own government, headed by the First Mayor, and has control over its own policies. The Ministry for Urban Development and Environment has its own coordination centre for climate issues. They cooperate closely with the Senate Chancellery and other ministries to realise the ambitious climate targets.

Hamburg signed the Covenant of Mayors in 2009 and submitted the Sustainable Energy Action Plan (SEAP) in 2010. The city aims to achieve a substantial contribution to the national goal of 40% CO<sub>2</sub> reduction by 2020 and 80% by 2050. So far, the CO<sub>2</sub> emissions per capita have been reduced by about 15% compared to 1990, with annual energy savings of about 46,000 MWh.

Hamburg has set up the Hamburg Climate Action Plan for the period of 2007–2012 and monitored and updated it annually. Nearly 500 different projects have been planned, started or realised during this period.

In 2012, a strategic master plan for climate protection will replace the Hamburg Climate Action Plan, focusing on all levels of energy demand and energy production in different sectors and various areas.



Hamburg bears the title 'European Green Capital 2011' for its combination of a history of progressive policies and ambitious climate protection goals.

The city of Hamburg is also an active member of METREX - the Network of European Metropolitan Regions comprising around 50 members. Hamburg has coordinated the METREX project EU CO<sub>2</sub> 80/50 (see [www.euco2.eu](http://www.euco2.eu)), which was concerned with possibilities for reaching the 80% CO<sub>2</sub> emission reduction target by 2050. Therefore, several stakeholder workshops with 14 metropolitan cities have been carried out. The results were presented at the METREX conference in October 2011.

## Energy-Efficient Buildings and Districts

There are major urban redevelopment projects in Hamburg which include climate change actions, for example Europe's largest waterfront redevelopment of HafenCity, as well as the restructuring of older and more disadvantaged parts of the city such as Wilhelmsburg, where about 60,000

inhabitants will benefit from the International Building Exhibition, IBA 2013. Work on IBA's third key theme, entitled 'Future Concept Renewable Wilhelmsburg' (ENERGY ATLAS) has been planned. It demonstrates the possibility of meeting the electricity requirements of buildings on the Elbe Islands by 2025 and covering almost all their heating needs by renewable and locally produced energy by 2050. Additionally, climate model districts have been developed at 19 locations spread across Hamburg.

All these highlighted concepts are based on subsidy programmes for energy-efficient new buildings and building stock refurbishments.

The main challenge for the city of Hamburg regarding energy efficiency in the building sector is to renovate existing building stock. Most of these existing buildings are in a more or less inadequate condition. Unfortunately, the ownership structure is complicated and the legal instruments to enforce renovations are limited.

## Renewable Energy Sources and Distributed Generation

Regarding renewable energy sources and distributed energy generation, Hamburg is working on a high level. The municipality wants to become a leading location for innovative services in the renewable sector. For this purpose, the city has initiated the Renewable Energy Cluster operating company. Hamburg has a large energy and district heating network, which is of enormous economic value. Therefore, the city of Hamburg has obtained a 25.1% share of the network to guarantee a strategic impact in energy decisions. In 2009, Germany's two largest wind turbines (output of 6 MW each) were set up in Hamburg. Together with energy provider HAMBURG ENERGIE, the city waste water management corporation built two more turbines at the site of the Dradenau water purification plant. At present, Hamburg obtains 50 megawatts from wind power. However, the Senate of Hamburg is currently seeking additional sites for wind turbines.

Beyond this, a pilot project for geothermal heating is presently being examined for the Wilhelmsburg area. Following the exploratory phase, which confirmed the potential for deep geothermal heating sources, the first deep drilling is about to begin.

In 2011, the city expanded the use of roofs for solar panels. This is the follow-up to a project which examined more than 130,000 roofs to assess their suitability for photovoltaic or thermal solar panels.

In cooperation with industry, the Senate has set up an initiative to increase the use of combined heat and power generation (CHP). HAMBURG ENERGIE and E.ON HANSE AG support low-cost checks for possible use of mini-CHP plants.

Funding programmes for the use of solar heat and biomass are also being launched. The main challenge for Hamburg is to modify existing long-distance



heating grids and develop new district heating grids to integrate decentralised renewable energy sources. Moreover, the development of new power lines, power storage facilities, demand-side management, the interaction between power and heat by virtual power plants and the conversion from power to gas are various aspects to increase the potentials of renewable power.

## Energy in Urban Transport

Regarding the transport sector, Hamburg will improve its cycling network, in particular”

- by constructing a network of ‘velo routes’ ,
- by increasing use of cycle lanes,
- by improving cycle tracks along main roads,
- and by providing more parking spaces for bicycles.

The plan is to double the proportion of trips made by bicycle from 9% in 2002 to 18% in 2015; the current figure is more than 12%.

The city will also expand its successfully launched cycle hire scheme. Right from the beginning, Hamburg’s StadtRAD bicycle hire scheme has been Germany’s most successful bicycle hire system. By the end of 2010, more than 75,000 users were registered, and more than a million journeys were made.

Hamburg is one of eight model regions in Germany for electric vehicles. One of the major projects in Hamburg is to trial 100 electric vehicles, mainly in commercial transport but also for Hamburg’s public authorities. The Hamburg public transport company is also involved in this trial, testing series-built diesel hybrid buses in regular line operation. To ensure energy supply for electric vehicles, Hamburg is building up an infrastructure, which had 100 public charging stations in 2011. They will provide power exclusively generated from renewable sources. A new generation of fuel cell buses will also be operated in the city, running on hydrogen. In the future, they will be refuelled at Europe’s largest hydrogen fuel station in Hamburg’s HafenCity district.

New S-Bahn (suburban rapid transit) and U-Bahn (metro) lines S4 and U4 are under construction or are planned to improve infrastructure and public

transport services. The power used for public rail transport has been switched over to renewable energy sources. The main challenges for those projects are created by the technical development and social integration of a higher proportion of mobility by bike, the development of a technical infrastructure for electric mobility and the process of persuading people to use services such as car-sharing and car-to-go.

## Financing

In its 2010/2011 budget, the Hamburg Parliament approved the total fund allocation of €23.49 million and a commitment appropriation for €12 million to implement the measures of the Hamburg Climate Action Plan in 2011.

Focal areas for expenditure have been set for 2012, in accordance with the main strategic areas of the Hamburg Climate Action Plan for the coming years. This strategic approach puts the focus on direct carbon-reducing measures and projects, and on the support for the subsidy programmes.

Key areas:

- Direct subsidies for implementing a higher energy standard within the social housing programme of the state-owned bank 'Hamburgische Wohnungsbaukreditanstalt'.
- Direct subsidies for implementing energetic renovation measures by the state-owned bank 'Hamburgische Wohnungsbaukreditanstalt'.
- Direct subsidies for installing renewable energy systems such as solar thermal panels or biomass systems by the Hamburg Ministry of Urban Development and the Environment.
- Own investments or financing by state-owned or commissioned companies based on political decisions.
- Own investments within the Hamburg Climate Action Plan 2007 - 2012.

## Future Visions and Expectations

In 2012, a strategic master plan for climate protection will replace the Hamburg Climate Action Plan, focusing on all levels of energy demand and energy production in different sectors and various areas.





**Wuppertal Institute**  
for Climate, Environment  
and Energy

Doepfersberg 19  
42103 Wuppertal  
GERMANY

City of Hamburg  
Germany



**CASCADE**

Cities exchanging on  
local energy leadership



Co-funded by the Intelligent Energy Europe  
Programme of the European Union

[www.cascadecities.eu](http://www.cascadecities.eu)

CASCADE is an EU-funded project coordinated by EUROCITIES which aims to design and deliver large-scale networking and mutual learning actions on local energy leadership among members of the EUROCITIES network. The CASCADE consortium is composed of: EUROCITIES, Wuppertal Institut, Koucky & Partners and the following cities: Amaroussion, Amsterdam, Birmingham, Burgas, Edinburgh, Eindhoven, Gateshead, Genoa, Gijon, Malmo, Mannheim, Milan, Nantes, Stockholm, Sunderland, Tampere, Terrassa, Venice and Warsaw.

The CASCADE project is co-financed by the Intelligent Energy Europe Programme. The sole responsibility for the content of this report lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.