Hamburg Climate Action Plan 2007-2012

Update 2010/2011

Hamburg

PARLIAMENT
OF THE FREE AND HANSEATIC CITY OF HAMBURG
19th Electoral Period

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Communication of the Senate to Parliament

"Update of the Hamburg Climate Action Plan 2007-2012"

Report on further development of programme, implementation of the measures in 2010, and planned allocation of funds in 2011 (third update)

C o n t e n t s

A.
Reasons and content

Climate action has become one of Hamburg's key policy fields in recent years. Hamburg has vigorously taken up the challenge of actively combating climate change and establishing climate action in all areas of responsibility, with an effective set of measures. The far-sighted climate policy of the Hamburg Senate has proven itself as a key to sustainable development of the city, specifically in and following a period of economic difficulty. The award of the title of "European Green Capital 2011" to Hamburg based both on the city's existing achievements in climate action, and on its intentions for further action. The Climate Action Plan is the main planning and funding instrument in this field.

The funds applied for with doc. 19/4906 were approved by the Hamburg Parliament on 6 March 2010; under the interdepartmental control of the Coordination Centre for Climate Issues, about EUR 22 million of the approved EUR 25 million budget funds were allocated for implementation in budget year 2010. As set out in doc. 18/6803, the Senate has undertaken to report annually to Parliament on fund allocation and concept updating and further development of the underlying action concept. The Senate is meeting that obligation for 2010 with the present document. It updates the programme last presented in doc. 19/4906 to take account of changes in the parameters for climate action in Hamburg. Major factors are the development in the economic cycle, progress in scientific knowledge, and political developments at Federal, European and international level. In particular the current policy directions for energy concepts at EU and Federal level are relevant for Hamburg's climate action planning for the coming years.

This document presents the interim status, following three years of implementation of the Hamburg Climate Action Plan. So far a total of about 400 projects have been put into effect with a financial volume of about EUR 75 million from the Climate Action Plan and with further departmental and third-party funding. Hamburg is currently on the intended track, and the Senate will present the Parliament with an inventory and evaluation of the existing programme and the established structures in 2011. The key areas of the climate concept are once again climate action and climate impact management, awareness raising and training, and a wide range of energy policy issues. In the coming year, there will be a special focus on measures for energy-efficiency modernisation of existing buildings and measures for climate-friendly mobility. This update document also meets the requirements for expert evaluation of the climate action policy and the individual projects.

The structure of this document has been simplified compared with the previous document. Annex 1 comprises the list of measures, with fund appropriation and fund requirements, but unlike the previous year it no longer gives detailed project descriptions. In view of the number of measures, and to maintain a good overview and readability, the list has been drawn up in the form of a compact table, structured in the same way as the text section. New measures are marked as such, as was already the case in doc. 19/4906, and are integrated in the existing catalogue.

The present update, based on the two previous Climate Action Plan documents, aims to consolidate and enhance Hamburg's leading role in climate action – a role which is demonstrated by the high regard in which the Climate Action Plan is held, far beyond the limits of the city itself. Its intention is to achieve even better and more effective action in 2011, to meet goals for reduction of greenhouse gas emissions and to raise awareness of climate action among the people of Hamburg.

The present document also implements the response to the requests by Parliament in documents 19/5207 "Shallow geothermal energy" and 19/5852 "Solar roof register for Hamburg – providing more service for citizens interested in solar energy. Launching the energy turnaround".

B.
Hamburg's Climate Action Plan

I.
Hamburg and climate change

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) was published in spring 2007, setting out the status and changes in the climate system, the resulting impact, and the necessary measures. Leading scientists worldwide agree that climate change is already happening, and attribute this primarily to the rapid increase in anthropogenic emissions of greenhouse gases since the start of the industrial age, with gases such as carbon dioxide (CO_2), methane and other climate relevant gases. The Earth's climate has become about 0.84°C hotter on average in the last 100 years. The global rise in temperature has many impacts – increasing frequency of extreme weather events such as heat waves, droughts and heavy precipitation, more intensive tropical storms, melting of polar and glacier ice and of permafrost, accelerated rise in sea level, and finally shifting of climate and vegetation zones and changes in regional climate patterns. Climate change is already having an impact, mostly negative, on human health and society, on economic structures, and not least on flora and fauna. The scientists warn that climate changes and their impact on human beings and the environment will increase still further in the future.

Climate change can no longer be stopped, but it is still possible to mitigate it and to avert the worst scenarios. Urgent action is needed in order to do that, especially action to reduce greenhouse gas emissions. And adaptation strategies are also necessary in order to adjust to the consequences of global warming that can no longer be prevented.

Hamburg is also affected by climate change in a number of ways, and has to adapt accordingly. An average temperature increase within a bandwidth of 2.8 to 4.7°C is forecasted by the end of the century for North Germany and Hamburg, whereby the level within this bandwidth depends on the development of greenhouse gas emissions. There will be little change in the average annual precipitation quantity, but all the more change in distribution of precipitation over the seasons. Precipitation may increase by up to 40% in winter, and decrease by the same amount in summer.

The consequences are more frequent extreme weather situations, with dryer summers and more precipitation in

winter. There are likely to be more heat periods in the summer months, and possibly more severe storms in autumn and winter. Hamburg would be effected because of its geographical position, which is influenced by the North Sea and the River Elbe, both by rising storm floods from the North Sea and by the risk of inundation. A steady rise in sea level will also have an impact on the levels of the Elbe and its tidal system, whereby an increase in tidal sediment transport of the Elbe would have substantial impact on the Elbe and the Port of Hamburg. That makes sustainable management of the tidal Elbe all the more important.

Climate change is a threat to the health and safety of the citizens in the medium term, for economic and social structure, and for the natural environment and flora and fauna of Hamburg and its metropolitan region. A specifically urban problem is the city climate effect, whereby temperatures in cities increase even more. The change in the climate in the city and its surroundings also results in a change in natural habitats, with loss of wildlife species or their replacement by other, more adaptable species.

To counteract the consequences of climate change that can no longer be avoided, the Senate is preparing its own general strategy for adaptation to climate change.

II.
Goals of Hamburg's Climate Policy

Long-term goals of Hamburg's Climate Policy

It is thought that the rise in average global temperature versus pre-industrial level has to be limited to two degrees Celsius in order to restrict the impact of climate change to an extent with which humankind will most probably be able to cope. The cities are responsible for nearly 80% of greenhouse gas emissions. They should therefore reduce their carbon emissions by at least 80% by the middle of this century.

Hamburg has already set ambitious goals for reduction of greenhouse gases: carbon emissions are to be reduced by another 2 million tons by 2012 versus baseline 2007 (reduction from 17.6 million tons to 15.6 million tons). That corresponds to an additional reduction of about 10%, so that Hamburg is expected once again to more than double the reduction volume so far achieved since 1990 (1.7 million tons CO_2). That means reduction of carbon emissions has gone so far since 1990 (a total of 20.7 million tons at that time), that the medium and long-term goals seem to be achievable on continuation of this path. These medium-term goals involve a 40% reduction in greenhouse gas emissions in Hamburg by 2020 versus baseline 1990 (a reduction of about 8 million tons to approx. 12 million tons and an 80% reduction by 2050.

That is the basis for the following 14 action goals as the framework for Hamburg's climate policy:

14 action goals for Hamburg's climate policy

1. Energy supply

Like other cities, Hamburg has the challenge of ensuring sustainable, low-emission energy supply, to meet the ambitious goals for reduction of greenhouse gases while at the same time ensuring its energy security and competitiveness. That includes secure provision of carbon-free or at least low-carbon energy for electricity and heating, obtained from a steadily increasing share of renewable energy sources.

2. Energy savings

Energy savings are the primary route to achieve effective climate action in practice. Measures for energy saving should be set up with priority in the areas mainly responsible for causing greenhouse gas emissions. For Hamburg, that is industry and plant technology, transport and buildings.

3. Renewable energy

Energy generation using biomass from waste is to be advanced substantially, by expanding wind power capacity to at least 100 MW installed power, especially by dismantling old wind turbines and installing powerful new wind turbines, and by using photovoltaic energy and solar thermal heating.

4. Energy efficiency increase

Hamburg is an important industrial location. To maintain the performance of Hamburg's industry in the long term, economic growth must be decoupled from greenhouse gas emissions.

5. Energy networks

Hamburg is currently examining if and how the energy networks should be taken back into public ownership, with a view to improved climate action, cost-effectiveness and supply security, giving the city more influence on the municipal energy infrastructure again in future.

6. Adaptation to climate change

Hamburg is preparing a comprehensive strategy for adaptation to climate change, in order to adjust to its impacts. The long-term aims are to identify the risks and eliminate them, and to define and implement the necessary measures.

7. Modernisation of buildings

The intended carbon reduction goals require considerable cuts in energy consumption by buildings, especially in space and water heating requirements, and the use of renewable energies and low-emission combined heat and power systems (CHP) for the remaining energy requirements. The energy efficiency strategy for buildings is based on legal requirements and the provision of funding for measures aimed at improving energy performance.

8. Industry and plant technology

Activities in company environmental protection and climate strategy are to be further intensified in cooperation with all the important players of Hamburg's industry – the companies, and the chambers and craft trade organisations. The necessary structures for this purpose are to be continued and further developed in

cooperation between the Senate and the business community, and established as a long-term strategy extending beyond 2012.

9. Role model function of Hamburg's administration

The exemplary function of the city is to be realised by ensuring that municipal infrastructure, in particular public buildings, play a leading role in the reduction of energy consumption, the improvement of energy performance, reduction of carbon emissions and the implementation of electricity and heating supplies from renewable sources.

10. Mobility

The Hamburg Senate is setting the framework conditions for sustainable mobility in all areas of transport. The major goal is to promote the use of environment friendly means of transport with low carbon emissions. The provisions of low-emission transport are to be expanded and improved. That involves expansion and improvement of facilities for public transport, cycling, and pedestrians.

11. Research for climate change

Scientific excellence is to be further improved in research and teaching in climate research, further enhancing its international visibility. The existing research expertise in climate adaptation and climate change mitigation are to be further expanded and better focused, for long-term improvement of Hamburg's presence in these areas, too.

12. Communication of climate change, and awareness raising

It is important to raise public awareness of all factors associated with climate action and with the causes and impacts of climate change, and to provide the relevant educational, training and consulting programmes. Climate action and the impact of climate change need to be recognised in people's everyday lives. Information on climate action in Hamburg is to be provided with easy access, in a much more systematic and greatly expanded way.

13. National and international cooperation

Hamburg uses its networking activities at regional, national, European and international level, also working with its twin cities, to present itself as a centre in combating climate change, and at the same time to get benefits for its own climate action policy from exchange of experience and know-how.

14. Evaluation and monitoring

Monitoring of carbon reduction is to be conducted in order to assess the effects of the Hamburg Climate Action Plan, and in particular to monitor the budget funds used for it, and to make any necessary adjustments. Evaluation of the Hamburg Climate Action Plan is intended, both for the programme as a whole and for individual measures.

Based on these goals, Hamburg has the following strategic approach: Hamburg's Climate Action Plan has the overall objective for 2007-2012 of developing a differentiated range of instruments and projects that serve for achievement of the above action goals.

A Climate Action Masterplan for Hamburg is to be prepared by 2011 for long-term strategy, creating the framework for implementation stages which should be as specific and quantifiable as possible; this strategy initially runs until 2020, but also takes into account the objectives up to 2050. A baseline report has been prepared for this purpose, showing what action options Hamburg can take to achieve the goals which it has set itself for 2020 and beyond.

Baseline report on Hamburg's Climate Action Master-plan

The baseline report for a Climate Action Masterplan was presented to the public on 20 October 2010. For the first time, it presents a set of figures describing the status of carbon emissions in Hamburg under various conditions, the trend to be expected without continuation of the Hamburg Climate Policy (reference scenario) and a set of possible measures for achievement of Hamburg's climate goals. That enables the public to play an active part in discussion on the Hamburg regulations and measures necessary for achievement of the goals.

The following three subjects are at the centre of the baseline report, and are action recommendations for the political discussion:

Building and housing: the report reaches the conclusion that space heating in buildings and hot water heating in Hamburg have to be practically zero-emission by 2050. This target requires regulations for modernisation of existing buildings and new buildings; these will have to be examined in the framework of amendment to the Hamburg Climate Action Act and in discussion with the business community. The coming debate will among other things have to clarify the relationship between improvement of energy performance by building insulation on the one hand, and meeting energy demand by means of renewable energies or improved heating technologies on the other hand.

Transport: this sector, especially passenger car transport, accounts for 25% of carbon emissions. The report therefore recommends a package of measures including not only the expansion and improvement of public transport and greater use of cycles and walking, but also various innovative methods (electric vehicles, car sharing and liftsharing). It also proposes creation of a mobility development plan for Hamburg.

District heating: the report indicates that further development of Hamburg's district heating production and distribution system can play a major part in the short and medium term. The use of district heating production in coal-fired power stations (Tiefstack, Moorburg), in combined gas-and-steam power stations and in biomass-fired power stations can make the greatest individual contribution to achieving the goals for 2020. In the medium term, the modernisation of district heating systems (with decentralisation, reduction of input temperatures to include renewable energies) could make district heating a vital factor in achievement of the goals for 2050.

The process will continue with discussion of the report, and decision on further procedure.

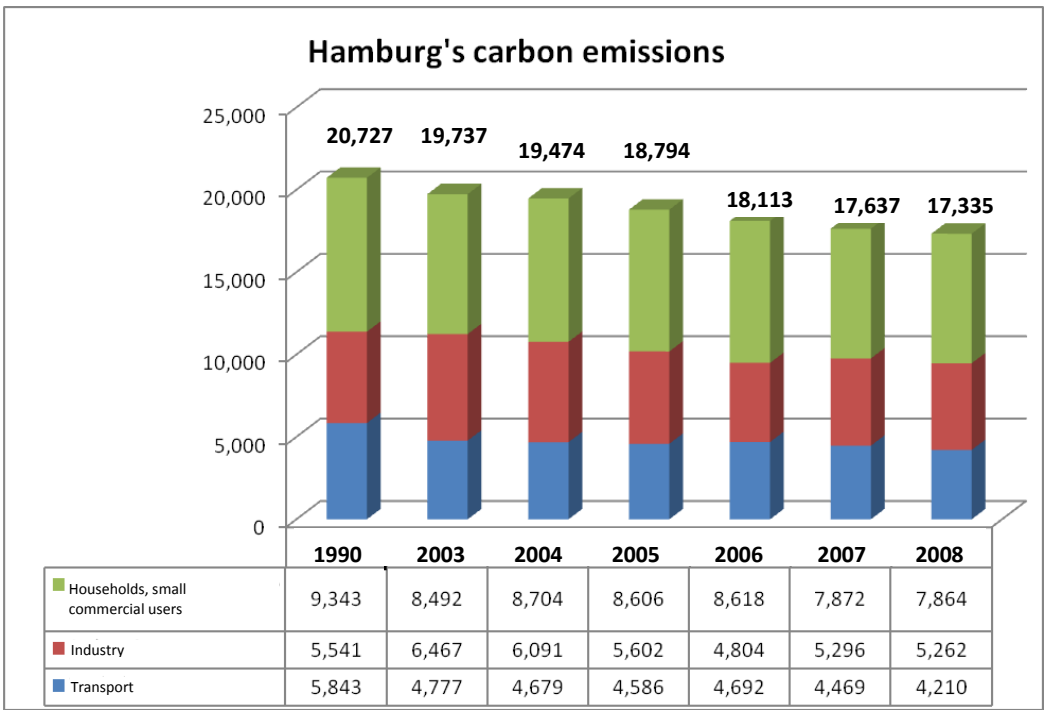
III.
Successes in climate action: the Hamburg carbon inventory

The Statistics Office North fundamentally revised the method for determining Hamburg's carbon inventory in July 2010. Electricity consumption is now no longer calculated from the electricity sales figures of the utilities, but from the electricity delivery data of the network operator; the district heating deliveries from Schleswig-Holstein are posted in a way that more accurately reflects their origins. The figures for the years from 2003 onwards and for 1990 have been revised in accordance with this change.

These changes make the inventory more accurate. At the same time, the steep decline in emissions since 1990 which had previously been calculated had to be revised in part.

In the longer term, there is a decline in carbon emissions in Hamburg. Despite increase in housing space, less energy is used for heating in buildings, and that energy is cleaner. Energy consumption is also declining in the transport sector. At the same time, increased blending of biofuels is helping to reduce emissions. Power consumption remains at practically the same level, but the carbon content is going down due to increasing use of renewables, so that emissions as a whole are likewise going down.

Fig. 1

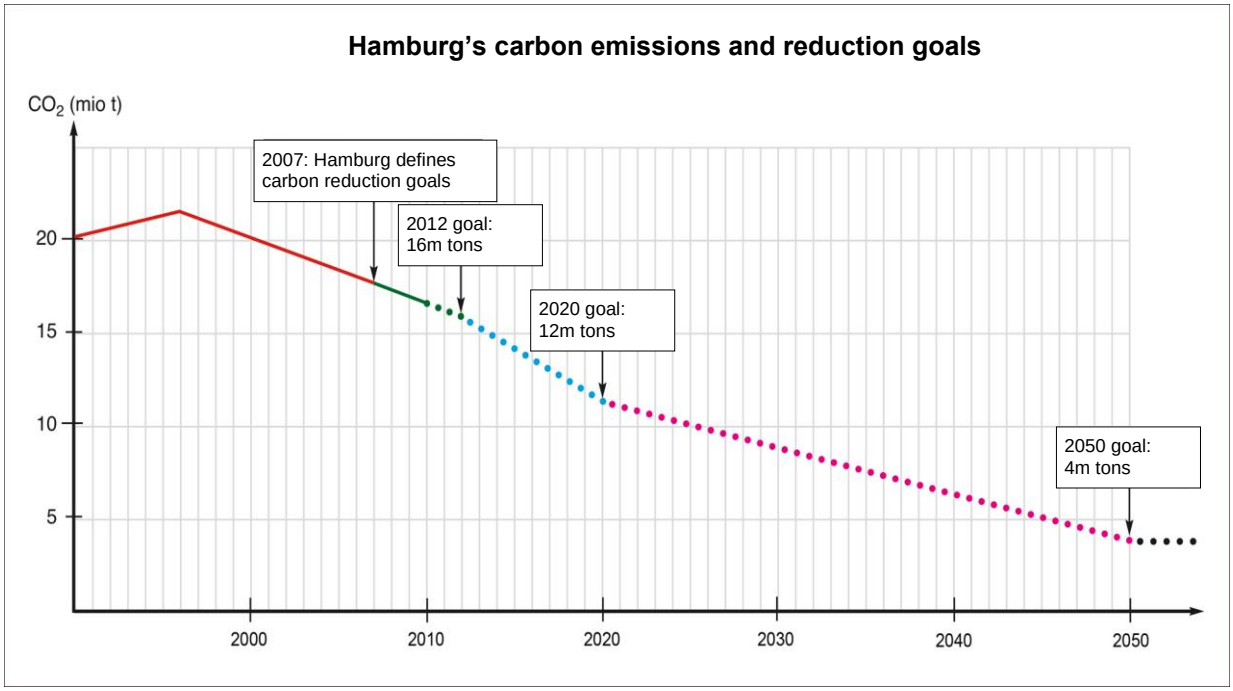


	1990	2003	2004	2005	2006	2007	2008
Households, small commercial users	9,343	8,492	8,704	8,606	8,618	7,872	7,864
Industry	5,541	6,467	6,091	5,602	4,804	5,296	5,262
Transport	5,843	4,777	4,679	4,586	4,692	4,469	4,210

Source: Statistikamt Nord

These trends continued in 2008, but emissions were down only a little compared with 2007. The main reason for that was a sharp rise in heating oil consumption. Whereas the VAT increase at the beginning of 2007 caused a significant drop in purchases in that year, stocks of heating oil were substantially increased again in 2008. The decline in emissions was also limited by an increase in power consumption by industry.

Fig. 2



IV.
Hamburg moves forward – two good examples

The "City as a model" section contained in the previous document has been discontinued, and the projects of this sector integrated in other sections. There are numerous good examples of the city acting as a model – two of these are presented in more detail below.

Example project "Building modernisation for police and fire stations"

In 2007 the Senate mandated the ministry which was responsible at the time to prepare reports for modernisation of a total of 30 police and fire stations, with the aim of achieving the best possible energy efficiency modernisation of these buildings over the period of the Climate Action Plan. Each of the reports contains a potential analysis, planning of measures, and cost-effectiveness analysis. The measures started in 2008 and 2009, using funds from the Climate Action Plan on a total of five properties, have now been successfully completed. These modernisation measures have saved 220 tons CO_2.

Further funds were allocated in 2010. Additional measures are to be funded from the Climate Action Plan in budget year 2011 in view of the central role of energy performance modernisation of buildings in the city's climate policy, the undisputed role model function of public administrations in this area, and the contribution which energy modernisation can make to achievement of quantitative climate goals, specifically in carbon reduction.

Example project "Climate Campus"

The Climate Campus is a grouping of university and facilities and non-university research facilities for climate research. The main concern of Climate Campus is basic research. The scientists there analyse past and present climate changes, in order to develop realistic forecasts. They use climate models as their main tools for this purpose. These highly complex models are used to calculate various scenarios. In addition, field research is used to obtain and analyse measurement data on ice, ocean, land and atmosphere. At the same time, the researchers are working on ways to improve the models still further, and thus gain new insights into climate processes and feedback effects.

A major focus is also on the question of how human beings can respond appropriately to climate change. The scientists from different disciplines work in networks at the Climate Campus, to develop and examine possible approaches. For example, economists and sociologists model the impact of emissions trading, and examine the conditions needed for development of a low-carbon society; peace researchers analyse the risk of local climate conflicts; and media scientists conduct research into subjects such as how journalists' reporting on the subject influences citizens and politicians. The key objective is to develop action options for society and government, in order to put climate policy on a sounder scientific basis. The stimulus for cooperation of the partners in the Hamburg Climate Campus came from the excellence cluster "Integrated Climate System Analysis and Prediction" (CliSAP) of Hamburg University, in

cooperation with partners. It is supported by the German Research Community (Deutsche Forschungsgemeinschaft) as part of the Excellence Initiative of the Federation and States of Germany, over a five-year period, with funding of about EUR 32 million. The participants working with Hamburg University include the Max-Planck Institute of Meteorology, the German Climate Computing Centre, and the Institute for Coastal Research of the Helmholtz Centre Geesthacht Centre for Material and Coastal Research. This cluster, which was launched in October 2007, is at the centre of the activities of the Climate Campus, and is generating even closer interdisciplinary cooperation. At present, an application is being prepared for continuation of the Cluster (see Section C III, no. 2.c Activities in the research sector).

The Climate Campus has great importance for Hamburg, not only because it increases university expertise at this location, and promotes and concentrates international research skills on climate subjects, but also because the research projects make a contribution to answering the important questions of what risks may be associated with climate change and how Hamburg can adapt to the impacts of climate change.

V.
Hamburg is European Green Capital 2011

Hamburg was awarded the title of "European Green Capital 2011" by the EU Commission in 2009 (see doc. 19/5797).

As a candidate for this title, Hamburg presented a range of programme and project ideas designed to give this title real meaning.

Hamburg's Climate Action Plan was a key argument for the Jury in selecting Hamburg as the European Green Capital 2011. While local climate action efforts were just one of the ten areas of policy examined, there are many other areas that are directly or indirectly relevant to combating climate change:

1. Local contribution to global climate action;
2. Urban public transport systems;
3. Availability of public green spaces;
4. Local air quality;
5. Noise abatement;
6. Waste occurrence and waste management;
7. Water consumption;
8. Waste water treatment;
9. Environmental management in municipal authorities;
10. Sustainable land use.

Climate change mitigation and adaptation to climate change are thus relevant in a whole range of subjects such as transport systems, sustainable land use, waste management and green spaces.

Thematic events on the subject of climate change are an important part of the programme of events for the European Green Capital 2011. Numerous individual events on climate change have already been scheduled.

Some climate networks where Hamburg is active are holding their annual conferences in Hamburg in 2011, e.g. METREX. The igs 2013 (International Garden Show) and IBA 2013 (International Building Exhibition) include a strong focus on climate action in their programme of events.

VI.
Climate policy is sustainability policy

Climate policy to secure the future of our planet is an essential part of sustainability policy. Climate policy also involves the need to achieve harmony between economic growth and conservation of natural resources on a socially acceptable basis. The impacts of climate change, the steady loss of global biodiversity and rapid depletion of fossil resources, coupled with rising global demand, involve not only environmental risks, but also economic and social risks. Hamburg believes it is important to make a contribution at local level to sustainable development at global level.

That is why the Senate decided to develop a sustainability strategy for Hamburg. It is currently in preparation under the leadership of the Hamburg Ministry of Urban Development and Environment (BSU) in cooperation with all the specialist departments. The Hamburg Climate Action Plan is a major component in sustainable development for Hamburg and is a concept that is already integrated in related and generally relevant strategies and policy areas, or is to be integrated in them. Thus the sustainability strategy will be greatly influenced by the present update of the Climate Action Plan and its measures for sustainable overall policy in Hamburg.

Climate policy as a task for the community can only achieve the goals that it sets for itself by identifying possible synergies and conflicts and putting the components together in a generally acceptable systematic concept.

C.
Sectors

Two sectors have been renamed by comparison with the previous document 19/4906:

- "Industry and plant technology" has been renamed in German ("Wirtschaft und Anlagentechnik" replaces the wording "Gewerbe- und Anlagentechnik"); and
- "Control" has been renamed "Evaluation and monitoring".

The sector on "the city as a model" has been discontinued. Its projects have been re-allocated to the individual sectors relevant to content. Legislation has also been re-allocated to the relevant sectors.

I.
Greenhouse gas reduction

1. Energy

a) Goal

Energy supply for Hamburg must be made sustainable and climate friendly, in order to achieve the ambitious goals of reducing greenhouse gases. The key factor here is successful restructuring of the supply structures in Hamburg. Power and heat must be increasingly obtained from renewable energy sources.

Important regulations and funding mechanisms have been set up for this purpose at national level, such as the Renewable Energies Act Amendment legislation for the electricity sector, the Renewable Energies

Heating Act for the heating sector, and the CHP Promotion Act to support the development of Combined Heat and Power systems (see details on page 5 of doc. 19/4906). There are also further options for climate friendly energy supply for the city. They include exerting greater influence on the development of energy networks, in particular optimisation of network structures, storage capacities and control methods such as "smart grids" and the expansion of generation and use of renewable energies and CHP with minimal carbon emissions.

The Senate has set up HAMBURG ENERGIE in order for the city to exert greater control on the supply situation, so that further measures can build on this.

b) Focus of action

Hamburg is focusing on the following areas of action to achieve climate friendly energy supply for the city:

– Examination process for take-over of energy networks by the City of Hamburg

Takeover of the energy infrastructure is under careful consideration in many cities in Germany, in view of the impending lapse of many concession contracts. There is a special situation in the City of Hamburg, firstly because the distribution networks are very large, with a correspondingly large economic value, and secondly because Hamburg has an extensive district heating network. Re-appropriation of Hamburg's district heating would also involve taking over the generating plants. These are combined heat and power plants, so they additionally generate electricity; that means taking over not only heat generating, but also about 60% of the electricity generating capacity located in the territory of Hamburg.

Examination of possible take-over of the energy networks includes consideration of the following aspects:

- Ensuring inexpensive, secure, user-friendly, environmentally sound energy distribution in the territory of Hamburg, and cost-effective operation of the Hamburg distribution grid, with expectation of profit;
- Exerting influence on future investments in municipal energy infrastructure, and its harmonisation with development of the city;
- Gaining scope to shape energy and climate policy, keeping technical innovations in mind;
- Earning revenues from grid use charges, thus giving the city of Hamburg participation in the profits of the regional energy market.

The decision of the City of Hamburg on future arrangements for ownership and operation of the energy grids cannot be finally made at the present time, because the information needed for decision making is not yet available. In particular, it is not yet possible to make a reliable cost-effectiveness calculation. That requires detailed data which are at present available only to the current concession holders (see also doc. 19/6387).

– Long-term heat supply planning

Reduction of carbon emissions by 80% to 95% by 2050 is needed in order to meet the overall climate goals. That requires strategic heating planning for the extended district heating network and its heat generating plants. The responsible authority has been mandated to develop regulation proposals for climate friendly further development of the district heating pipe network, with the goal of developing an "open heating platform".

– Expansion of Hamburg's know-how in renewable energies by setting up a Renewable Energies Cluster

The strategy process to define the content and organisation of the Renewable Energies Cluster has been completed. Hamburg is to be developed and marketed as a leading location for management and innovative services in the renewable energies sector. Three strategic areas are to be pursued here – establishment of the "Northern Wind Center" by means of strategic alliances in North Germany; development of an "International Service Hub" by creation of innovative services for renewable energies and use of synergies for other competence areas in Hamburg such as climate research, the maritime sector, aviation and logistics; and expansion of research and development activities to set up a "Renewable Innovation Center". The creation of a special Network Agency as a private limited company (GmbH) is currently in preparation. The shareholders of the GmbH will be the City of Hamburg and the Association for Promotion of the Renewable Energies Cluster, which was set up on 29 September 2010 by the business community with participation of the academic community. This structure is to give financial participation of companies in the network activities.

As in other clusters, it will not be possible to achieve extensive financial participation of companies in the build-up phase. The Hamburg Parliament therefore provided a funding grant for cluster management from 2010 onwards in doc. 19/6497 "Budget Plan 2009/2010: retrospective approvals pursuant to Section 33 of the State Budget Ordinance (LHO) and amendments in budget year 2010". A business plan will be submitted by the Network Agency for implementation, giving financial details.

– Extension of the solar energy initiative to private and public buildings (Solar Potential Analysis II)

Following the request by Parliament (doc. 19/5852), the responsible authority realised a solar roof register for a part of Hamburg. This is to be extended in 2011 in the framework of Solar Potential Analysis II.

Solar Potential Analysis II follows the climate project completed in October 2009, "Examination of solar potential of roofs on school buildings" and "Solar Potential Analysis I", a project likewise completed in 2010 with approx. 130,000 roofs. These two projects firstly examined school roofs and then further selected roof spaces in Hamburg to determine their potentials for generating electricity or hot water from solar energy. Solar Potential Analysis I, now completed, is used to locate and market suitable roof spaces (see 10 MW project by HAMBURG ENERGIE at http://www.hamburgenergiesolar.de/Solaratlas.68.0.html).

Property owners can enter their address or search the map for their house roofs, and see the classification in

one of four suitability categories, showing whether it is worthwhile to install a solar array. A click on the respective roof also gives information on the size and the theoretically obtainable energy yield. The analysis takes account not only of the roofs with their size, orientation and pitch, but also of objects throwing shadows, such as neighbouring houses, dormer windows and trees. The calculation method includes the different positions of the sun depending on time of day and season, and includes both direct and diffuse insolation.

The next stage will be extension of this system to cover the whole urban area of Hamburg. This procedure will be coordinated with the Hamburg Data Protection Adviser.

The Parliamentary request has thus been met. Parliament is asked to declare that the request set out in doc. 19/5852 has thus been settled.

– Expansion of wind power output

The two largest wind turbines in Germany, at 2 x 6 megawatts, went on stream here in 2009. Two wind turbines are currently being built by Stadtentwässerung (the Hamburg waste water treatment authority) together with HAMBURG ENERGIE, at the Dradenau sewage treatment plant, so that a total installed power of 50 megawatts will be operating by the end of the year. Parallel to that, the Hamburg Senate is systematically searching for suitable sites, culminating in autumn 2010 in the formal procedure for change in the land usage plan and landscape programme. Subject to a corresponding decision by the Parliament for change in the land usage plan, that provides sites making it possible to increase installed power to 100 MW, in particular by dismantling old wind turbines and building new, more powerful turbines. That means little change in the total number of wind turbines in Hamburg, but approximately a three-fold increase in power production thanks to improved technology. The technical development of micro wind turbines, e.g. vertical rotors for rooftop installation, is under continued observation, and is being examined for its potential for decentral energy generating. Trial areas have been designated in the scope of the Port Development Act, so that the Hamburg Port Authority can in future examine individual applications for the installation of wind turbines and if applicable approve them.

– Use of geothermal energy

Deep geothermal energy

The use of geothermal energy is an innovative, climate friendly heating strategy, and can under ideal conditions even provide energy to cover base load; it can make a contribution to reducing carbon emissions and thus help to combat climate change. A model project for deep geothermal drilling is being conducted in the Wilhelmsburg area to determine the potentials of virtually carbon-free heating and power supply. After completion of the geological and engineering feasibility studies, seismic exploratory work was successfully conducted in May 2010 using funds from the Federation's Economic Stimulus Package II, amounting to about EUR 400k, to clarify outstanding questions on distribution and thickness of the aquifers available for geothermal purposes at this site. The project phase is now forthcoming, to create the financial and engineering conditions for implementation of the deep drilling operation.

HAMBURG ENERGIE has also received permission from the responsible mining authority, the Lower Saxony Mining, Energy and Geology Authority, for three exploitation areas that could potentially be used to obtain geothermal energy, and has started the explorations for this purpose.

A study for modelling of temperature relationships and reservoir simulation in Rhätsandstein is currently being conducted, likewise with funding from the Federation's Economic Stimulus Package II, also providing an overview of existing and possible consumer structures for geothermally produced heat. This work was completed by the end of 2010.

– Shallow geothermal energy

The examination mandated in Parliament's request "Shallow geothermal energy" (doc. 19/5207) and the analogous mandate from doc. 19/4906 for examination of the technical, conceptual and economic conditions for a funding programme for "Shallow geothermal energy", taking account of the energy inventory on use of probe technology, showed that expansion of the existing funding programmes is currently not necessary for environment policy reasons, but that improvement is needed in the consulting and information provisions of the responsible authority.

The total costs of heat pump with probe technology, for an operating period of 20 years, and taking account of the current funding from the Federation (market incentive programme) gives costs comparable with gas condensing boiler systems for smaller plants, and is below the comparable costs for gas condensing boiler systems for larger heat pump systems.

In terms of environmental inventory, a heat pump with probe technology gives approximately 10% lower carbon emissions than a gas condensing boiler system, assuming the heat pump is properly executed and based on the data of the current Federal electricity mix. However, in practice there are more cases known with heat pumps than with condensing boiler heating systems where planning and design errors have substantially reduced efficiency and thus caused higher carbon emissions. In addition, there is a risk (though a small one) of the release of greenhouse gases with high greenhouse effect potential from the secondary circuit of the heat pump in the course of manufacture, production, operation and disposal. It is practically impossible to assess the effects of perforating the cover layers over underground strata and the risk of soil pollution despite technical precautions, or to assess the effects of temperature reduction in the soil due to thermal depletion by heat pumps. Similarly, there is no experience in the effects of temperature increase in the soil for heat pump / solar collector combinations, where the summer solar yield is put into interim storage in the soil, for subsequent withdrawal in the heating period.

Following consideration of these aspects, no further correction of the market position of shallow geothermal energy is necessary or useful in view of the current benefits for the environment. Any future increases in energy prices will also have significantly

less impact on the operating costs of a heat pump than on the operating costs of a gas condensing boiler system or a biomass heating system; this improves the future outlook of heat pumps in financial terms.

The existing Hamburg funding programme for thermal solar energy and heating has since March 2008 supported a particularly efficient combination of shallow geothermal energy and solar thermal energy, with significantly higher carbon savings potential than for the same heat pump without a solar thermal array.

The information provision by the responsible authority, and access to information on shallow geothermal energy, has been improved via the website and change in links. The provision of further contents (drilling profiles) is in preparation.

The Parliamentary request has thus been met. Parliament is asked to declare that the request set out in doc. 19/5207 has thus been settled.

c) Exemplary activities

In the framework of the Hamburg Climate Action Plan, the following major projects and activities are being pursued to promote the use of renewables and climate-friendly CHP systems, and to promote innovative energy supply concepts and other carbon reduction strategies.

c1. Expansion of renewables by funding programme for solar thermal energy and heating (project no.: 2007/100)

Hamburg attaches great importance to increased use of renewable energy sources, to meet the challenges for carbon reduction and conversion of the energy supply system. Increased use of decentral facilities close to housing, and in particular the use of solar thermal energy, continue to play a major part in this. Compared with alternative heat generating systems, solar thermal energy is environment friendly but is still dependent on financial incentives. The Solar Thermal Energy and Heating programme will therefore be continued.

c2. Increase in use of CHP with companies in the manufacturing, services and housing sectors (project no.: 2008/031)

The Senate has launched an initiative for increased use of combined heat and power (CHP) in industrial companies and housing, in cooperation with the Hamburg business community. A potential analysis was conducted to establish contact with operators of suitable heat generating plants. The events organised in this context were well taken up by companies for technical discussions. The "Companies for resource conservation" programme provides checks to determine possible applications of small CHP plants to make it easier for companies to start using such CHP plants. The costs of these checks for companies are minimised, since two thirds of the costs are borne by HAMBURG ENERGIE and E.ON Hanse AG. The standardised check is conducted by engineering consultants from a consultant pool, and provides a plant analysis, preliminary planning for a small CHP plant, and indications of costs, savings, and cost-effectiveness. In individual cases, investment grants can be given for construction of the plants. Extensive consulting services have been provided in the framework of the Companies for resource conservation programme, leading to initiation of 28 CHP plants with forecast annual carbon emissions avoidance of about 21,000 tons. Nine of these subsidised CHP projects have so far been built, with carbon avoidance of about 9,800 tons. Added to this there are individual projects, e.g. in production there is the CHP plant of Aurubis AG with carbon avoidance of about 4,300 tons per annum, and in housing the small CHP plant of the Association for Ecumenical Student Hostels (Überseekolleg) with carbon avoidance of 63 tons per annum.

c3. Renewable energy plants (esp. photovoltaic plants) on schools (project no.: 2007/019)

Construction of the photovoltaic plants applied for has been delayed by the re-organisation and establishment of the school building agency Schulbau Hamburg (SBH). A model contract of SBH, which is a condition for construction of further plants, has now been submitted, but not yet finally agreed. So far there are 51 applications for photovoltaic plants. Seven further applications will be added in the near future. At present there are plants on 74 school roofs, with a total installed rating of about 180 kWp.

c4. Optimisation of waste cycle in Hamburg from the viewpoint of climate action (recycling initiative) (project no.: 2007/117)

The goals and measures of the recycling initiative were presented in doc. 19/8245. Hamburg is working to extend the system of separate collection of paper for recycling and organic waste from households. It also wishes to extend the existing private-sector system collection of lightweight packaging from households in the whole of the city area, to include collection of non-packaging waste made of metal and plastic (Hamburg recycling bin).

In order to optimise the recycling of organic and green waste, the existing Bützber composting facility of SRH (Hamburg Waste) will be expanded to include a dry fermentation plant, which is expected to go on stream in August 2011. The biogas obtained from fermentation of organic and green waste is to be processed and fed into a nearby natural gas pipeline.

c5. IBA project: Wilhelmsburg energy bunker (project no.: 2007/090)

The modernisation of the Wilhelmsburg bunker and expansion and conversion into an "energy bunker" with a documentation centre is being conducted by IBA Hamburg – it combines conservation of a historic building with realisation of an innovative, climate friendly energy concept for supply to the Reiherstieg district. HAMBURG ENERGIE is implementing a sustainable and exemplary energy project here, for the post-fossil-fuel city of the future; its components are a large heat storage facility (volume 2,000 m^3) and use of renewable local energy resources (solar, wood, biogas).

d) Newly adopted projects

This section lists projects which were newly adopted in 2010. The projects already described in doc. 19/4906 of 22 December 2009 are listed in table form in Annex 1, indicating the reference in doc. 19/4906.

Implementation of projects in the framework of the Renewable Energies Cluster (project no. 2010/038)

The Renewable Energies Cluster is currently being established. When it has taken up its work it will generate projects to be realised by the participating companies, in some cases together with universities or the responsible authorities. They include for example the Energy Campus project. Further details cannot be specified at the present time, because the details of the project will be defined in the course of the work of the Cluster.

Energy efficient lighting concept for subways and tunnels of the 60s and 70s at the centre of Harburg (project no. 2010/039)

These pedestrian subways give the impression of dark, cave-like tubes, not only in the evening and night, but also during the day. Pedestrians often take considerably longer routes in order to avoid these scary places. The programme is intended to reduce carbon emissions compared with the existing situation, to have exemplary character as a high-profile programme, and to upgrade the centre of Harburg. This programme leads to a direct reduction in carbon emissions.

Smart Power Project (project no. 2010/045)

The Hamburg University of Applied Sciences (HAW), working under the lead management of HAMBURG ENERGIE in cooperation with Aachen University (RWTH), has submitted a funding application to the Federal Ministry of Economics and Technology for the development of innovative energy concepts for Hamburg. The main content of the project is the development of technical solutions and services for a Smart Grid. The concept is based on two pillars – intelligent power consumption management (demand side management) and electricity controlled small CHP plants in connection with heat storage in the city's infrastructure. The project has a duration of four years.

Solar Potential Analysis II – expansion to the whole of Hamburg (project no. 2010/060)

The predecessors of Solar Potential Analysis II were firstly the climate action project to examine the suitability of roofs of school buildings for solar energy use (Solar Potential Analysis for School Roofs; project no. 2008/094) completed in October 2009, and secondly "Solar Potential Analysis I" with approx. 130,000 roofs (project no. 2009/0086, doc. 19/4906 III.3.b) (ff)).

These two projects examined roof areas for their capabilities of generating electricity or hot water from solar energy. The next stage now planned is to expand this to the whole of the Hamburg urban area. It is not possible to make use of the existing 3D city model of the Hamburg Agency for Geoinformation and Surveying for this purpose, as previously, because it only covers the area of Solar Potential Analysis I. This measure will help to increase the proportion of renewable energies and thus reduce carbon emissions.

Heat supply to St. Katharine's Church (project no. 2010/069)

St. Katharine's Church (part of the North Elbe Church organisation NEK) is currently being completely renovated due to age-induced damage to the building. The parish wants to convert the heating system for the church entirely to renewable energies. In particular, it intends to use a heat pump system. This project will contribute to reduction of carbon emissions.

Load management in public buildings by means of Smart Meters (project no. 2010/070)

Smart Meters are intelligent electricity meters with a connected sub-meter structure, to be used in large buildings. They capture data and control where, for what purpose and for what period power consumption occurs. Fitting of buildings with smart meters thus prepares them for rational power management with the aim of adapting power production to specific consumptions, and gives an incentive for saving. Examples of the use of smart meters are in the new construction of large public buildings such as university buildings, and also retrofitting in existing buildings. The new project initially has the goal of gaining experience at an early stage of introduction. Smart Meters contribute to reduction of carbon emissions.

2. Buildings

a) Goal

The carbon reduction goals which have been set require substantial reduction in energy consumption by buildings, especially in space heating and hot water demand, the use of renewables and climate-friendly CHP for the remaining energy demand. The basis for an efficiency strategy in the buildings sector is legal regulations, funding provisions, and possibly agreements with the housing sector.

At Federal level, binding standards are set for buildings, in particular by the Energy Performance Ordinance (EnEV 2009) and also by the Renewable Energies Heating Act (EEWärmeG) (cf. also details in doc. 19/4906, pp. 5 and 144). These standards are to be further developed in the course of transposition into national law of the revised EU Directive on the energy performance of buildings (2010/31/EU). From 2021 onwards, the rule for new buildings is that only nearly zero-energy buildings are permissible, where the very low energy requirement is largely covered from renewable energy sources. For major renovation of existing buildings, overall energy performance must be improved and as far as possible high-efficiency alternative systems of energy supply must be used. Specific definition of the term "nearly zero-energy building" and the requirements for overall energy performance are largely up to the member states. The Directive also increases the relevance of energy performance certificates and modernisation recommendations. The Directive must be transposed into German law by July 2012. However, individual regulations may be applied by member states at a later date. Thus the nearly zero-energy standard for public

buildings used by public authorities as their owner has are to take on an exemplary function in improving energy performance of existing buildings.

Hamburg has set standards with the Climate Action Ordinance adopted in the 18th legislative period, taking on a front runner position in climate action legislation. Hamburg should continue to play this part in the future. That should be done by further development of the Hamburg regulations in keeping with the need to combat climate change and ensure socially acceptable development, in order to achieve optimum energy savings and energy performance in Hamburg's existing buildings and all new building projects. In addition, the quality of energy-efficiency modernisation should be systematically improved. The conservation of buildings with heritage character is particularly important for Hamburg in this context.

Climate friendly planning and building gives considerable potential for reduction of carbon emissions. Land use planning in Hamburg should therefore ensure energy-efficient housing and transport space development in the city, and high quality of buildings with respect to climate-friendly energy supply.

The Senate has also set itself the goal of acting as an example to other players in energy performance and energy saving, and significantly improving energy performance standards in public buildings in the coming years.

b) Main areas of action

1) Funding programmes for energy efficiency modernisation of existing buildings

Hamburg is putting the focus in the building sector on measures that give direct reduction of carbon emissions, good cost-benefit ratio and wide-ranging impact. A focal point of expenditure in the Hamburg Climate Action Plan in the coming years will be energy efficiency modernisation of existing buildings. Funding from budget title 6800.971.19 is in future only to be given to projects with innovative character (climate model districts, IBA projects). The following funding programmes for energy efficiency modernisation of existing buildings are to be continued in the coming years, and to be reinforced with funds from the Hamburg Climate Action Plan, or to be newly launched from 2011 onwards:

– Thermal insulation in existing buildings in the framework of the "Jobs and climate action" initiative for housing and industry Energy efficiency modernisation of buildings which are largely owner to be met from 2019 onwards. The public authorities
– occupied (single family and two-family houses, housing ownership groups) is to receive grants in the framework of the "Jobs and climate action" initiative via the "Thermal insulation in existing buildings" programme. In 2008 about 4,000 dwelling units were funded, and in 2009 more than 5,000 in the framework of this programme.

The objective of this project is to use grant funding to establish an energy standard in existing housing and buildings that is more ambitious than the minimum legal requirements and exceeds their carbon reduction effect. About 85% of the buildings in Hamburg were constructed before 1978. Even where they have good building substance, their outer walls, roofs and windows are often inadequately insulated, and a large proportion of the space heating escapes unused to the outside. The insulation standard specified in the funding programme reduces the annual heating energy requirement for the building by up to 70%.

Energy efficiency modernisation of existing buildings to the standard of new buildings normally also saves more heating energy cost than the cost of funding (interest and repayments) of the modernisation investment. The funding gives additional incentive for complete renovation, and an improved standard compared with the minimum requirements of Energy Performance Ordinance EnEV2009.

The funding programme comprises the components information and advice (grant for preparation of the Hamburg Energy Performance Certificate) and funding of the building measures in the form of investment grants. Approvals are given by the housing loans organisation Hamburgische Wohnungsbaukreditanstalt (WK) on behalf of the responsible authority.

– Housing modernisation in rented flats in multi-family buildings

The target for 2009 of increasing the number of energy efficiency modernisations in rented housing by 1,000 dwelling units to a total of 7,000 dwelling units was even exceeded, at a total of 7,561 dwelling units.

The significantly stricter regulations for energy performance in the funding regulation for "Modernisation of rented housing 2010" entered into force on 1 January 2010. The newly defined requirements for housing components may in individual cases go as far as zero-emissions standard (passive house standard). At the same time, as announced, mandatory quality assurance has been introduced for energy modernisation measures for rented properties funded by WK.

Efficiency modernisation measures in rented housing funded in 2009

Segment	No. of dwelling units	Additional carbon emission savings (tons p.a.)	Present value* Total subsidy:	Present value subsidy per t CO2 **
Modernisation from regular housing funding programme	4,129	10,569	EUR 13.15 million	EUR 41
Additional modernisation in the framework of Climate Action Plan	1,992	5,538	EUR 6.14 million	EUR 37
Modernisation from regular housing funding programme with regulated occupancy	1,440	2,988	EUR 7.48 million	EUR 83
Total	7,561	19,095	EUR 26.77 million	EUR 46

** Related to term of investment of 30 years * Present value factor: 6.5%

Note: The term of the investment was reduced from 40 years to 30 years due to a change of system resulting from carbon monitoring for the Climate Action Plan.

– New: funding programme "Urban character and climate action" – conservation of Hamburg's brick buildings and other characteristics buildings in the context of energy efficiency modernisation of older buildings

The Hamburg Parliament requested the Senate with doc. 19/929 to take measures to resolve the goal conflict between maintenance of urban heritage on the one hand and improvement in energy performance on the other. The responsible ministries intend to set up a special programme for energy efficiency modernisation of heritage buildings, together with the housing loans association Hamburgische Wohnungsbaukreditanstalt.

The target group is the rented and owner occupied residential buildings designated as conservation properties in doc. 19/929, and non-residential buildings where energy-efficiency measures cannot be implemented or not sufficiently implemented with other regular programmes for energy-efficiency modernisation. The first pilot projects are to run in 2011 to work out basic procedures for energy efficiency optimisation of heritage buildings. This programme is in particular to fund the testing and market roll-out of special methods to remedy structural problems in the respective building types (thermal bridge problems, e.g. beam supports in the outer wall area, concrete renovation, window installation, moisture problems in various designs) and building equipment problems with pilot character.

The basis of this funding is to be an extended "Hamburg energy performance certificate for heritage buildings". Compared with the regular Hamburg energy performance certificate, the extended version shows the justification of funding, from the economic and energy-efficiency viewpoints. It is also to show the usefulness of testing certain techniques, and to document the necessary decision making process and the procedure for determination of the status of "heritage building". The measures funded are to be evaluated in terms of longer-term building quality and energy-efficiency results.

– New: funding of pilot projects for energy-efficient non-residential buildings

The energy-efficiency modernisation of non-residential buildings is to be advanced more effectively by a new funding programme. Unlike residential buildings, energy-efficiency modernisation is the exception in the non-residential sector, although these buildings account for a large proportion of Hamburg's carbon emissions. The extent of funding is to be determined by the amount of energy saved, and the reduction in carbon emissions. Further knowledge is needed for development of standards, and this is to be obtained from pilot projects.

2) Amendment of the Hamburg Climate Action Act (HmbKliSchG)

The energy performance requirements for buildings need to be further developed in accordance with the requirements of the carbon emission reduction goals. The Hamburg Senate has therefore mandated the responsible authority to examine how far the existing regulations on climate action need to be changed, and to submit draft legislation for amendment of the Hamburg Climate Action Act (HmbKliSchG), setting higher energy performance requirements for new buildings and existing buildings. Examination of the related technical, legal and economic issues has not yet been completed.

3) Meetings with the housing sector

An initial meeting between the responsible authority and the associations of Hamburg housing companies agreed on more detailed meetings at working level to examine how far agreements can be made on climate action for buildings. A working group is to prepare specific details for the contents of a possible agreement.

4) Climate model districts

Planning and building for low emissions and for adaptation to climate change are to be developed in climate model districts, so that procedures, standards and insights can be transferred to planning for other districts in Hamburg. The climate model districts are characterised by high energy performance standards for buildings, going beyond the legal minimum requirements, and district-related energy concepts for better climate performance. The concepts and plans, particularly of the districts, are to be given targeted support via this project. And it is also possible for the project to select the planning of other players as climate model districts. Climate model districts may comprise aspects of climate change mitigation, or adaptation to climate change. The districts should reflect different geographic positions in the city, with different uses, density and year of construction, and should take account of existing buildings and new buildings.

So far, 19 climate model districts have been identified together with the local administrations, and selected on the basis of a criteria list. These climate model districts all have a key focus on climate action, an in particular on high energy performance standards for buildings; in four cases, they also comprise goals for adaptation to climate change. The projects are distributed over the whole of the Hamburg urban area, with at least two climate model districts in the area of each local council. In one case, the planning of a logistics area as a model for "Sustainable logistics" has already been defined in detail and agreed, and a second project is currently in the planning phase.

5) City as a model – improvement in energy performance of public buildings

More attention is to be given to improvement in energy performance of public buildings in the coming years. The responsible ministry has called on external expertise to examine what increased energy performance standards can be implemented in new and existing buildings. The report was completed in the first quarter of 2010. The outcome is that higher energy performance requirements can be set for new buildings, roughly corresponding to zero-energy level. This target level is also to be the aim for energy-efficiency modernisation of existing buildings. Reasons will have to be given where the defined energy performance standards cannot be achieved. The amendment of the Hamburg Climate Action Act (HmbKliSchG) makes it possible to set higher energy performance standards as mandatory requirements for buildings used by public authorities (see above).

c) Exemplary activities

The following major projects and measures in the building sector are also being continued.

c1. Introduction of an energy performance component in the rent scale (project no. 2008/069)

The Hamburg rent scale 2011 is currently at the tendering phase. An important criterion for award of the contract will be that the subsequent contractor includes a concept to take account of the energy performance component in preparing the rent scale, and puts this into practice after consultation with the rent scale working group. Agreement has already been reached in the working group on the principle of including an energy performance component.

c2. New buildings by municipal housing associations to be based on zero-emissions standard (project no. 2007/140)

Agreement was reached with SAGA/GWG in 2009 that future new buildings will be built only to zero-emissions standard. That is already reflected in planning for current building projects.

c3. Further development of standards for funding programmes for housing (project nos.: 2007/140; 2007/142)

Zero-emissions standard in new residential building

From 1 January 2012, the zero-emissions standard will be a basic requirement for new residential building funded by the housing loans association (WK). The responsible ministry will also examine whether a funding programme can be realised for zero-emissions standard from 2011 onwards. Re-adjustment and possibly a graduated scale of funding levels will also be examined for programme year 2011, for the current minimum level of WK (KfW energy efficiency house 70 referring to EnEV 2009 / previously KfW 40 with ventilation system including heat recovery system, in force since January 2008) and for zero-emission houses. The goal is to reduce the subsidy for the minimum standard, which has now become well established and is very much in demand, in the WK funding programmes, and thus to improve the effectiveness of the funding programme. The incentive to build houses to zero-emission standard as early as 2011 is to be increased by means of a wider spread between funding levels, compared with the current WK minimum standard.

Zero-emissions components in modernisation, and urban heritage issues

The significantly more demanding funding regulation "Modernisation of rented housing 2010" entered into force on 1 January 2010. The newly defined component funding system goes in some cases as far as zero-emissions standard ("passive house components"). For building façades which are to be conserved, exceptions may be made from the energy requirements on presentation of good reasons, whereby the alternative in such cases must be to use the highest energy-performance solution possible under the circumstances. To support the conservation of characteristic brick façades in connection with energy-efficiency modernisation, the funds of WK have been increased from 2011 onwards for aesthetically valuable, authentic façade materials (clinker facing brick and clinker full brick).

c4. Development of standards and concepts for non-residential buildings (project no. 2010/016)

The responsible authority was mandated by the Senate to examine the potentials for carbon emission savings by setting higher energy performance standards for non-residential buildings for typical industrial use. The necessary examinations of existing non-residential buildings are the object of a study which has not yet been completed. As soon as the results have been

submitted, concepts will be developed for uniform, binding requirements, taking account of the economic and architectural heritage aspects (cf. doc. 19/4906, Annex 1, V.3.a)(mm), p. 82).

c5. Further development and expansion of certification procedures for sale of municipal properties (project no. 2007/189)

The obligation to certify planned new buildings in the framework of sale of municipal properties, in tender and competitive procedures, can be introduced in the near future for purely office, hotel and retail buildings, in accordance with the procedures of the German Sustainable Building Society DGNB – Deutsche Gesellschaft für nachhaltiges Bauen e. V. – (minimum standard "bronze") within Ringroad 1, and must be introduced at the latest by 1 January 2012. At selected outstanding locations within Ringroad 1, requirement for the DGNB silver or gold standard can be set in individual cases; obligation for certification of prominent projects is not ruled out for the whole area of the city. In residential building, the energy performance standards on sale of municipal properties are regulated by the Housing Development Plan.

The responsible authorities have examined how far the ecological certification procedures (gold and silver standard) used in the HafenCity district can be further developed and stepwise extended to sale of other municipal properties, in the framework of tender procedures and competitions. The result of this examination is that the ecological certification procedure used in the HafenCity area (HafenCity Environment Label) cannot simply be transferred to other areas. It is difficult because other areas have more heterogeneous structures than HafenCity (different rent levels/positions/uses/no uniform energy supply, etc.). Some of the certification criteria developed specially for HafenCity, such as opening of the buildings to the public, are not necessary or desirable in other areas of the city. In addition, the HafenCity Environment Label is currently still in the pilot phase. So far, five buildings have received pre-certification. The final certificate is to be awarded two years after completion of the building, provided that monitoring results are positive. As yet there are no buildings which have received final certification with the HafenCity Environment Label.

The DGNB certification system, which is widely used in Germany and in other European countries, is also used in HafenCity. A building can be certified simultaneously with the HafenCity Environment Label and the DGNB certificate. So far, about 80 buildings in Germany have been certified to the DGNB standard.

c6. Innovative projects in the framework of IBA (project no. 2008/054)

One of the three key themes at the International Building Exhibition IBA Hamburg is "Cities in climate change". It includes implementation of the climate action plan "Renewable Wilhelmsburg", and realisation of renewable heating networks for buildings, to develop outstanding examples both in new buildings and existing buildings and to submit these to long-term monitoring and evaluation. This is to include both consumption and generating data of the building projects and energy concepts, and area-related analysis of energy flows. In addition, it is to integrate the aspects of user behaviour, user response, and further individual technical examinations. The following are a few of the many IBA projects in the building sector, by way of example:

"Good climate" campaign: IBA supports pilot modernisation projects, because the greatest energy saving potentials are in the modernisation of the existing building stock. In 2009 it funded the preparation of a total of 60 Hamburg energy performance certificates with "IBA excellence" standard. As many as possible of these modernisation concepts are to be transferred to planning and implementation in 2010, including quality assurance. Home owners have to meet at least four of the seven criteria of the "IBA Excellence Modernisation Standards", related to the quality of the building envelope, heat generation, controlled ventilation, and own power production.

Exhibition in the Exhibition: The "Exhibition in the Exhibition" aims to give answers for housing construction in the 21st century. It focuses on four model building areas in Central Wilhelmsburg, setting new standards – these are buildings which adapt to their occupants and changing usage needs (Hybrid Houses), intelligent and sustainable planned "Smart Material Houses", attractive looking and yet affordable "Smart Price Houses" and "Water Houses" specially adapted to their position by the water. The "Smart Material Houses" are of particular interest for combating climate change, using façade-integrated energy generation and a new type of heat storage material (PCM, phase change material).

d) Newly adopted projects

This section shows projects which were added in 2010. The projects already described in doc. 19/4906 of 22 December 2009 are shown in table form in Annex 1, indicating their reference in doc. 19/4906.

Pilot project for promotion of energy-efficient non-residential buildings (project no. 2010/031)

More public attention is to be drawn to energy-efficiency modernisation of non-residential buildings by means of a new funding programme. Unlike residential buildings, energy-efficiency modernisation is the exception in the non-residential sector, although it is responsible for a large proportion of carbon emissions in Hamburg. The amount of funding is to be adapted to the amount of energy saved, and the reduction in carbon emissions. Further knowledge is needed for the development of standards, and this is to be obtained from pilot projects. The basis of this pilot funding will be the results of the expert report prepared in accordance with Request 12 of doc. 2009/2504. This measure contributes directly to reduction of carbon emissions.

Ecological housing estate "Hausbruch 35" (project no. 2010/047)

Apart from zero-emissions technology, no climate change mitigation or climate impact adaptation aspects were so far included in this housing estate concept. In

the second phase of building, the following aspects are also to be included:

– Rainwater management (retention areas, rain water usage);
– Alternative waste water treatment;
– Ecological construction (renewable materials);
– Development (surfaces suitable for soakaway);
– Green spaces concept.

This gives an opportunity to try out on a small scale, and then to publicise, the technology for realisation of future building phases of the large housing estates Neugraben-Fischbek 65, Elbmosaik, and the conversion area Neugraben-Fischbek 66, and Röttiger Barracks. This project contributes directly to reduction of carbon emissions.

Energy efficiency in extension of Finkenau Art and Media Campus (project no. 2010/053)

The buildings at the Art and Media Campus are to be rounded off and completed by construction of an extension. The goal is to build this extension to be as sustainable and energy-efficient as possible. In particular, the following requirements are to be met:

– Dimmable lighting control;
– Natural ventilation of rooms;
– Active use of solar energy.

This project contributes directly to reduction of carbon emissions.

Energy-efficiency modernisation of buildings – analysis of the portfolio of buildings used by the City of Hamburg (project no. 2010/059)

This project is aimed at realisation strategies for energy performance improvement of existing buildings used by public authorities, and at further development of energy performance standards. Energy performance standards have to be constantly developed and successively implemented in existing buildings, in order to fulfil the model function of the City authorities. For this purpose, buildings used by the public authorities are to be analysed in order to determine a priority sequence for energy-efficiency modernisation strategies. The impacts of current EU regulations are to be taken into account. This project contributes to reduction of carbon emissions.

Development of a funding programme for urban heritage and climate action (brick building fund) and implementation of demonstration projects (project no. 2010/061)

Conservation of architectural heritage, characteristic buildings and estates, is often seen by the public as being in conflict with today's requirements for energy efficiency and climate action. The result of this project is to be development of a funding programme for heritage buildings. This project contributes to reduction of carbon emissions.

3. Mobility

a) Goal

Hamburg is faced with the task of organising transport in a growing city in such a way as to meet the mobility needs of road users, protect the needs of local residents, and combat climate change. Hamburg also has one of the world's largest container ports, and is a logistic hub for the North – that means it requires a particularly sustainable, growth oriented strategy for the future of transport, taking account of the city's interest as a business location, and at the same time limiting climate problems and environmental pollution and impairment of quality of life in the most effective possible way.

The Hamburg Senate sets the framework conditions for sustainable mobility in all areas of transport. The goal is to increase the proportion of environment friendly means of transport with low emissions. The measures taken here are intended to help increase and improve the available means of transport. They include improvements to public transport by expanding the system and network and improving the available services, and further development and expansion of cycling facilities including cycling infrastructure. Support is also provided for the market launch of low-emission propulsion technologies.

b) Main areas of action

The Renewable Energy Directive (2009/28/EC) sets a target of a 10% share for renewable energy in the EU transport sector by 2020. EU Regulation 443/2009, adopted in 2009, sets CO_2 emission targets of an average of 130 grams per kilometre for new passenger cars. By analogy to that, the EU proposes in a new draft regulation that average CO_2 emissions for new light-duty vehicles should be reduced stepwise to 175 grams CO_2 per kilometre from 2014 to 2016. The long-term goal for 2020 is to reduce average CO_2 emissions to 135 grams per kilometre.

Throughout Germany, the emissions from transport have gone down only slightly between 1990 and 2007, unlike other sectors. That is due primarily to the increase in traffic volume. This increase almost completely offsets the successes of vehicle specific emission reductions.

About 25% of the CO_2 emissions in are caused by transport (data for 2008). Most of these emissions come rom passenger cars, followed by light-duty trucks.

The Hamburg Senate aims to shift transport more to cycling and walking, particularly for shorter trips of less than five kilometres. Nearly half the car trips in Hamburg fall into this category. The low operating temperatures of vehicles travelling short distances makes the specific emissions substantially higher for short trips than for longer ones. And increased attention should also be given to the longer trips, because they account for a large proportion of the kilometres driven in regional traffic and generate a corresponding volume of emissions. Urban parking space management and regional rail transport (including feeder systems) are to be used here. That means involving surrounding areas in planning. The main areas of the Climate Action Plan here are as follows:

1. Strategies for non-motor traffic
   – Cycling: expansion and improvement of the cycling network, especially creation of a network

of velo routes (cycle superhighways), increased use of cycle lanes and cycle tracks, and creation of cycle parking spaces;
- Improvement of service and communication for cycling, e.g. by extension of the cycle hire system and increased public relations work for cycling;
- Walking: preparation of a walking strategy as a systematic basis for increased activities to create more attractive, safer routes for pedestrians. That will also make public transport more attractive, as people mostly get to public transport by walking.

2. Enhancement and further development of public transport, e.g.
   - Improvement of infrastructure and transport provisions, e.g. introduction of a tram system and new S-Bahn and U-Bahn lines (S4 and U4), making public transport more efficient, more attractive, and lower-emission;
   - Conversion of rail systems in Hamburg's public transport to electricity from renewable energy sources.
3. Environment friendly technologies in transport, e.g.
   - Promotion of electric vehicles and other innovative propulsion systems;
   - Promotion of environment friendly taxis, e.g. introduction of an environmental label;
   - Energy-efficiency optimisation of technical transport infrastructure such as traffic lights.
4. Transport and mobility management, e.g.
   - Car-free Sundays;
   - Marketing campaigns;
   - Expansion of "e-ticketing" (via Internet or mobile phone);
   - Guidelines for procurement of low-emission vehicles for new purchases or replacement purchases for the general vehicle fleets of public authorities.

Other measures in the Climate Action Plan relate to ship and air traffic.

c) Exemplary activities

c1. Cycling Action Plan (project no. 2008/083)

Cycling has a key role to play in the transport system of a modern city. It is not only emission-free, but also flexible, quick and space saving. The Cycling Action Plan includes a range of measures to show a long-term perspective of how to increase the proportion of cycling in traffic from 9% in 2002 to double this amount by 2015. The "Mobility in Germany" survey (status summer 2008) shows that the percentage is now already more than 12% with a rising trend.

The Hamburg Cycling Action Plan comprises the following elements:

1. Good cycling tracks
2. Good cycle parking
3. Better links between cycling and public transport
4. Greener mobility and improved road safety
5. PR for a better cycling climate
6. Using cycle tourism potential
7. More service for cyclists
8. Structures for implementation
9. Quality assurance and monitoring of results.

It is not possible to make good in just a few years the backlog of work required in the cycling network which has grown up over decades; this task can only be accomplished step by step. The capital investment in the cycling network is therefore mainly concentrated on three focal areas:

- Improvement of velo routes to make them safer and easier to use (network length about 280 km):

Three velo routes are to be realised in 2010 to 2012 (City Centre – Eimsbüttel – Eidelstedt, City Centre – Billstedt – Bergedorf, and City Centre – Wilhelmsburg – Harburg) with a total length of 46 km, and several other local improvements are to be made in the velo network.

- Increased creation of cycle tracks and cycle lanes:

The first phase in 2010/2011 is to implement about 15 km marked cycling routes in all seven districts of the city.

- Improvement of mandatory cycle tracks and other important cycle tracks along main traffic routes (network length about 550 km):

In 2010 improvement work was completed on cycle tracks in the major road network with a total length of about 8 km.

In addition, the districts will have support in repair and maintenance of important cycle tracks.

Other activities include in particular the 1,000 cycle rail programme to improve cycle parking facilities, and continuous extension of the bike hire system.

c2. Electric vehicles (project nos.: 2008/052; 2009/071)

Alongside further development of existing expertise in hydrogen and fuel cell technology, the Senate attaches great importance to electric vehicles.

The goal of the Federal Government is to have one million electric vehicles on German roads by 2020, operating either only on battery power or plug-in hybrid vehicles. In order to make Germany the lead market for electric vehicles in the next ten years, the Federal Government is following a strategy of cooperation between the business community, academia and government, for a wide range of measures from promotion of battery research to incentives for market launch.

In 2009 Hamburg made a successful application together with partners from the energy supply sector, the automotive industry and mobility service providers, for selection as one of eight electro-mobility model regions in Germany. This consortium is receiving funding that will add up to about EUR 12 million by mid 2011.

The activities in the Hamburg electro-mobility region are playing a major part in preparing to shift transport to low-emission vehicles, and setting a clear signal for increased use of renewable energy sources in the transport sector. This includes both public transport and individual motor transport. The concept goes well beyond demonstration of electric powered vehicles. It creates charging points in the public area, that will continue to be available for future users of electric

vehicles after completion of the model project. On 24 September 2010 the Bundesrat took up Hamburg's initiative and called for am addition to the Road Traffic Act (StVG) to permit reservation of parking spaces at charging points for battery operated electric vehicles. This calls on the Federal Parliament (Bundestag) to support the introduction of electric vehicles and to give a secure legal basis for the users of charging points.

Hamburg already has fuel cell powered hydrogen buses operating today. Hamburg Waste (SRH) has been using two battery powered vans in its operating fleet since 2009. In addition, a total of ten diesel hybrid buses are to be used in inner-city line operation. Electric vehicles will also be introduced in individual car transport, initially most of them with fleet customers (including the City of Hamburg).

The aim is to create up to 50 charging points in public spaces (each for two vehicles at a time) by mid 2011, and further charging points on private spaces which are publicly accessible. The first charging point went on stream in November 2010. At present there are six charging points ready for assembly, that is spaces for charging 12 vehicles (status December 2010). Half the charging points are to be operated by the municipal organisation HAMBURG ENERGIE, and half by Vattenfall Europe. They are to be available to customers with power delivery contracts of different providers, so that appropriate vehicles of all manufacturers can use all the charging points. Exclusively electricity from renewable energy sources is to be used. This project aims to have a total of 50 battery powered passenger cars plus 35 commercially operated vehicles operating in the Hamburg model region by the end of March 2011.

The electric vehicle concept for the Hamburg model region comprises the following project modules.

Fig. 3

Electric Vehicle Model Region Hamburg

Dieselhybridbus	**hh=more**	**HamburgPURE**	**hh=wise**
Use of diesel hybrid buses in regular line service Start of regular purchase	Use of cars in fleet operation Establishment of public charging points	Use of cars with commercial users Use by commercial fleet operators	Commercial operation (retail, craft trades, logistics, port operations)
Up to 10 EvoBus Citaro diesel hybrid buses (two already in operation)	50 Smart ED (from 11/2010) up to 100 public charge points, at least 50% operated by city	15 Renault Kangoo ZE (from March 2011)	20 Fiat E-Fiorino (from February 2011)
Workshop infrastructure at HOCHBAHN depot	100% renewable charging electricity, non-discriminating user access, compatible with urban design, settlement of regulatory points for installation and operation of charging infrastructure		

Source: hySOLUTIONS

Hamburg is also cooperating with Berlin, which was likewise selected as a model region, on hydrogen and electric vehicles. An inter-city technical working group was set up with participation of the Berlin Chamber of Industry and Commerce and the Hamburg Chamber of Commerce.

c3. Guidelines for procurement of low-emission vehicles in the general vehicle fleet for the public authorities (project no. 2010/073)

A new set of guidelines is to be introduced to regulate new purchase and replacement purchase of vehicles for the general vehicle fleet for the public authorities, stipulating purchase of low-emission vehicles. The guidelines are to specify differentiated maximum carbon emission levels for the various vehicle categories and to set a binding standard for nitrogen oxide and particulate emissions. All in all this is to ensure procurement of vehicles with the minimum possible emission of pollutants related to the current state of the art as it develops.

c4. Examination of further change-over of railbound public transport in Hamburg to electricity from renewable sources (project no. 2010/007)

Since 1 January 2010 the rail network of the Hamburg S-Bahn (rapid transit trains) has been operated with electricity generated without carbon emissions, from German hydro power stations. Hamburger Hochbahn AG has ordered 100% of its electricity (about 155 GWh) required for 2011 via Renewable Energy Certificates (RECs). It already obtained 40 GWh from renewable sources in 2009 and 2010, corresponding to more than 25% of its total requirement. As the lines operated by AKN are not electrified, all electrically operated rail transport within the responsibility of the City of Hamburg now uses green power.

c5. Air transport – cabin technology and the multifunctional fuel cell (project no. 2010/063)

Air transport is forecast to increase by about 5% per annum, with a corresponding demand for aircraft. That calls for new developments to reduce emissions, including high-efficiency electric systems to reduce fuel consumption and thus also greenhouse gas emissions. Fuel cells to generate power for cabin systems give great potential, both for reduction of energy consumption and carbon emissions, and for cutting operating costs. The new approach in use of fuel cells in civil aviation makes use of their multi-functionality, i.e. using both the electric energy and the by-products water and inert gas for active fire prevention.

The project for "Cabin technology and multifunctional fuel cell" brings together the expertise in the region, with selected partners and companies such as the German Aerospace Centre (DLR), Hamburg Airport, EADS IW, and the Hamburg University of Technology (TUHH), to develop innovative system concepts and ensure maturity of their technology. This project focuses on the use of fuel cells based on hydrogen technology for application in civil aviation, and the associated innovations for cabin technology.

The main focus of this project is on quantified improvement in environmental soundness and securing and improving the scientific and technological position of the German aviation industry in the metropolitan region of Hamburg, and enhancement of national innovation and integration capability in global competition. This project receives funding of about EUR 11.5 million from the Federal ministry of Education and Research, in the framework of the Leading-Edge Cluster Competition.

d) Newly adopted projects

This section shows projects which were added in 2010. The projects already described in doc. 19/4906 of 22 December 2009 are shown in table form in Annex 1, indicating their reference in doc. 19/4906.

Eco-taxis for Hamburg: award of an environmental or climate label (project no. 2010/030)

This project aims to make the use of taxis in Hamburg greener and more climate friendly, by increased operation of low-emission vehicles. High demand potential for environment friendly taxis is expected from companies, institutions, tourists and the city population. Eco-taxis are expected to have a positive impact on the image of taxi companies. Eco-taxis are vehicles operating with hybrid, gas, combined gas/petrol or electric propulsion, complying with emission category Euro 5, with carbon emissions of less than 150 grams per kilometre. Also vehicles of emission category Euro 4 with carbon emissions of less than 230 grams per kilometre, capable of carrying more than seven passengers at a time. Since November 2010, these vehicles have the exclusive right to advertise themselves as "Hamburger Umwelttaxi" ("Hamburg eco-taxi") and to use the "European Green Capital" logo. At present these requirements are met by about 130 vehicles of the total Hamburg taxi fleet of 3,400.

From 2012 onwards, the Eco-Taxi label will be awarded to vehicles operating on hybrid, gas or combined gas/petrol or electric propulsion, or complying with emission category Euro 5 and with carbon emissions of less than 130 grams per kilometre, and vehicles capable of carrying more than seven passengers at a time that comply with emission category Euro 5 with carbon emissions of less than 220 grams per kilometre. This project contributes directly to reduction of carbon emissions.

Green traffic light coordination for cyclists (project no. 2010/033)

This project is to be implemented on long, continuous stretches of road – preferably veloroutes or major routes – where coordinated signals are possible for cycling traffic. These should be routes with plenty of cycling traffic, in order to give as many cyclists as possible a rapid, safe comfortable journey, and to a strong incentive for them to cycle to work.

This project contributes directly to reduction of carbon emissions.

Implementation of feasibility studies submitted on improvement of cycle routing in selected streets (project no. 2010/034)

A feasibility study which has been submitted examines the area of Eppendorfer Marktplatz and surroundings.

It concludes that lack of cycle track connections in this area lead to mistaken routes and considerable diversions for cyclists. Implementation of improvement proposals with regular cyclist guidance would reduce lost time and roundabout routes, reduce the incidence of wrong-way cycling, and thus improve road safety.

This measure includes the addition of missing cycle tracks, widening of existing cycle tracks, and improvement of line signage, in particular at junction points.

Another feasibility study has been prepared for Elbchaussee. It shows that marking of cycle lanes could give an improvement of routing for cyclists on a 5 km section, with improvement of road safety.

This project contributes directly to reduction of carbon emissions.

Workshop on "energy-efficiency measures for shipping" (project no. 2010/052)

At the "2nd Maritime Summit", delegates of the Federation, the States, and industrial associations and banks, agreed to hold a workshop on energy-efficiency measures in shipping. The workshop is to involve 150 participants from shipping companies, maritime equipment suppliers, shipyards, government, financial services and academia. Organisation is effected by the responsible authority in cooperation with the Federal Ministry of Economics and Technology, the German Shipowners' Association (VDR), the Shipbuilding and Ocean Industries Association (VSM), the German Engineering Federation (VDMA) and Germanischer Lloyd. The venue will be the Hamburg Chamber of Commerce.

Introduction of a low-floor tram (project no. 2010/056)

A tram can be a useful addition to the Hamburg public transport system. It gives major advantages over buses in terms of transport capacity, speed, comfort and emissions. That means it is likely to make public transport more attractive, thus gaining a significant number of additional passengers and substantially improving the road traffic situation. At the same time, construction and operation of a tram involves significantly less cost than expansion of the existing S-Bahn networks. That makes it a good transport system to serve transport routes with high demand for transport services but where underground or overground trains do not come into consideration.

Operation of the tram is completely free of pollutant emissions, so it gives improved quality of life, especially for local residents. It does not produce any harmful exhaust gases. Electric operation also reduces noise emissions compared with diesel engines. A tram system also uses less energy than a bus per passenger-kilometre, because it has less rolling resistance and can make use of energy recovery.

A new tram system can improve public transport in Hamburg and develop further passenger potentials. It will also encourage more people to switch from using individual cars to public transport, and substantially reduce emissions of the harmful greenhouse gas carbon dioxide.

Antares DRL H2 (motorised glider with fuel cell propulsion) (project no. 2010/062)

The Antares DLR H2 is now ready for operation – it is a fuel cell platform for preliminary tests of fuel cell systems for flight, and/or for testing fuel cell components under real flight conditions. This test platform permits testing of fuel cell systems and their components and sub-systems under realistic climate, acceleration and performance conditions, for development of multifunctional fuel cell systems for wide-body aircraft. Another focus of this project is development of hybridisation concepts for coupling of fuel cells with motors or with further electrochemical storage systems.

Cabin technology and multifunctional fuel cell (project no. 2010/063)

For explanations see above, section c5.

Airport 2030 (project no. 2010/064)

This project pursues the goal, with the example of Hamburg Airport, of showing process and technology approaches for improved ground procedures, making a measurable contribution to improvement of quality and overall performance, and environmental acceptability of air transport. This is a major element in the leading edge cluster "Metropolitan Region of Hamburg", helping to make air transport of the coming decades more ecological, more economical, more comfortable, safer and more flexible.

Electric vehicles – pilot project for introduction of E-Smart ED (project no. 2010/065)

This project for the model region of Hamburg involves purchase of seven electric vehicles as replacements for conventional vehicles in the vehicle fleet of the City of Hamburg. These vehicles are in some cases intended both as replacement purchase for leased vehicles reaching the end of their contracts at specialist departments, and also for a Hamburg-wide pool, for example for the local councils. The goal is preferred use of zero-emission vehicles compared with conventional vehicles, thus giving the maximum reduction in emissions of carbon and other harmful substances.

This project contributes directly to reduction of carbon emissions.

4. Industry and plant technology

a) Goal

Activities in company environmental protection and climate action are to be further intensified in cooperation with all the key players of Hamburg industry, the companies, chambers and other industrial organisations. Establishment of further necessary cooperative structures in cooperation between the Senate and industry is to be continued and further developed, and established as a long-term strategy extending beyond 2012.

b) Focal points of action

About 50% of total carbon emissions in Hamburg come from industry, small business, trade and services (Inventory of polluters 2007, Statistikamt Nord). The industrial sector thus has a key role to play in the Hamburg Climate Action Plan 2007-2012, for realisation of specific activities for carbon reduction that is measurable and in many cases very substantial.

Emissions trading was started in 2005 in Germany, and has a limiting effect with respect to half the carbon emissions from the high-emission sectors energy and industry. 30 companies in Hamburg participate in emissions trading.

A much regarded international discussion has started on "Greening our Economies", aimed at efficiency gains not yet realised in industrial and business operations, both in terms of environmental protection and economic performance. It is possible to achieve further reduction of energy consumptions in business and industry by means of a strategy based on consultation, network building and subsidy programmes, giving continuous improvement of the energy efficiency of the plants used by means of successive replacement investments, making products more energy-efficient and improving them in terms of climate and environmental performance, and increasingly using renewable energies in plant operation.

The Senate has for a number of years been conducting intensive cooperation with Hamburg businesses, for rapid initiation of resource-efficiency measures in the companies, going beyond the requirements of legislation. This strategy is based on the following major points:

- Environment Partnership between Senate and industry, setting concrete additional environmental goals. Improvement of communication between the partners and controlling of implementation;
- Creation of financial incentive systems for resource-efficiency measures (subsidy programmes) in companies;
- Establishment of efficiency networks to communicate know-how, experience and contacts between the companies and other expert players;
- Provision of extensive consulting sessions for key areas (such as heating, refrigeration, propulsion, LichtCheck, etc.) and for environmental management systems, renewable energies and integrated product policy;
- Conduct of awareness raising measures;
- Inclusion of many companies by attractive, low-cost offers and by communication via the organisers of the Environment Partnership;
- Implementation of voluntary self-commitments by energy-intensive companies.

These tools are reaching a wide range of different Hamburg companies with a high proportion of companies in the basic production industries, and are initiating broad-based long-term development.

Industry and business in Hamburg are in many cases just at the beginning of a long period of development, with systematic examination of all potentials for action and analysis of company procedures with the goal of improving energy and resource efficiency, reducing carbon emissions, and at the same time cutting operating cost. The growing market for environmental and efficiency technology for certain industries is gaining increasing economic importance.

c) Exemplary activities

c1. Further development of the Environment Partnership (project no. 2007/064)

In the framework of the Hamburg Environment Partnership, Hamburg businesses and the Senate have agreed to give strong support to environment friendly, resource-efficient management in Hamburg. The organisers of the Environment Partnership have committed themselves to the joint goal of strengthening climate action and environmental protection in Hamburg's companies. The organisers, alongside the Senate, are the Hamburg Chamber of Commerce, the Hamburg Chamber of Crafts, the Hamburg Industry Federation, and the Port Companies Association.

The working programme of the Environment Partnership sets ambitious, quantified goals. The number of Environment Partners is to be increased from the present level of about 660 to 1,000 companies by 2013, and the number of environmentally committed companies from the current level of about 2,850 to 5,000 companies. The overall presentation of the Environment Partnership as a brand is to be strengthened for this purpose. The programme is to appeal to the target groups directly and on an easy-access basis, and to keep the companies at the focus of communication. A major public relations campaign by the Environment Partnership is planned in connection with the European Green Capital year 2011.

The establishment of mobile consulting structures in the form of on-site advice is an important element in the Environment Partnership. The goal is to increase the reach of the climate action programmes by active involvement of companies not previously participating. The ZEWU-Mobil project was launched for this purpose by the Chamber of Crafts and the HK Energy Guides project by the Chamber of Commerce in 2008. Both of these systems were well accepted and have proved effective in gaining initial contacts and providing motivation for climate action activities, so that a total of 1,400 on-site consulting sessions and 70 intensive advice sessions were conducted up to 30 June 2010.

According to a survey campaign for ZEWU-Mobil in February 2009 with about 80 companies that received advice in 2008, total investments of about EUR 500k have so far been triggered by the programme. They include for example changeover to heating systems based on biomass, installation of photovoltaic modules, purchase of new refrigeration plant, and replacement of lamp bulbs.

The extension of project funding for ZEWU-Mobil by the European Social Fund (ESF), and HK Energy Guides up to 31 December 2012, is supported by the Hamburg Senate, providing budgetary funding of EUR 450,000.

c2. Companies for resource conservation (funding programme) (project nos.: 2007/069; 2007/070; 2007/072 - 2007/076)

Studies by leading economic and academic institutes estimate current energy saving potentials in industry and business at about 20-30%. Companies are slow to invest in resource-efficient technologies, although these are often close to being cost-effective today. The next task will be to eliminate existing barriers and restrictions. These are in the areas of finance, information provision, skilled staff, motivation, available time capacities, and legal and organisational framework conditions.

The "Companies for resource conservation" programme is the contact point for Hamburg companies for efficient technologies to save resources such as energy, water and raw materials. As a contribution to climate action, the City uses this programme to give industry incentives to initiate voluntary, short-term investments in resource-efficiency measures. Its combination of expert consulting, active networking and targeted funding is having an impact. Since October 2001, companies have used the programme for more than 1,520 measures, 820 of these since 2007. They provide effective climate action by means of extensive investments, for annual savings of about 113,000 tons of carbon dioxide, saving about 355,400 megawatts of energy and 617,000 cubic metres of water, and avoiding over 26,000 tons of waste. The completed measures funded by the Companies for resource conservation programme save the companies about EUR 17.4 million per annum.

This wide-ranging efficiency network together with the cooperation partners, that is the Chamber of Commerce, Chamber of Crafts, Hamburg Industry Federation and the industry organisations and associations, involves more than 2,000 companies and players, permitting intensive communication between the companies and with expert partners. The contacts with experts of all technical disciplines, specialists and scientists, and with manufacturers, are decisive for successful efficiency measures. The know-how and experience from nearly 1,000 completed projects for better handling of energy, water and raw materials, is continuously compiled and evaluated, and made available to other companies via the network. The authority is able to act as an independent and neutral partner, so that it has a high level of acceptance with all players. This environment, with its targeted sub-programmes and projects, permits completely new constellations for cooperation of different players, in a way not possible before. The companies benefit in their projects from a high density and good availability of high-quality technical information and consulting opportunities.

The company provides a range of different check-up services: FirstCheck, LightCheck, HeatCheck, ColdCheck, ServerroomCheck, CHPCheck, and EfficiencyCheck. These are ideal for many companies, and often show them the way for optimal energy and resource efficiency. Individual consulting is provided by the authority, with expert analyses by qualified engineering bureaus or specialist companies, at very favourable prices – that gives information on savings potentials and shows the way to achieving them.

Financial support to reduce the payback period is often the decisive incentive to implementation of the measures. Regardless of the size of the company and the sector, the amount of funding is dependent on the environmental and climate impact actually achieved, i.e. the amount of carbon emissions avoided, or savings in water consumption, or reduction in raw material consumption.

c3. Funding programme for energy and innovations (project no. 2008/073)

There are many obstacles involved in making product innovations. They are a great challenge particularly for small and medium sized enterprises, due to the associated costs and risks. That applies especially where the innovations are not the main function of the product, but concern only its environmental performance.

In order to overcome these obstacles, a programme was set up in 2009 as a "Funding programme for climate action in product development and technical innovations in the energy generating and conversion sectors" (short name: Energy and innovation funding programme). This complements the previous application-oriented funding programmes in the climate action area, and gives targeted support to climate-relevant product innovations by Hamburg companies. It initially runs for four years (2009-2012). The project organiser is the Hamburg Innovation Foundation. The programme is designed to promote two areas:

a) Development of products and production processes in technological innovations for energy generation and conversion;

b) Development of products, processes and services expected to lead to savings in resources or materials, reduction in carbon emissions or reduction in environment polluting emissions.

Since the start of the funding programme in September 2009, the Innovation Foundation has received 22 written project outlines for research and development projects, and many more verbal inquiries by companies. The project outlines have been critically examined with respect to the criteria of energy efficiency, relevance for the environment, degree of innovation, feasibility and commercial implementation. So far, two complete applications have been submitted to an award committee for decision. One project has now been started, and arrangements have nearly been completed for funding of another project. In total, that gives a funding volume of EUR 353,733. Three further applications with a possible funding volume of approx. EUR 800,000 are expected. Most of the project inquiries were related to biomass/biogas, wind and solar energy. There are also project ideas in the energy storage sector, and in energy-efficiency in production.

There is strong demand for the new funding programme. It is also positioned in the context of the renewable energies cluster, with synergies in

particular for research and development that is relevant to companies. This funding programme is also intended to encourage innovations in the renewable energies cluster, and thus to position Hamburg as an innovative location particularly in the renewable energy sector.

c4. Voluntary self-commitments by industrial companies (project no. 2007/051)

In September 2007 eleven industrial companies of Hamburg signed voluntary self-commitments (Letters of Intent) to the Senate, undertaking to reduce their carbon emissions in the period 2008-2012. The companies concerned are as follows: ADM Hamburg AG, AVG Abfall-Verwertungs-Gesellschaft mbH, HOLBORN Europa Raffinerie GmbH, H&R Ölwerke Schindler GmbH, Lufthansa Technik AG, Arcelor-Mittal Hamburg GmbH (formerly Mittal Steel Hamburg GmbH), Aurubis AG (formerly Norddeutsche Affinierie AG), Sasol Wax GmbH, Stadtreinigung Hamburg AöR, TRIMET ALUMINIUM AG and Vattenfall Europe Hamburg AG (see also docs. 18/6803, 19/1752 and 19/4906).

This commitment is voluntary, and documents the good cooperation between the companies and the City of Hamburg. It gives savings potentials of 500,000 tons carbon per annum up to 2012, and is an important element in the Hamburg Climate Action Plan and its goal of saving two million tons of carbon per annum up to 2012. It corresponds to 25% of the savings goal. The targeted reduction goal of the companies is very ambitious, especially in view of the current difficult economic situation. Possible future energy price rises also mean considerable uncertainties in planning for energy-intensive industrial companies.

Status of implementation: in 2010, the Coordination Centre for Climate Issues, which coordinates implementation of the self-commitment, played an active role in putting this process into practice, with meetings and visits to companies, and clarified details of implementation and methodological questions. In July 2010, the participating companies were asked, with support from the Hamburg Industry Federation, to give details of implementation of the agreement in Hamburg companies. In advance of this, a methodological aid was provided for recording carbon reductions, based on the method proposed by the Wuppertal Institute for carbon monitoring of self-commitments (see doc. 19/1752). The companies are participating actively and cooperatively in implementation of the carbon reduction goal. But the self-commitment does not contain any agreements on the manner and extent of monitoring. The level of detail of the documents for interim status from the companies therefore varies.

Carbon savings of 330,000 tons have been determined for the interim status. Subtracting the measures which are co-financed in the course of the funding programme "Companies for resource conservation", and which are inventorised there, the total is 327,000 tons. So that constitutes a substantial contribution to achievement of the goal. The companies have also announced further measures for carbon emissions reduction. Adjustment in results to the carbon monitoring method may lead to changes in the figures in 2011.

The self-commitment of industrial companies to reduction of 500,000 tons carbon emissions per annum by 2012 includes the reduction in carbon emissions by individual measures or a carbon reduction programme. It is does not refer to the total carbon emissions inventory of the companies.

At the beginning of their self-commitment, the companies indicated their planned measures, with which they intend to achieve the desired carbon reductions in their operations. For some of these measures, the legal conditions set outside of the companies have changed in the course of time, and that has to be taken into account in technical assessment of the measures indicated by the companies in the interim status report.

In particular, there has been a change since 2007 in the factors for calculation of carbon emissions for example for electricity (Federal electricity mix) and in district heating. Application of the current conversion factors has an impact for some companies, particularly with respect to district heating, decreasing the carbon reduction achieved.

c5. Carbon inventories and climate action programmes of public companies with relevant carbon emissions (project no. 2010/019)

The Senate has mandated the public corporations mainly responsible for carbon emissions to report on their climate action plans (indicating short-, medium- and long-term goals) and carbon emissions budgets by January 2011. Recommendations for implementation of the Senate mandate were provided in order to ensure that they use consistent methods in their procedures.

c6. Examination of energy savings and efficiency potentials in retail business in Hamburg (project no. 2007/052)

Various meetings were held in 2010 with the retail associations and between the public authorities concerned, to discuss how energy savings and efficiency potentials can be identified and better implemented in Hamburg's retail business. The preparation of an implementation action concept "Climate action in the Hamburg retail trade" was also considered. The first step, to be taken in the year of the European Green Capital 2011, is to be a conference on "Climate action in the retail trade", giving a forum for presentation of best-practice examples from Hamburg companies and opportunities to present programmes such as "Hamburg Environment Partnership" and "Companies for resource conservation". The goal of this event is to be awareness raising in retail companies for climate action, setting incentives for specific projects, and indicating the funding available from the City. A potential analysis is also to be included, with recommendations for action.

c7. Action concept to strengthen Hamburg as a location for events on climate and energy subjects, in the business field of Hamburg Messe und Congress GmbH (project no. 2009/082)

Hamburg Messe und Congress GmbH (HMC) has

developed a concept, with recommendations for action, in cooperation with the responsible authority. Practical implementation of the recommendations still needs further clarification, especially with respect to the funding of selected trade fairs and conferences, as suggested in the recommendations. This new focus in city marketing still has to be discussed by the bodies of the Marketing Holding company, which is currently being set up.

d) Newly adopted projects

This section lists projects which were newly adopted in 2010. The projects already described in doc. 19/4906 of 22 December 2009 are listed in table form in Annex 1, indicating the reference in doc. 19/4906.

Replacement of the lighting systems in Deichtorhallen (North and South Hall) (project no. 2010/058)

The outmoded lighting systems are to be replaced by a new lighting system with lower power consumption and more efficient controls. This project contributes directly to reduction of carbon emissions.

5. National and international cooperation

a) Goal

Hamburg uses its network activities in regional, national, European and international climate contexts to present itself as a climate action centre, and at the same time to gain benefits for its own climate action policy from the exchange of ideas and know-how. Hamburg also wishes to continue climate action in bilateral cooperation with its partners, and to discuss issues of climate change and conduct joint projects with them.

b) Focal points of action

Hamburg successfully pursued its climate and energy policy goals in national and international cooperation in 2010. The major elements in this development were the Hamburg Climate Action Plan, which was highly regarded at national and international level, and its active participation in international, national and regional networks.

Publication of the English version of the Hamburg Climate Action Plan 2009/10 led to a large number of invitations to attend European expert conferences, and the Coordination Centre for Climate Issues and the responsible authority attended those events wherever possible.

At regional level, the project work in the Climate Action Group in the Metropolitan Region of Hamburg, was continued intensively, coordinated by Coordination Centre for Climate Issues. At international level, Hamburg was particularly active in the networks Covenant of Mayors and METREX. In parallel, preparations were continued for Hamburg's role as European Green Capital 2011.

c) Exemplary activities

Outstanding activities in 2010 were the preparation of a Sustainable Energy Action Plan (SEAP) in the framework of the Covenant of Mayors process, continuation of the project EUCO2 80/50, and specific measures for successful conduct of the programme for the European Green Capital 2011.

c1. SEAP for the Covenant of Mayors (project no. 2007/106)

By joining the Covenant of Mayors, Hamburg undertook to submit a Sustainable Energy Action Plan (SEAP). The European Commission already indicated in advance that it would recognise the existing updated Climate Action Plan of the Coordination Centre for Climate Issues as the basis of a SEAP. The Hamburg SEAP was formally submitted on 15 September 2010.

c2. Scenario workshops of the project EUCO2 80/50 (project no. 2007/203)

The European project EUCO2 80/50 is coordinated for the Metropolitan Region of Hamburg by the Coordination Centre for Climate Issues. The participating regions wish to develop strategies for 80% reduction of regional carbon emissions by 2050.

Carbon inventories were prepared in accordance with UN specifications in 15 European cities in 2009. After General Electric became the official sponsor of the project in December 2009, scenario workshops were conducted in all the partner regions in 2010.

The regional carbon data were transferred to a computer simulation for the scenario workshops. The participants at the three Hamburg workshops in May 2010 were senior executives from business, government, administration, universities and NGOs. They were able to enter joint assumptions into the program, and immediately saw the impact on carbon emissions.

Following the first three workshops, seven further scenario workshops were conducted with experts from administration and companies, to put the results on a broader base. The result in the simulation was an average carbon reduction of 75% by 2050. The detailed results are to be used in formulation of the long-term Hamburg Climate Action strategy, and are shown at www.euco2.eu.

c3. European Green Capital 2011 (project no. 2008/013)

As the European Green Capital 2011, Hamburg wants to be a Europe-wide platform for the exchange of urban visions. Hamburg has devised a modern, interactive exhibition in the "Train of Ideas", to show people in an exciting and informative way what can be done to make our cities liveable and sustainable in the future. The exhibition in the "Train of Ideas" will take up the issues of urban development and housing, mobility, energy and climate action, nature and urban green spaces, resource conservation and industry, and consumption; it will make the problems and opportunities comprehensible and exciting for a wide ranging international target group. Other cities are invited to present their innovative environment projects in this exhibition, too. 17 cities, including Warsaw, Malmö, Copenhagen, Brussels, Vienna, Barcelona and Marseille will get on board the "Train of Ideas". A series of events will be conducted for discussion of major issues, on the way to the city of the

future. These Green Capital Dialogues are to show by way of example how the new city is being created in Hamburg. The events will work on selected, key aspects of comprehensive change. Invitations go out to the interested public, to specialists, and to stakeholders from business and administration – all who wish to take part in this Hamburg Future Debate. A major element will be presentation and discussion of best practice examples from other European cities.

For a detailed overview of climate relevant events, see http://umwelthauptstadt.hamburg.de
and http://hamburggreencapital.eu.

c4. INTERREG project "CO_2OL Bricks" (project no. 2008/113)

The proposal by the Hamburg Heritage Preservation Department for a transnational INTERREG project "CO_2OL Bricks – Climate Change, Cultural Heritage & Energy Efficient Monuments" in the Baltic Sea region was approved by the Monitoring Committee on 16 September 2010. With a total of 17 national and international project partners from practically all the Baltic Sea states and Belarus, the Heritage Preservation Department is now preparing for the start of this three-year project as lead partner. "CO_2OL Bricks" aims to harmonise the different requirements for climate action and protection for heritage buildings. The goal is to improve the energy performance of historic buildings, without losing their identity. The project is to identify conflicts and analyse solutions at the technical, administrative and political level. It will work together with the partners from the Baltic Sea region, who are faced with comparable challenges, and provide exchange of experience and also develop cross-border concepts and strategies, and implement and evaluate pilot projects. The project launch is planned in spring 2011.

d) Newly adopted projects

This section lists projects which were newly adopted in 2010. The projects already described in doc. 19/4906 of 22 December 2009 are listed in table form in Annex 1, indicating the reference in doc. 19/4906.

"Regenerative Cities" conference (project no. 2010/068)

An international conference on "Regenerative Cities" is planned by the World Future Council for autumn 2011, discussing how cities can cover a large proportion or the whole of their electric and non-electric energy demand themselves.

II.
Adaptation to climate change

1. Hamburg's adaptation strategy

a) Goal

It has become clear, at the latest on presentation of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) on climate change and its conclusion that climate change has already arrived now, and that it will in future affect every region of the planet. Hamburg also has to prepare for changes.

At present, adaptation to climate change impact is already standard practice in a number of fields of activity, but in others people are only just beginning to think about adaptation. The Senate's Climate Action Plan put a major focus on climate change impact management right from the start.

The Senate will present an overall strategy for adaptation to climate change, in order to get the different activities together and coordinate them with one another. The purpose of the adaptation strategy is to get Hamburg better prepared to deal with the consequences of climate change. That includes coordination with other planning systems in the city. The long-term goal of the strategy is to identify and implement the necessary measures. Insights of climate research and adaptation research are to be compared with practice on a step by step basis.

b) Main areas of action

Adaptation measures will have to be examined in the Hamburg Adaptation Strategy for the following fields of action which are affected by climate change in Hamburg:

- Coastal flood defences
- Water management and inland flood protection
- Waterways and the Port
- Urban and landscape planning
- Nature conservation and soil protection
- Industry
- Transport and infrastructure
- Disaster protection and disaster prevention

c) Exemplary activities

c1. KLIMZUG-NORD (project no. 2007/177)

KLIMZUG-NORD – strategic approaches for adaptation to climate change in the metropolitan region of Hamburg – this is a group financed by Federal and State funding, comprising recognised and reputed partners from universities, research centres, public authorities, establishments closely related to the authorities, and companies. It also includes further associated partners and supporters from all eight counties of Lower Saxony and six counties of Schleswig-Holstein that are within the metropolitan region of Hamburg. It brings together urban and landscape planners, engineers, agricultural scientists, meteorologists, soil experts, geographers, architects and climate researchers for development of solutions for adaptation to climate change.

A major goal of the networking in KLIMZUG-NORD is to provide information on climate change and possible consequences, to raise awareness of the necessity of implementing a climate change adaptation strategy in the metropolitan region of Hamburg, and to achieve a high level of innovation, interdisciplinarity and integration in the climate adaptation strategies to be developed. This is done by involvement of science, administration, the business community and professional associations. KLIMZUG-NORD as the lead project of the metropolitan region of Hamburg promotes dialogue between these groups and the population. This networking approach, which is very

much aimed at participation, is implemented by having recourse to existing networks of players. Interested partners are involved right from the planning process, by means of public events, seminars, workshops, learning and action alliances and online discussions.

New impulses are expected from KLIMZUG-NORD in the coming years for the elaboration and ongoing development of the Hamburg climate change adaptation strategy.

c2. Surface drainage and rainwater management – RISA (project no. 2007/114)

An important element in elaboration of a climate change adaptation strategy is the joint RISA project (Rain InfraStructure Adaptation) which was launched in September 2009 in cooperation between the responsible authority and HAMBURG WASSER. The goal of this project is to elaborate a structural plan by 2012, setting out the binding guidelines for activities by administration, experts and land owners in connection with rainwater in Hamburg. The project also provides for water management measures in urban and landscape planning and in transport planning, for preparation of technical documents for Hamburg's rainwater management, and for adaptation of institutional and legal conditions to these changes. It is also necessary to legislate for decentral rainwater management in new building areas and to embark on systematic implementation of the required measures.

2. Urban climate modelling

One of the most important challenges posed by climate change for Hamburg is the threat of overheating in the central areas of the city in summer periods when there is little air movement. An urban climate study has been conducted to give first indications for planning, but it is not yet clear what specific recommendations to make to the urban planners, and what methods are applicable.

In view of climate change, urban planning and architecture can no longer be considered purely from the viewpoint of city planning, but also in terms of their impact on the urban climate of the immediate environment (microscale, with resolution to a few metres) and for the city as a whole (mesoscale, resolution 100 m to a few 100 m); this must be estimated, as must potential changes in the urban climate due to global and regional climate changes. Urban development must be pursued in keeping with the needs of the urban climate; whether or not a development is in keeping with the needs of the urban climate can be determined by established methods (VDI guidelines) and mesoscale and microscale models, taking account of changes in the surrounding conditions (global and regional climate changes, changes in building materials or greenery concepts, impact of mitigation measures).

Local influences include the "home-made" changes such as changes in land use, energy consumption, etc., which are caused by the city itself, and are to some degree within the control of urban planning.

Local adaptation measures can be taken to reduce such changes in the urban climate. However, at present there is only qualitative knowledge rather than quantified knowledge of what measures have what effect (for example is a compact urban design with high usage density better than an extended urban design?).

The first step is currently in progress at the Climate Campus, with preparation of a numerical model for detailed land use in Hamburg (METRAS-urban). It will then be seen whether the conventional numerical models are suitable for calculation of selected urban climate parameters. Then the first assessments are to be made of the impact of building-related adaptation measures. The first aim is to develop a tool that helps urban planners to make planning decisions, taking account of urban climate problems.

III.
Generally applicable sectors and subjects

1. Awareness raising, consulting and qualification

a) Goal

Climate action is aimed at reducing greenhouse gas emissions (mitigation) and making changes to take account of the unavoidable consequences of climate change (adaptation). These goals can be promoted by government regulations and by economic incentives. But in order to actually achieve the goals, awareness and action is needed on the part of ordinary people and the interest groups that represent them.

That is why awareness raising is the third component in climate protection, alongside funding and regulatory measures. A zero-energy house will only work properly if used with the appropriate climate awareness, e.g. with appropriate ventilation. The purchase of more efficient, lighter and thus lower-carbon vehicles calls for greater awareness on the part of the purchaser. The consumption of regional products requires a change in behaviour both on the supply side and on the demand side.

Awareness on the part of users and the companies is essential specifically in energy saving. Activities by individuals are both desirable and effective in this area.

So this should be made a key issue in school education and out-of-school education, from early learning to continuing education in all phases of learning – communicating knowledge and working to change behaviour.

b) Main areas of action

1. Pre-school teaching and schools

Practical teaching and learning by experience is the best way to achieve good climate behaviour in pre-school and school education. It is important to create general awareness that people can change the world by their own actions, provided that these actions become the general norm. It must be made clear to people that the apparent conflict between quality of life and climate action does not apply, by showing alternatives and presenting role models.

2. Adult education

The programmes in private and vocational education and training should contribute to improvement in the

availability of advice for private individuals and for commercial users.

The non-vocational education work of the Volkshochschule (Adult Education Institute), Consumer Centre and the Hamburg Energy Agency (Hamea) aims to provide information on energy issues.

Continuing vocational education is also important. It has the goal of promoting appropriate decisions in the interest of climate action, and of enabling companies, particularly in the small industry sector, to update their services to the latest state of the art, so that this expertise is available to the end users.

3. Climate action as a key subject in education for sustainable development

In 2005 the Senate launched the "Hamburg Learns Sustainability" initiative, a contribution to the UN Decade of Education for Sustainable Development 2005-2014. A Hamburg Action Plan will be published annually, listing particularly exemplary projects. In the 2010 edition, about one third of projects were in the complex of Climate Change Mitigation, Energy-efficient, sustainable building, and Sustainable consumption. That shows that the subject has got into the education sector through a wide range of projects, and is being covered there. The initiative has also conducted a large number of events and specialist discussions on climate action in education.

c) Exemplary activities

c1. Climate action in schools (project no. 2008/082)

Hamburg schools are working on this with the slogan "Climate – we are taking action!" They are developing and implementing school climate action plans. So far, Hamburg is the only city in Germany where climate action at schools is a regular part of activities, controlled by a modern planning tool, and is established in a framework that extends beyond the project period. Schools can draw on support from a comprehensive range of teaching materials and technical support for climate action and environmental education. That includes a workshop series specially developed for the participating schools, training climate action advisers for schools, and providing teaching materials and facilities, further education courses, on-site consultation by climate advice staff, and cooperation projects.

A climate action plan describes the climate goals in teaching, in energy efficiency and in building equipment, and the measures to be implemented by the school together with its stakeholders (teachers, students, caretakers, other school staff, parents, regional partners), to contribute to reducing carbon emissions. The school mainly sets the goals and programmes itself. The main focus is on awareness raising for climate action by establishing it in everyday teaching at the school. There is plenty of potential in the schools, for example in electricity, heating, mobility, food, and purchasing. It is possible to cut energy consumption by 15-20% by change of behaviour alone, if the whole school community joins in. The first 23 pilot schools have been working actively since autumn 2009 on drawing up their own school climate action plans, and get intensive advice and support from the Hamburg Institute of Teacher Training and School Development (LI). The schools were able to put forward their plans by the end of October 2010 for the new LI quality label "Climate school". The plans are examined on the basis of the quality criteria set for the label, and assessed for viability. The first quality labels were awarded at the Hamburg Climate Action Days in November 2010.

From 2011 onwards, the experience from the pilot phase will be available to all Hamburg schools. The next round will start in February 2011 with new project schools for climate action. The project team encourages exchange of experience between the schools, so the pilot schools with their know-how are taking on an important role as multipliers for other schools in their respective educational region.

c2. Hamburg Energy Agency (Hamea) (project no. 2008/043)

The Hamburg Energy Agency (Hamea) was set up in 2010 by the responsible authority, as a driving force for energy efficiency in private households in Hamburg. It acts as project controller, designing and coordinating activities, and evaluating and improving them.

Almost a quarter of all carbon emissions comes from private households. The advice and information provisions, campaigns and PR work motivate citizens to save energy and at the same time to play an active part in mitigating climate change.

Hamea aims to transform Hamburg's climate action goals into practical projects, and to raise awareness for responsible handling of energy by means of systematic communication. It acts as an ideas source, and increases the reach of ideas by networking with players in civil society. It reaches the various target groups by specially tailored formats, and puts tangible know-how for energy saving in the foreground.

c3. From the region – for the region (project no. 2007/155)

People can make an important contribution to mitigating climate change by deliberately choosing regionally produced food and the products and services of local contractors and companies. Buying regional seasonal products gives many benefits for the climate. It keeps transport distances short, thus reducing traffic, especially in transport between the regions. It also strengthens regional economic cycles, helps to preserve rural areas, strengthens local farming operations, and helps to safeguard nearby recreational facilities – all of these are very important factors in long-term climate action.

Increased selection of regional and seasonal consumer products is also a useful contribution. It not only helps to mitigate climate change, but also strengthens local economic structures, for more jobs in the region, and for improvement of recreation facilities in the area. An overview of projects and programmes and the current event calendar are shown at the website www.hamburg.de/politik-und-projekte/1277070/aus-der-region.html.

The regional initiative "From the region – for the region" is a project where the population, public

institutions, administration and local government can play a part, and make a real contribution to awareness raising.

This initiative has a key function in many ways – there has never previously been a project like this, with such wide ranging cooperation between the authorities and the different subjects and crossing the state borders. It involves players from agricultural science, sales promotion, consumer protection, urban development, environmental protection and schools, who have built up an exemplary network.

The initiative was also selected as one of eight initiatives nationwide to cooperate in the "Regional Alliances" project of the Federal Association of Regional Movements, funded by the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV). This partnership and dialogue with the Regional Association of Regional Movements and the players in the other regional initiatives enables "From the region – for the region" to learn from the experience of the other regional initiatives in Germany and make optimal use of synergy effects.

The initiative is exemplary both at strategic level and at the specific project level with its model projects, for example for canteens and cafeterias, catering, school meals and weekly markets. The project is credible and authentic, thanks to its multi-layered horizontal and vertical networking within Hamburg, and also in the metropolitan region and in the North German area.

The regional products are practically the calling cards of the rural areas in North Germany, and of the areas used by city dwellers to get out into the countryside in their leisure time. Consumers of all ages can make a contribution to climate action at all times of year, by buying and using fresh produce and the products and services of contractors and companies in the region, regardless of the quantities they need.

c4. Cooperation in climate action with the North Elbe Church (NEK) (project no. 2008/071)

The church in Hamburg is working in the framework of the North Elbe climate campaign "Church for Climate" (2010-2013) to make climate change issues a focal area, and wishes to make progress both in reduction of emissions and in awareness raising. It has the specific goal of reducing the NEK's greenhouse gas emissions 25% by 2015 versus baseline 2005.

Exemplary work for development and implementation of climate action measures is taking place in the Hamburg East district of the Church:

The Church District has adopted resolutions on climate action, setting up a programme to make a contribution to climate change mitigation in Hamburg. That includes the introduction of energy controlling (establishing a new staff position at NEK from 1 September 2010), to prepare Energy Efficiency Reports for numerous buildings, taking account of the climate aspects for major conversion work, and ensuring low-carbon energy supply and mobility. Climate change and climate justice will play a greater part in future educational work. Individual projects are already in place for climate cooperation with partners in developing countries.

c5. Hamburg Planetarium – Climate Change Information Centre (project no. 2007/191)

The Planetarium's profile as a place for people to learn about the universe, and its special technical facilities and media presentation equipment, and also its position in the middle of the Stadtpark, a protected green space, make it ideal for the function of a "Climate Change Information Centre", reaching 500,000 people each year.

The Planetarium already has work focusing on ecological issues, and this will be further developed in the present project, by targeted measures such as virtual climate expeditions, to inform children and young people in particular about the status of their environment, environmental forecasts, and the ecological consequences of their own actions. That enables it to communicate fundamental relationships between what happens on our planet at the local level and the global level – in particular, information about how we can act to reduce emissions of CO_2 and other greenhouse gases. This communication can be provided very effectively by the Planetarium, with its exciting presentation methods, appealing to all the senses.

"Climate igloos" compatible with the media equipment of the Planetarium are to be set up in schools or in various urban districts from 2011/12 onwards, as "mobile lifeboats" for interactive briefing and debriefing sessions, and at meetings and environmental fairs. Modules from the "climate expeditions" and other real-time visualisations of climate and geodata are used in a sustainable manner. The Planetarium works on this in the framework of a joint initiative with the Hamburg Institute of Teacher Training and School Development (LI), and with other organisations such as HafenCity University Hamburg and the Lübeck University of Applied Sciences.

The Hamburg Planetarium, with its high-end visualisation equipment, is also an ideal place for specialist meetings of teachers and scientists. Further training programmes for teachers, and conferences with interdisciplinary cooperation will be held there, in the framework of national and also international networks. New event formats and meetings are to be developed for the climate dialogue between scientists, politicians, industry and the general public.

This concerted initiative of the Hamburg Planetarium is receiving worldwide attention, because it is unparalleled anywhere. It has the potential to communicate and enhance Hamburg's awareness raising programmes and focal points of action at both national and international level.

c6. Hamburg Climate Week 2010 (project no. 2010/029)

The second Hamburg Climate Week was held in the Europa-Passage shopping arcade from 20 to 26 September 2010 with the goal of presenting climate change issues and climate change action to end users of all age groups in a comprehensible and appealing form. The organisers were TuTech Innovation GmbH, the KLIMZUG-NORD project and Climate Campus, in cooperation with the Hamburg Ministry of Urban Development and Environment. Due to its model

character for other cities, the Climate Week also received funding from the Federal Ministry of Research.

The Climate Week was conducted with participation of 80 players from science, administration and companies. The Hamburg research organisations were fully represented, showing their research results and projects. A total of 250,000 people visited the Europa-Passage during the Climate Week. The highlights were the Climate Night, the Climate Concert, and the educational programme for school students, which was particularly successful. 25 school classes participated in the Climate Classroom, ten school classes attended the Multivision Show, and 23 classes participated in excursions. And there were also a number of school classes that came for guided tours around the exhibits in the Europa-Passage.

A survey of visitors and players showed a very high level of satisfaction with the course of the Climate Week. The Hamburg Climate Week was such a success that it will to be held again each September in the coming years.

d) Newly adopted projects

This section lists projects which were newly adopted in 2010. The projects already described in doc. 19/4906 of 22 December 2009 are listed in table form in Annex 1, indicating the reference in doc. 19/4906.

Hamburg Climate Week 2010: How will we live in 2050? (project no. 2010/029)

For explanations, see Section c6 above.

Wind turbine at school "Gymnasium Allee" (project no. 2010/043)

A small wind turbine with a vertical rotor for an output of 4.2 kW is to be installed on the roof. Gymnasium Allee wishes to build and operate the system as the pilot climate school, incorporating it in their teaching work. Construction cannot be started until 2011.

Harburg Climate Action Portal and Harburg 21 project (project no. 2010/046)

The main goal of this project is to provide information and communication and awareness raising with respect to climate change and climate action, in the framework of the network for the region of the local Agenda 21 Harburg. Support is to be provided for design and updating of the Internet communication platform and online forums in various languages, and planning and implementation of the climate action working group.

H_2Expo – International Conference and Exhibition on Hydrogen, Fuel Cells and Electric Drives (project no. 2010/050)

H_2Expo is an international conference with accompanying exhibition on hydrogen, fuel cells and electric drives, and is to be held for the eighth time at the Hamburg Fair site from 8 to 9 June 2011. Alongside the conference and exhibition, participants and the interested public can take part in a wide-ranging, largely free-of-charge supporting programme with user workshops and excursions. In 2008, H_2Expo had about 50 exhibitors and more than 1,400 visitors. 50% of trade visitors were from abroad.

Construction and operation of small wind turbines on the Georgswerder waste tip, with scientific monitoring (project no. 2010/054)

To give the manufacturers of small wind turbines an opportunity to improve their products and to provide a showcase for the (limited) applications of small wind energy facilities, a number of small wind turbines are to be installed on the Georgswerder tip, and to be scientifically assessed by Leuphana University Lüneburg and the manufacturers.

Flight offset with regional component (project no. 2010/071)

From January 2011, passengers using Hamburg Airport will have the opportunity to transfer EUR 10 to atmosfair via SMS from their mobile phone. Two thirds of this amount will then be used directly to offset the greenhouse gas emissions from their flight by means of climate action projects in the third world, and one third will be used for climate relevant projects in the metropolitan region of Hamburg.

This new feature is motivated by a survey conducted by the HafenCity University Hamburg, which shows that willingness of passengers to offset their greenhouse gas emissions rises by a factor of 4 or 5 if they know that climate action measures will be taken in their own region. atmosfair therefore decided to include this variant in its service, not least because this could be a model for many other metropolitan regions.

Sustainable, climate appropriate food (project no. 2010/072)

Food (including its production and transportation) accounts for about 20% of greenhouse gas emissions in Germany. This project aims to inform the general public, institutional canteens, producers and retailers about the subject, and to raise their awareness and motivate them to change eating habits in favour of sustainable, climate friendly food, and thus to save carbon emissions daily. The main aims of this project are to combine individual activities by the authorities where they are not yet networked, with a focus on sustainability and climate relevance; to develop a practical assessment system to show the climate relevance of various options for action; and to conduct effective publicity and motivating events with accompanying campaigns at canteens and restaurants.

2. Research

a) Goal

The Hamburg area is an important centre of climate and climate impact research in Germany. Hamburg pursues the goal of building on its excellent reputation as a science location for climate research, and of representing its interests at national and international level. The exchange of research-based information and data and interdisciplinary pooling of specific knowledge on climate issues is to be improved by stepping up activities and actively participating in various research networks.

There is a need to increase basic research in renewable energies and energy efficiency, and to strengthen and expand application-related research in and around Hamburg. The expertise and activities of the Hamburg

research facilities in energy research are also a central part of the competence cluster for Renewable Energies. The City of Hamburg wants to get scientific and economic expertise together in these clusters in a targeted way, to generate synergies and to promote outstanding research results and their transfer into application. Cooperation with the states of Schleswig-Holstein and Lower Saxony is very important in this work.

b) Focal points of action

Hamburg has outstanding research institutions and unique research resources for climate system, climate impact and climate adaptation research, and excellent interdisciplinary research groups. Climate research in Hamburg enjoys a good international reputation and is one of the scientific flagships of this city and Germany. One of the focal areas in climate research is further development of the Hamburg Climate Campus and extension of the outstanding basic research associated with it.

The Senate supports in particular the further implementation and the efforts to continue the excellence cluster CliSAP in the framework of Excellence Initiative II conducted by the Federation and the States; in Hamburg it is supported by 17 university institutes, 3 non-university research facilities (Max Planck Institute for Meteorology; Helmholtz Centre Zentrum Geesthacht, Centre for Material and Coastal Research; and the German Climate Computing Centre) and 18 partner facilities from the Hamburg region.

The work done to build Hamburg's profile in renewable energies, energy efficiency and sustainable urban development/resource efficiency must now be continued, in order to strengthen Hamburg's research competence in the areas with long-term relevance for climate action. The Senate is giving full support to establishment and further development of new focal points of research at Hamburg schools. A special focal area of action there is continued building of research networks, and cooperation between the universities and non-university research institutions.

c) Exemplary activities

c1. CliSAP (project no. 2007/170)

The excellence cluster "Integrated Climate System Analysis and Prediction" (CliSAP) of the University of Hamburg is funded in the framework of the excellence initiative of the Federation and States with about EUR 32 million over a five year period. This cluster, launched in October 2007, gave the initial impulse for the partners to get together as the Hamburg Climate Campus. It is at the centre of these activities, and gives rise to even closer interdisciplinary cooperation. Research at the Climate Campus (within the CliSAP excellence project) is structured in four key areas:

- Climate analysis;
- Climate variability;
- Climate and human beings;
- Regional effects and risks.

To examine these issues on a long-term basis, new groups of researchers have been set up and the graduate school "School on Integrated Climate System Sciences" created for long-term training of experts.

c2. Climate Service Center (project no. 2008/100)

Even though the core competence of the Climate Centre is in basic research, it is still increasingly important to achieve ever closer networking and cooperation with other research projects, e.g. with KLIMZUG-NORD (see Section II No. 1 Hamburg's Adaptation Strategy), with corresponding departments and state agencies, and with industry, as a link between research and application. An important interface function is taken on by the Climate Service Center set up in 2009. This national service centre, established here for the first time, brings together in one network the climate knowledge which is spread over many institutions in Germany, and serves as a central information and advice platform for government, science and the business community.

c3. Establishment of new focal areas of research at universities (project nos.: 2007/172; 2007/175; 2008/044)

New focal points of research have been set up at various Hamburg universities in the area of energy and resource efficiency, and also Master programmes and Graduate schools to promote young talent.

The following are examples of these activities:

- Establishment of Competence Centers for Renewable Energies and Energy Efficiency (CC4E) and establishment of a focal point of research "Energy Independence Technology" at the Hamburg University of Applied Sciences;
- Establishment of a focal point of research "Resource Efficiency in Architecture and Planning" and a Master Programme with the same title at the HafenCity University Hamburg – University of Architecture and City Development (HCU);
- Establishment of an interdisciplinary focal research area "Climate Friendly Energy and Environment Technology" at the Hamburg University of Technology (TUHH);
- Establishment of a Hamburg Graduate School "C1-Chemistry in Resource and Energy Management" at Hamburg University.

c4. Further development of German Climate Computing Centre (DKRZ) (project no. 2010/055)

The German Climate Computing Centre (DKRZ) is one of the most important partners of the Climate Campus, because the world leading systems used there for calculation and data management enable the climate scientists to design, implement and evaluate complex models which would have been totally impossible just a few years ago, and even today can only be realised at very few places in the world.

In spring 2009, the new high-performance climate computer was installed there. The move to the new DKRZ building followed in summer 2009. The bottom floor of the DKRZ has accommodated the newly established Climate Service Center since summer

2009. The official inauguration ceremony for the DKRZ took place in November 2009.

At present the German Climate Computing Centre is working to reduce the energy consumption and carbon emissions of high-performance computer systems and is conducting research projects in this area together with Hamburg University.

c5. Intensification of efforts to obtain third-party funding in applied sciences (project no. 2010/002)

This project examined how far further efforts can be made to obtain third-party funding for applied science projects targeting climate action, energy concepts or climate impact management.

An important condition for obtaining third-party funding is targeted reinforcement and funding of cooperation between scientists and the business community. For this purpose, the "Hamburg Innovation Alliance" (an initiative set up at the end of 2008 under joint management by the Hamburg Ministry of Science and Research and the Ministry of Economics and Labour Affairs) adopted "Strategic Principles" in March 2010. These are the basis to ensure the widest and deepest possible mutual relationship in the particularly promising innovation area at the interface between science and industry, and to enable optimal cooperation of the players involved.

In addition, further expansion of the Renewable Energies cluster and implementation of the cluster strategy will help to increase the appeal of Hamburg as a location for companies in the renewable energies sector, and to make it more visible. That also includes the establishment of an Energy Campus in Hamburg. That will help to initiate application related cooperation projects between science and industry, and to achieve a further increase in the proportion of third-party funding from industry and from private-sector capital sources.

d) Newly adopted projects

This section lists projects which were newly adopted in 2010. The projects already described in doc. 19/4906 of 22 December 2009 are listed in table form in Annex 1, indicating the reference in doc. 19/4906.

E-Harbours – Smart power load management for the Port of Hamburg (project no.: 2010/051)

The Hamburg University of Applied Sciences is the consortium partner in the E-Harbours project, which is funded from the INTERREG North Sea programme for the period 1/9/2010 – 31/08/2012. The main goals of E-Harbours are:

- To give a systematic overview of the potentials for smart power consumption management related to the port infrastructure;
- To develop innovative business concepts for companies, using smart power consumption management;
- To demonstrate the benefits for the environment, energy consumption and its cost in the integration of smart power consumption management in specific areas, for example drainage pumps in the port. That will serve as a model for other port-specific applications.

German Climate Computing Centre (DKRZ) – increasing energy-efficiency in the high-performance computer centre (project no. 2010/055)

High-performance computers consume enormous amounts of electricity for computing power and cooling. Up to now there have only been rough calculations to determine what energy consumptions are caused by what. This project of the German Climate Computing Centre is in particular to take steps to increase efficiency in cooling of the computing rooms, because they have a direct impact on the power consumption of the computers themselves:

1. "Cold corridor system": construction measures for systematic separation of hot air and cold air in the computer room enables considerably more efficient design of computer cooling. The savings potential is about 10-20%.
2. "Free cooling": increasing the number of recooler units on the roof of the DKRZ can extend the period in which the computing centre can be cooled completely by means of outside air in the winter months, which directly reduces energy consumption in the computing centre by a substantial amount.
3. Monitoring of energy consumption: a network of sensors and appropriate software is needed for control of components and evaluation of the data, in order to record in detail the power consumption of the individual components in the computing centre and identify optimisation potential, and to check efficiency after implementation of energy saving measures (see also c4 above).

3. Evaluation and monitoring

Monitoring of carbon emissions is effected in order to assess the impact of the Hamburg Climate Action Plan and in particular the budget funds used for it, and if necessary to make adjustments. The scientific monitoring is done by the Wuppertal Institute, which examined the plausibility of Hamburg's carbon reduction goal of 2 million tons CO_2 by 2012, and also developed the methodology and procedure for CO_2 monitoring for the Hamburg Climate Action Plan (cf. doc. 19/4906). That will now be the basis used for evaluation and monitoring of the specific implementation of CO_2 monitoring as a practical module.

In addition, evaluation of the overall programme and individual measures (fine concept) is intended in 2011, as the basis for adjustment and further updating of the Climate Action Plan.

a) Evaluation concept

The Wuppertal Institute was given the assignment to prepare a rough concept for evaluation of the impact of the Hamburg Climate Action Plan. This concept is the basis for assessment of the effectiveness of the Plan, and also to record and evaluate the various processes and impacts initiated by the it, using a wide range of structural, process and impact criteria. That is important in view of the central goals of the Hamburg Climate Action Plan, which include for example obtaining directly measurable carbon emission

reduction effects, initiating learning processes between the players in Hamburg, and generating long-term structural effects.

Criteria for assessment of the overall programme and the individual measures are:

1. Efficiency of the resources used: what is the relationship between the human resources and funding of the programme on the one hand, and effects achieved by the individual measures and packages of measures on the other?
2. Programme execution: are the individual projects of the programme implemented as planned, or are there deficits in implementation and realisation? If there are such deficits, in what sectors and areas do they occur?
3. Quality of the technical/methodological project approach: What is the technical plausibility and methodological consistency of the individual projects? Was the best available practice used, and were other existing quality standards used as the reference standards?
4. On-site inspections: are there possible discrepancies between the planning levels of carbon emission reduction in projects and the reduction actually achieved on implementation of the measures? How can exemplary on-site inspections by experts contribute to improvement?
5. Cross-references to other environmental effects: in what way do measures of the Hamburg Climate Action Plan have an impact either on the reduction or on the increase of other harmful substances or other pollution, or promote more efficient use of other resources, e.g. quantities of waste material or consumption of water and materials?
6. Networking and process involvement of multipliers: in what way are important multipliers involved in the process? Are important stakeholders, target groups and multipliers involved in the development and implementation process of the programme?
7. Reaching target groups and impact on multipliers and target groups: what was the effect so far of the programme and its individual measures on key multipliers and target groups (for example in agenda setting, awareness raising, coordination of players, reframing of the political debate, learning processes, etc.)? Did it in fact reach relevant target groups? To what extent do the respective target groups make use of the provision of information, advice and funding in the programme? Can further impacts be identified? What programme resources and means were used to reach the respective target groups (partners and multipliers)? Is it possible to find indicators of how far these means are appropriate to achieving their goals? And how far do individual measures or packages of measures in the Climate Action Plan give potential for additional image building and social acceptance?
8. Structural effects and added value – what structural stimuli for the regional economy has the programme so far generated? That includes for example employment effects of the programme, economic effects of the programme and their distribution among the individual target groups, recording of the regional value added by the programme, or possible sectoral shifts in value added. In what way did the programme set up stimuli to develop or test innovations, and were there any resulting spill-over or growth effects?
9. Inclusion of other greenhouse gases – what impact does the Climate Action Plan have on emissions of other greenhouse gases (e.g. methane and nitrous oxide [laughing gas])?
10. Implementation processes and procedures – are the existing organisational procedures and process involvements (e.g. the application procedure) appropriate for effective and efficient implementation and continuation of the Climate Action Plan? What role is played by transparency and acceptance?
11. Organisational structures – are the existing administrative and working structures for implementation and continuation of the Climate Action Plan appropriate for long-term accomplishment of this work? What improvement possibilities or necessary changes are there?

b) CO_2 monitoring

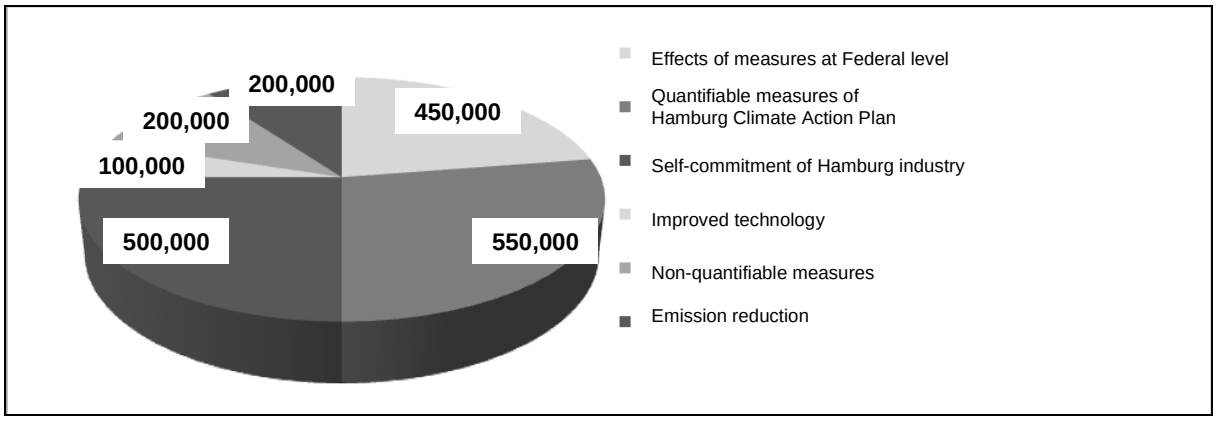
An intermediate evaluation of the CO_2 reduction achieved so far in Hamburg by means of the Climate Action Plan has been made with scientific advice from a working group from the Wuppertal Institute for Climate, Environment and Energy and the Eco-Institute.

The route taken by the City of Hamburg for evaluation and monitoring of its Climate Action Plan is new in Germany, as it not only records the development of carbon emissions via “top-down inventory” (inventory of carbon emissions at the Hamburg level by means of a method agreed between the German states), but also via a systematic “bottom-up analysis” of the effects of the measures taken (analysis of the effect of individual specific measures of the Climate Action Plan). What is special about the “bottom-up analysis” is that it includes a second stage which differentiates between the influence of Federal activities and local authority, municipal and state measures, thus avoiding typical double counting, and getting a realistic estimate of the impact of the Hamburg Climate Action Plan (see doc. 19/1752).

In addition, a percentage breakdown of the carbon emission goals was prepared in 2007 (see doc. 18/6803) on the basis of potential estimates, empirical values obtained from experience of what previous measures achieved, and ex ante calculations of possible savings. The possible reductions mainly comprise effects achieved by Federal measures directly in Hamburg (450,000 tons CO_2) and technical efficiency improvements (100,000 tons CO_2), from quantifiable effects of Hamburg measures (550,000 tons CO_2), and measures implemented by industrial companies in Hamburg (500,000 tons CO_2). A smaller role is played by non-quantifiable measures, e.g. in awareness raising and education, the contribution of which to the savings goal was estimated at 200,000 tons CO_2. A residual amount of another 200,000 tons CO_2 is to come from “emission reductions to be

added", whereby it was not defined at the time where these reductions were to come from (see Fig. 4).

Fig. 4 Percentage breakdown of goal for CO_2 reduction by 2012 (tons CO_2 per annum)



Source: City of Hamburg (2007) Wuppertal Institute

The present interim evaluation starts from this definition of reduction shares. The inspection team from the Wuppertal Institute and the Eco-Institute conducted audit and quality control of the data provided.

Of a total of 388 measures in the Climate Action Plan (status July 2010), 172 are capable of evaluation in terms of their CO_2 impact at the present time of analysis, involving various amounts of work (about 60 of them involving substantial work). For 62 measures, the project organisers either made their own emission calculations, or collected basic data which permitted calculation of the emission reductions achieved.

Calculation method

The calculation method used to record the CO_2 reductions is based on the methodological monitoring concept developed by the Wuppertal Institute in 2008/2009 (see also docs. 19/1752 and 19/4906). An essential feature of the concept is a distinction between the first stage of evaluation (calculation of emission reductions achieved by all measures and developments) and a second stage (determination of specific effects of the Hamburg Climate Action Plan in relation to Federal measures).

The present interim evaluation distinguishes for the time being only between effects achieved directly by measures at Federal level and those of the Hamburg Climate Action Plan. Differentiation between evaluation stage one and two within a Hamburg measure is intended in a further evaluation in 2012.

The calculation is based, inter alia, on the following principles:

- Dynamic growth data of the population, and demolition of housing units, are not integrated in calculation of emission reductions.
- But calculations include annual savings (tons CO_2 per annum) and direct CO_2 emissions. That corresponds to the procedure for preparation of the Hamburg emissions inventory. There is no consideration of upstream chains or other greenhouse gases.
- Hamburg measures which were mainly initiated by Federal funding (e.g. installation of plant in compliance with the Renewable Energies Act) are recorded in the first stage as emission reductions for Hamburg.
- New building with high energy standards (x% better than standard of energy efficiency legislation EnEV) is already recognised as a saving in the first stage of evaluation. This inconsistency is eliminated in one of the following evaluations, when a clearer distinction is made between the first and second evaluation stage.
- Changes in emission factors in the course of time are not taken into account in this examination. The currently applicable factors are used.

The majority of measures were submitted to a plausibility check. The implementation status of the respective measures was checked with the staff responsible for project implementation in the Hamburg administration. For calculation of the savings achieved, they also checked the correctness of the calculation methods used and the emission factors used.

The measures audited by the Eco-Institute were submitted to detailed analysis, with reconstruction of the complete calculation processes (baseline data, status before/after, emission factors).

The procedure for each of the measures analysed was documented in a report sheet.

Alongside the original data and the project descriptions, the data records from the decentral documentation system of the authorities (eBIS-Climate) were an important basis of quality control.

Analysis of emission reductions achieved in Hamburg

1. Emission reductions achieved by measures of Federation and by improved technology

   The impact of the Federal measures is shown by the available data to be significantly below the expected emission reductions of 450,000 tons CO_2. The total of all the aggregated data collected in this connection show annual emission reductions of about 82,088 tons CO_2 for the period 2007-2009. However, a number of Federal funding measures have not yet been attributed to the Federation in the calculations, e.g. CHP funding, impact of plants from the market stimulus programme supported by the Kreditanstalt für Wiederaufbau, and impacts from measures from the Economic Stimulus Programme. So the impact of the Federal measures is to be regarded only as an interim result, currently based on provisional data. Similarly, the influence of technical efficiency improvements (100,000 tons CO_2) is not reflected here.

2. Emission reductions achieved by measures of the Hamburg Climate Action Plan

   The documentation and quality control of the available data give the following provisional situation (the data may still change in the course of further monitoring):

Year	2007	2008	2009	2010	2011	2012
t/CO2	45,496	243,498	330,646	390,667	345,774	422,981

Source: eBIS-Klima Hamburg, own calculations (tons CO_2 per annum)

*Data forecast on the basis of potential data of measures (status July 2010) or update of impacts from previous years

The sectoral analysis of the savings achieved by the Hamburg measures shows that the main focus of the savings achieved so far is in energy performance modernisation for buildings (especially funding programmes), funding of plant for energy conversion and heat generating by means of renewable energies, and the corresponding new housing building programme, and in the sector of industry and plant technology in the "Companies for resource conservation" programme.

The Hamburg measures are shown by the first evaluation step completed in August 2010 gave savings of just under 391,000 tons, that is about 70% of the target of 550,000 tons CO_2. It is now estimated that it is possible to achieve the emission reduction goal provided that the International Building Exhibition (IBA) implements a series of ambitious measures for energy efficiency and the use of renewables in the near future.

Further differentiation of the impact data from Hamburg measures in a second evaluation step (adjusted impact of Hamburg measures) will most likely lead to shifts or reductions in the emission reductions achieved, because some of them have to be attributed to the Federal level or to general increase in technical efficiency. That applies in particular to the plants installed in Hamburg under the Renewable Energy Act (e.g. photovoltaic and wind energy systems) and the modernisation measures funded by the Federation's Economic Stimulus Programme.

Recognition of the CO_2 savings from changeover to green power sources is still being examined.

3. The 10% of total savings (200,000 tons CO_2) provided by measures not capable of evaluation

The interim evaluation shows a substantial gap between the measures which can be evaluated from the CO_2 viewpoint at Federal level and Hamburg level, and the measures which cannot be evaluated, or can only be evaluated with a great deal of work (e.g. measures in the transport sector, educational measures, information campaigns and platforms, advisory and public relations work, etc.). Less than one third of the measures of the Hamburg Climate Action Plan can be evaluated with reasonable effort. But in modern Climate Action Plans it is specifically those measures which are difficult or impossible to evaluate which are essential for the success of the overall package of measures in the respective sectors. They are an indispensable part of the long-term overall impact of the Climate Action Plan.

The 10% of total savings originally included for these measures (that is 200,000 tons CO_2) are therefore an estimated value. It would be possible, with a great deal of work, to collect data of individual CO_2 impact for example from information platforms or climate campaigns.

4. Residual amount of 200,000 tons CO_2 "emission reductions to be added"

The following measures are provided in order to develop the residual amount of 200,000 tons CO_2, to be effected by "added emission reductions" in the concept period:

- Inclusion of additional players and measures in the Hamburg Climate Action Plan.
- Measures of the Hamburg Climate Action Plan for which no CO_2 reduction data have so far been collected or which would involve considerable additional effort for collection, most likely give substantial potential. For example, it has not yet been centrally recorded which buildings have been built or modernised in accordance with the Hamburg Climate Action Ordinance of 2008, and no surveys have been conducted with users of Internet portals to determine their impact.

  Further measures in the transport sector also give a chance to collect data for additional

emission reductions. An example of that is the measurement of effects in measures for cycling, for public transport, and other measures aimed at a change in the modal split. Their impact can often be determined only by evaluation of whole packages of measures. It is necessary to conduct a more detailed analysis of the available traffic counts, for assessment of the impact in the transport sector via a change in modal split.

The necessary funding and capacities are to be provided at the responsible authority to conduct the additional surveys needed for this purpose.

- In the course of the interim evaluation, the Coordination Centre for Climate Issues will provide practical support in 2011 for determination of CO_2 reductions and for standardisation of method, especially for measures which have not been evaluated so far. With the support of the Wuppertal Institute, application oriented tools will be developed for the individual sectors and offered for workshops.

5. Emission reductions achieved in the course of self-commitments of industry

The industrial companies have already achieved 333,000 tons of the target 500,000 tons CO_2 reduction, as of mid 2010. Subtracting the measures which were co-financed by the funding programme Companies for resource conservation and are recorded there, the total is 327,000 tons. Other measures have been announced by the companies, so that it may now be assumed that the target can be achieved. Adaptation of methodology in the results achieved to CO_2 monitoring as used in the Climate Action Plan may lead to changes in the figures in 2011 (see also Section I No. 4. Industry and plant technology).

6. In addition, the Wuppertal Institute also produced the following results in interim evaluation
   - The ambitious reduction goal of the Hamburg Climate Action Plan, the supporting structures established with the Coordination Centre for Climate Issues, and the eBis monitoring system developed, have given powerful stimuli for development and implementation of climate protection measures in Hamburg. It is already clear at the present time that the concept has achieved tremendous emission reductions, which would not have been achieved to this extent without the Climate Action Plan.
   - The cost and effort needed to determine and evaluate CO_2 reductions varies widely in the different sectors. For example, the emission impact of building modernisation has been recorded as a standard procedure, e.g. via the Hamburg energy performance certificates. But it would require extensive analyses of changes in the modal split to determine the impact of the cycling system projects on emission reductions.
   - The sectoral packages of measures complement one another in their impact. Non-quantifiable measures will therefore continue to be important in future for the measures which can in principle be quantified for CO_2 reduction. Conduct of an extended evaluation of the Climate Action Plan, including external impacts, regional structural effects, employment effects, efficiency aspects, etc., is therefore an important requirement for appropriate assessment of the impact of the Climate Action Plan.
   - Additions to the Hamburg Climate Action Plan are recommended in order to achieve the goals which have been set. Increased activities are needed in Hamburg for development and implementation of measures with concrete CO_2 reduction potential. It is advisable to continue and if possible increase funding programmes which are running successfully in the sectors of energy, buildings and industry.

Work on the results of the interim evaluation for CO_2 monitoring will be continued. In the next update document on the Climate Action Plan in 2011, there will be an indication of what adjustments can be made in the individual sectors of the Climate Action Plan, and how additional effective measures can be added to the plan for reduction of CO_2 emissions.

In this context, the Senate has instructed the Ministries to determine and document reduction of CO_2 emissions in the climate action projects, and to show the cost-effectiveness of the measures specifically with respect to CO_2 reduction. This applies to projects regarded as capable of evaluation by the interim assessment, and which are funded from Climate Action Plan resources.

c) Newly adopted projects

This section lists projects which were newly adopted in 2010. The projects already described in doc. 19/4906 of 22 December 2009 are listed in table form in Annex 1, indicating the reference in doc. 19/4906.

Further development of climate action software (project no. 2010/023)

Effective and efficient control of the overall process is needed in view of the wide range of subjects, the density of content and the procedural complexity of the Climate Action Plan, which is in a process of updating and further development. This task is a responsibility of the Coordination Centre for Climate Issues, and comprises ongoing examination and optimisation of the technical methods used for supporting the working process. The continuing high level of demands for coordination of the Climate Action plan will require further development of “eBIS Climate”, the electronic information system successfully used by the authorities.

D.
Budget impacts

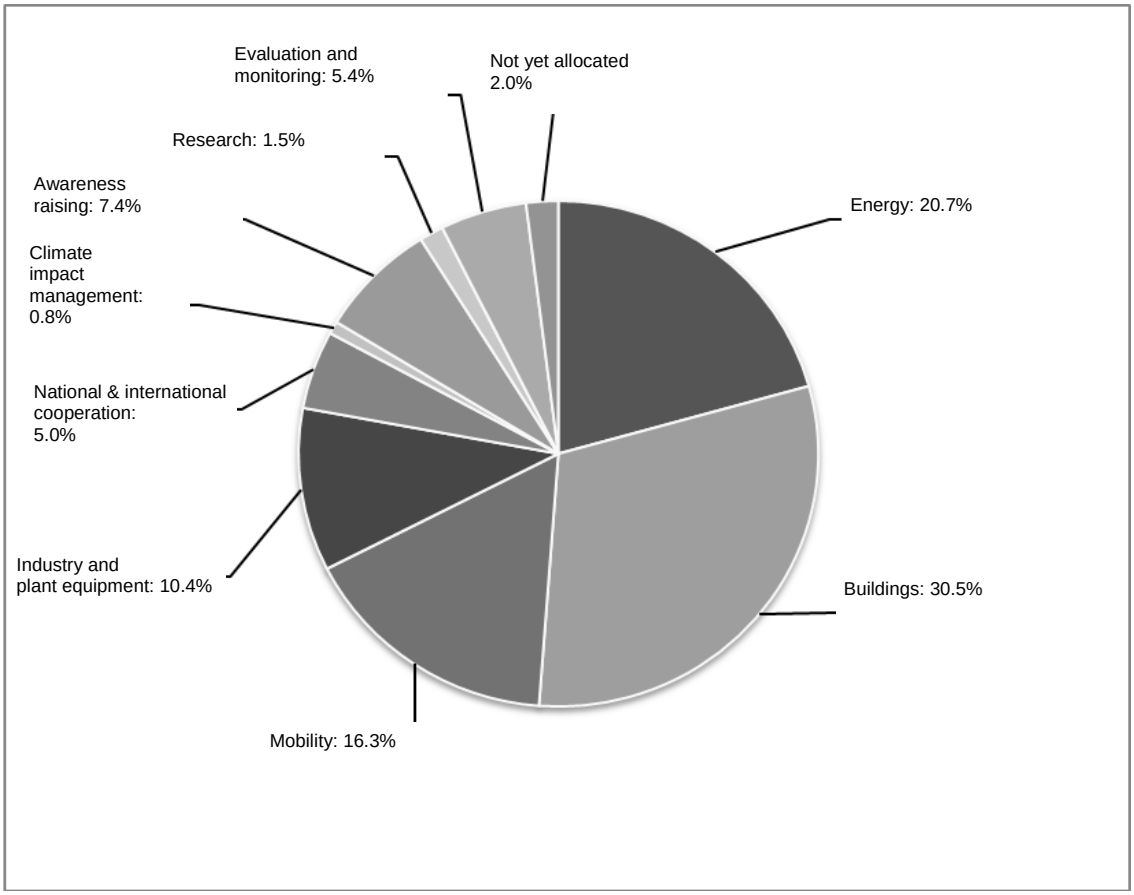
I.
Report on fund use and funding efficiency in 2010

1. Financial controlling 2010

In its 2009/2010 budget, the Hamburg Parliament approved fund allocation of EUR 25 million and a commitment appropriation for EUR 9 million from title 6000.971.01 “Hamburg Climate Action Plan 2007-2012” for implementation of the measures in 2010. IN 2010 there were also remaining amounts of about EUR 3.5 million still available from the 2009 allocation. In addition, in the course of 2010 there were returns of funds transferred in 2009 amounting to about EUR 1.2 million. That meant that in total there were about EUR 29.7 million in 2010 for funding of the measures of the Hamburg Climate Action Plan in title 6000.971.01.

The present Communication of the Senate to Parliament documents the use of funds for 2010. There are differences between the planning forecast of fund allocation for 2010 in doc. 19/4906 (“Budget 2010”) and the fund allocation actually realised by budget transfer to the specific titles (“Actual 2010”), due to transfers between individual measures, due to project-specific developments (obstacles and delays in some projects, faster readiness for planning and implementation than expected for other measures). The main areas of expenditures in 2010 were characterised by the provision of substantial third-party funding for investments in energy efficiency and renewable energies in public infrastructure. The volume of funding for such measures from the Federation’s Economic Stimulus Programme II for 2009/2010 was EUR 21 million.

Fig. 5: Fund allocation 2010 according to doc. 19/4906 (with current sector allocation)



	Energy	Buildings	Mobility	Industry & plant techn-ology	National & international cooperation	Climate impact management	Aware-ness raising	Research	Evaluation and monitoring	Not yet allocated	Total
%	20.7%	30.5%	16.3%	10.4%	5.0%	0.8%	7.4%	1.5%	5.4%	2.0%	100.0%
EUR	5,172,000	7,634,240	4,076,200	2,595,484	1,242,500	211,000	1,848,025	375,000	1,355,000	490,551	25,000,000

In 2011 the funding programmes are allocated to the respective sectors. Some further projects were allocated to new sectors, which explains the change in percentage allocation to the sectors. Some sectors were renamed, e.g. the German wording of "Industry and plant technology" was changed, and "Control" was changed to "Evaluation and monitoring". The new allocation was used for better comparison of the years 2010 and 2011.

All in all, the actual distribution of funds in 2010 versus forecast distribution of funds for 2010 was as follows:

In all sectors, the actual percentage distribution of funds is about the same as the fund allocation forecast in doc. 19/4906. However, at the present time, the actual transfer of funds is somewhat below what was originally planned. There were time delays in a number of projects due to more extensive planning and preparation. That led to later application for the funds, so that a number of applications are still being processed. That is still a significant amount particularly in the Energy and Building sectors.

By the end of 2010, about EUR 22 million of the total available funds of about EUR 29.7 million had gone into the implementation phase.

It is likely that a total of about EUR 7.7 million will no longer be used in 2010. This amount will be available additionally in the coming budget year, subject to decision on transfer of the remaining amount.

The details are shown in Annex 2.

2. Procedure for funding from the Climate Action Fund

The application procedure for funding from the Climate Action Fund has been kept and will be kept in future, i.e. the proposed measures have to be set out in concrete terms and approved in the course of the year. The examination scheme set out in doc. 19/4906 was

systematically applied by the Coordination Centre for Climate Issues and the participating authorities. The procedure permits retrospective assessment of funding efficiency of projects already approved, and is above all an aid to structuring during the ongoing approvalprocedure, and increases the transparency of decisions for project funding from title 6000.971.01.

For improvement of funding efficiency, the criteria from this examination scheme are already used in application for funding for projects and measures of the subsequent year. That improves the planning of fund distribution, and the strategic setting of focal points for 2012 can be implemented in a targeted way in the main areas of expenditure.

II.
Impact on budget years 2011/12 and subsequent years

1. Funding volumes and budget transfer procedure

The implementation of measures is effected in many areas in the framework of existing budget amounts or by third-party funding. The present Communication of the Senate to Parliament specifies the amounts for title 6000.971.01 "Hamburg Climate Action Plan 2007-2012" for the year 2011. Due to an organisational move of the Coordination Centre for Climate Issues within the responsible authority, the estimate will be made in chapter 6800, and there will be a division into a consumption title (6800.971.19) and an investment title (6800.893.19). The following estimate is set:

Title	**Description**		**Estimate 2011**	**Estimate 2012**
			- EUR thousands -	
6800.971.19	Hamburg Climate Action Plan	KM	7,490	7,490
		VE	4,000	4,000
6800.893.19	Hamburg Climate Action Plan –Investment expenditure–	KM	16,000	15,000
		VE	8,000	7,500
Total		KM	**23,490**	**22,490**
		VE	**12,000**	**11,500**

KM = fund allocation

VE = commitment appropriation

In order to conduct binding planning and specification in 2011 for some of the measures for 2012, and to enter into legal commitments, a commitment authorisation of EUR 12 million is required.

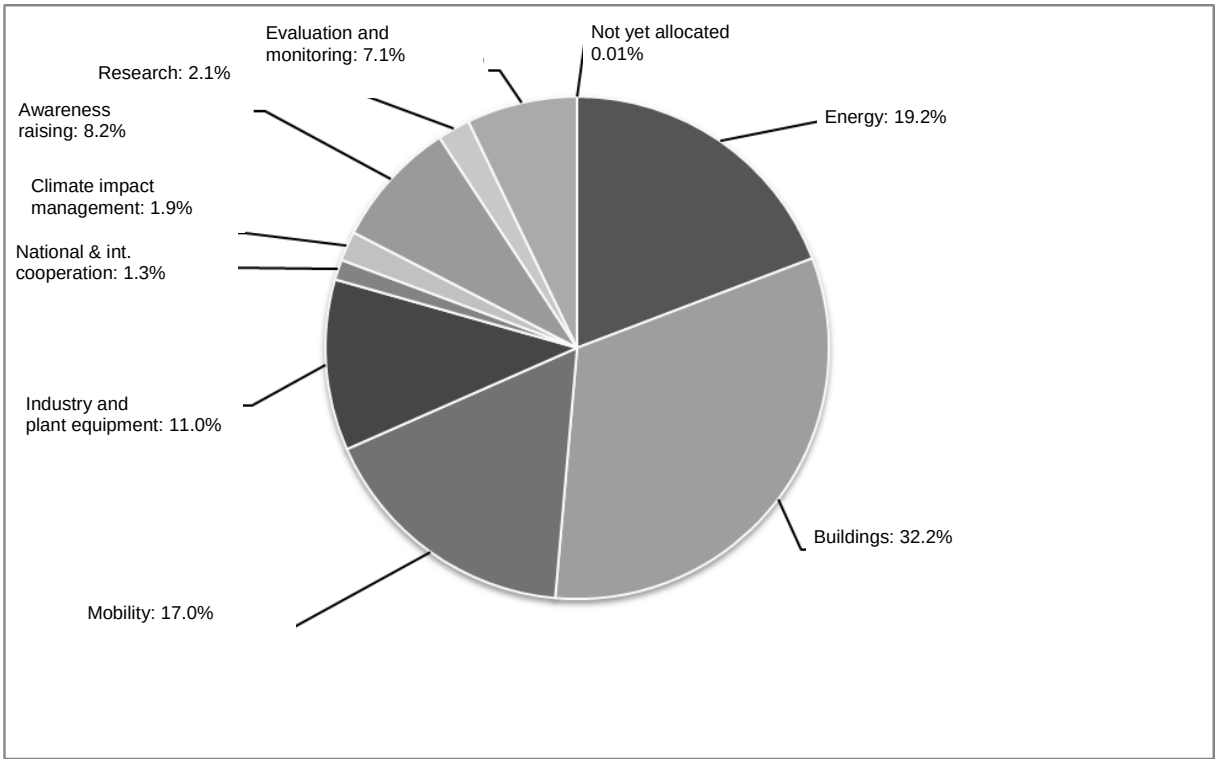
Funding of further measures after 2012 will then be decided on establishment of the double budget which then follows. In its medium-term planning, the Senate has also allocated about EUR 22.5 million for the Hamburg Climate Action Plan for each of the years up to 2019.

2. Intended fund allocation in 2011

Focal areas of expenditures have been set for 2011, in accordance with setting of 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, or their preparation, for example in the building sector for energy-efficiency modernisation of existing buildings, and in mobility for the area of non-motor individual traffic. For details of the focal points of action, see the indications for the individual sectors. In addition, Economic Stimulus Package II of the Federation will no longer be applicable from 2011 onwards, which means that increased funding has to be provided for investments for public buildings.

For project related details, see Annex 2 to this Communication.

Fig. 6: Forecast fund allocation 2011 from the Hamburg Climate Action Plan



	Energy	Buildings	Mobility	Industry & plant techn-ology	National & international cooperation	Climate impact management	Aware-ness raising	Research	Evaluation and monitoring	Not yet allocated	Total
%	19.2%	32.2%	17.0%	11.0%	1.3%	1.9%	8.2%	2.1%	7.1%	0.01%	100.00%
EUR	4,520,000	7,570,000	3,986,875	2,572,365	315,000	445,000	1,919,400	500,000	1,660,000	1,360	23,490,000

3. Human resources expenditures and staff requirements

It was possible to implement the measures only by employment of additional temporary human resources capacities. They were funded from Climate Action Plan funds. In addition, coordination of plan implementation required material expenditure for control purposes. In total, funding of about EUR 1 million was spent in budget year 2010 for supervision/control, corresponding to a share of 4% of the funds allocated by doc. 19/4906.

In the area of human resources costs, funded from title 6000.971.01, full-year expenditure of EUR 1,044 thousand (as shown in the Personnel Cost Table, PKT) was incurred by 22 December 2010. The figure for the actual costs will not be available until the beginning of 2011. That includes about EUR 111 thousand for computer workplace allowances. The human resources share is around EUR 933 thousand. The Coordination Centre for Climate Issues undertakes control and coordination tasks for the Climate Action Plan which are highly complex and technical; these will continue to be necessary in the future. The proven project organisation form will be maintained, but evaluated for possible mid-term updating of the Climate Action Plan. Due to the strong mutual relationships between the interdisciplinary tasks of climate action and the related tasks in the energy sector, the Coordination Centre for Climate Issues was integrated in the Nature and Resource Conservation Department with effect from February 2010 in terms of its organisation. It reports directly to the Head of that Department for continuation of its prominent task as an inter-departmental coordinator. The human resources funds needed for the Coordination Centre are in principle included in the human resources budget of the Ministry of Urban Development and Environment.

The list of measures of the update for the Hamburg Climate Action Plan again includes some new temporary tasks for which no existing personnel is available.

It was already found in the previous years that such additional requirements depend on the implementation conditions of the individual measures, so it is not possible in advance to put a figure on the requirement with the necessary planning accuracy. In order to be able to respond flexibly despite this, the allocation for additional human resources requirements in 2011 are increased to a maximum of EUR 1.375 million (including computer workplace allowances) versus the previous year (EUR 1.25 million). This amount is included in the estimated total amount of EUR 23.5 million. This means that within the budget authorisation, it is possible to continue creating and funding temporary positions for requirements demonstrated for these purposes.

E.
Request

The Senate requests the Hamburg Parliament

1. To take note of the present Communication updating and further developing the Hamburg Climate Action Plan ;
2. To take note of the response to the Parliamentary Request 19/5852 “Solar Roof Register” and 19/5207 “Shallow Geothermal Energy”.

F.
Annexes

1. Project list
2. List of projects funded
3. CO_2 monitoring of the Hamburg Climate Action Plan (interim status).

Annex 1 – Project List

Climate Action in Hamburg

Update 2010/2011

Project List
for Hamburg Climate Action Plan 2007-2012

Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
ENERGY SECTOR				**CAP = Climate Action Plan**	**KM = fund allocation VE = commitment**	
2007/019	IV. 3. b) (vv)	**Renewable energy plants (esp. photovoltaic plants) on schools - "Climate action at school"**	in progress	CAP Specialist title Third-party Total (excl. VE)	KM: 0 VE: 0 200,000 0 200,000	KM: 100,000 VE: 0 200,000 0 300,000
2007/039	IV. 3. c) (ii)	**District heating from Köhlbrandhöft sewage treatment plant to Container Terminal Tollerort**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/040	IV. 3. e) (dd)	**Status recording and concept development on situation of carbon emissions and housing development**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2007/043	IV. 3. e) (aa)	**Tree planting concept for reduction of carbon emissions**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/084	III. 3. a) (bb)	**Renewable energies competence cluster**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 499,000 VE: 0 499,000	
2007/086	III. 3. b) (dd)	**Large-area thin-film solar plants on industrial hall roofs**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 86,000 VE: 0 86,000	
2007/088	III. 3. d) (cc)	**IBA - Renewable energy in the framework of IBA - "Wilhelmsburg biogas project"**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/089	III. 3. d) (dd)	**IBA - Renewable energy in the framework of IBA - "Georgswerder energy hill"**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/090	III. 3. d) (ee)	**IBA - Renewable energy in the framework of IBA - "Wilhelmsburg energy bunker"**	in progress	CAP Specialist title Third party Total (excl. VE)		KM: 500,000 VE (b): 500,000 500,000
2007/092	III. 3. b) (mm)	**Promotion of use of biofuels**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 200,000 VE: 0 500,000 0 700,000	KM: 200,000 VE: 100,000 500,000 0 700,000
2007/093	III. 3. b) (oo)	**Wood heating plant SAGA/GWG**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/094	III. 3. b) (qq)	**Model trial for wood collection**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/097	III. 3. a) (cc)	**Renewable heat supply to island of Neuwerk**	in progress	CAP Specialist title Third party Total (excl. VE)		

* a: Priority projects (application deadline 31/03/2011)
*00+000** 000000 b: Other projects (application deadline 31/08/2011)
*00+000** 000000 No indication = a

Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2007/100	III. 3. b) (aa)	**Climate action programme "Solar thermal energy and heating" in the framework of the "Jobs and climate action" initiative**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 500,000 VE: 0 300,000 0 800,000	KM: 1,000,000 VE: 0 300,000 0 1,300,000
2007/101	XI. 3. a) (aa)	**Commitment for introduction of a Renewable Energies Heating Act at Federal level. Submission of resolution proposal**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/117	IV. 3. c) (dd)	**Optimisation of waste management in Hamburg with a view to climate action (recycling initiative)**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/145	III. 3. b) (ii)	**Designation of additional sites for wind power systems in port area**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/157	IV. 3. a) (cc)	**Power load management for public properties – "INSEL" research project (Hamburg University of Applied Sciences)**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/158	IV. 3. a) (aa)	**Power demand of municipal facilities: increase to 100% renewable energy sources**	completed	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 184,000 0 184,000	
2007/161	IV. 3. b) (ss)	**Solar water heating**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/193	IV. 3. b) (tt)	**Photovoltaic system at Kampnagel Performing Arts Centre**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/205	III. 3. b) (uu)	**Energy generating from waste water**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/206	III. 3. b) (ss)	**Expansion of geothermal heating**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/207	III. 3. b) (vv)	**Stellingen waterworks: generating heat from raw water**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2007/215	IV. 3. b) (rr)	**Use of renewable energy supply (solar thermal, photovoltaic) in new construction of Rahlau depot**	completed	CAP Specialist title Third party Total (excl. VE)		
2008/021	IV. 3. c) (ll) / VI. 3. f) (ee)	**Development of shore power concept (examination: development of joint environmental standards in port)**	in preparation	CAP Specialist title Third party Total (excl. VE)		

* a: Priority projects (application deadline 31/03/2011)
*00+000** 000000 b: Other projects (application deadline 31/08/2011)
*00+000** 000000 No indication = a

Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2008/028	IV. 3. a) (bb)	**Examination: changeover to green power on expiry of contracts, instead of separate tender process for RECs**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/030	III. 3. a) (aa)	**Examination: costs and consequences of public ownership of energy networks**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 400,000 VE: 0 400,000	
2008/031	III. 3. b) (yy)	**CHP initiative: implementation of programme to increase Combined Heat and Power (CHP) with Hamburg companies from manufacturing, services and housing**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 350,000 VE: 500,000 350,000	KM: 500,000 VE: 0 500,000
2008/036	III. 3. a) (ll)	**IBA - establishment of a virtual power station as a model project in the framework of IBA**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2008/037	III. 3. b) (rr)	**Expansion of bio-waste collection with the goal of more efficient energy use**	transferred to another project	CAP Specialist title Third party Total (excl. VE)		
2008/038	III. 3. b) (zz)	**Examination: provision of municipal sites for CHPs**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 200,000 VE: 0 430,000 0 630,000	
2008/039	III. 3. b) (ee)	**Provision of roofs, especially from public properties, for use of solar energy**	transferred to another project	CAP Specialist title Third party Total (excl. VE)		
2008/040	III. 3. b) (gg)	**Identification of suitable sites for local power stations**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/041	III. 3. b) (jj)	**Enabling repowering of existing wind turbines**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/042	III. 3. b) (hh)	**Identification and designation of sites for new wind turbines**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/053	III. 3. d) (bb)	**IBA - Energy Association New Centre Wilhelmsburg**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 100,000 VE: 100,000 100,000	KM: 200,000 VE: 100,000 200,000
2008/054	III. 3. d) (aa)	**IBA climate action concept - Renewable Wilhelmsburg**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 200,000 VE: 0 200,000	KM: 210,000 VE: 175,000 210,000
2008/061	III. 3. d) (ff)	**IBA - model project deep geothermal energy**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 600,000 VE: 0 331,570 931,570	

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2008/093	VII. 3. c) (jj)	**Establishment of an "Energy Campus" with commercial spaces to permit new start-ups and hive-offs**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/094	IV. 3. b) (qq)	**Examination of suitability for solar energy of roofs on school buildings (Solar Potential Analysis)**	completed	CAP Specialist title Third party Total (excl. VE)		
2008/101	III. 3. a) (dd)	**Sustainable energy supply concepts for large housing estates**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/102	III. 3. a) (gg)	**Measures to increase share of renewable energies in industry in Hamburg**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/103	III. 3. a) (ii)	**Competition: energy-efficient city**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/015	III. 3. b) (cc)	**Economic stimulus programme of Federation: promotion of energy efficiency and use of renewables – airborne laser scanner survey**	completed	CAP Specialist title Third party Total (excl. VE)		
2009/016	III. 3. b) (aaa)	**Grants for micro CHPs**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/020	III. 3. a) (hh)	**Study on development of heating supply in North Germany**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/023	III. 3. b) (tt)	**Feasibility studies for geothermal boreholes**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 175,318 0 175,318	
2009/024	IV. 3. b) (ggg)	**Expansion of a photovoltaic plant on the works and storage hall of the Rahlau depot**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/025	IV. 3. b) (hhh)	**Photovoltaic array on Seglerhaus at Appelhoffweiher**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2009/027	IV. 3. b) (iii)	**Photovoltaic array on new building Spielhaus (children's play centre) at Mühlenteich**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2009/030	III. 3. a) (ee)	**Former Röttiger Barracks, new housing in Neugraben-Fischbek**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 17,493 VE: 0 17,493	

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2009/038	IV. 3. b) (mmm)	**Photovoltaic array for Sporthalle Hamburg**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/041	IV. 3. b) (ooo)	**Photovoltaic array for District Council Ofice Hamburg-Nord**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/053	IV. 3. b) (uuu)	**Photovoltaic array on roof of main building of Eimsbüttel district council office to increase share of renewable energy**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2009/054	IV. 3. b) (vvv)	**Photovoltaic arrays on roofs of official buildings of Customer Centres of Eimsbüttel district council, Garstedter Weg 13 and Basselweg 73**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2009/060	IV. 3. b) (www)	**Conversion of Langenhorner Markt Centre – Co-financing of a solar roof over the public market area**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2009/074	IV. 3. c) (hh)	**Wind turbines on Dradenau sewage treatment plant**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/075	IV. 3. c) (jj)	**Sewage gas feed-in at Köhlbrandhöft sewage treatment plant**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/078	IV. 3. c) (kk)	**Photovoltaic systems of Hamburg Waste (SRH)**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/086	III. 3. b) (ff)	**Solar potential analysis 150,000 roofs (title changed to: Solar Potential Analysis I)**	completed	CAP Specialist title Third party Total (excl. VE)	KM: 130,000 VE: 0 0 130,000 260,000	
2010/003	III. 3. b) (kk)	**Wind-hydrogen study**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2010/004	III. 3. b) (pp)	**Wood-fired heating station at Haferweg**	completed	CAP Specialist title Third party Total (excl. VE)		
2010/018	NEW	**Examination of framework conditions for funding programme for shallow geothermal energy**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2010/037	NEW	**IBA - Neue Hamburger Terrassen, heating network**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 90,000 VE: 0 90,000

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*00+000** 000000 No indication = a

Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2010/038	NEW	**Implementation of projects in the framework of the Renewable Energies cluster Hamburg**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM (a): 300,000 VE (b): 300,000 300,000
2010/039	NEW	**Energy-efficient lighting concept for subways and tunnels of 60s and 70s in central locations in Harburg**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 20,000 VE: 0 20,000
2010/045	NEW	**Smart Power- intelligent load management project (Demand Side Management) and power-controlled micro CHPs in connection with heat storage in city infrastructure**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 0 51,293,098 51,293,098	
2010/060	NEW	**Solar Potential Analysis II**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 250,000 VE: 0 250,000
2010/066	NEW	**Energy Campus**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 150,000 VE: 0 150,000
2010/069	NEW	**Heat supply to St.Katharine's Church (North Elbe Church)**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 600,000 VE: 0 600,000
2010/070	NEW	**Load management in public buildings with smart meters**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 400,000 VE: 0 400,000
TOTAL ENERGY						**KM (a) 4,520,000** **KM (b) 0** **VE (a) 375,000** **VE (b) 800,000**

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
BUILDING SECTOR						
2007/001	V. 3. b) (cc)	**Urban building projects (housing, industrial, district centres) in the districts - Bürgerhaus Bornheide**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 50,000 0 50,000	KM: 0 VE (a): 800,000 VE (b): 100,000 1,200,000 1,200,000
2007/002	V. 3. b) (dd)	**Urban building projects (housing, industrial, district centres) in the districts - Mittlerer Landweg**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/003	V. 3. b) (ii)	**Urban building projects (housing, industrial, district centres) in the districts future housing in Lohkoppelweg**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/004	IV. 3. b) (bb)	**Technical Department of district council Hamburg-Nord**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/005	V. 3. b) (ff)	**Urban building projects (housing, industrial, district centres) in the districts - Pestalozzi district in St. Pauli**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/006	V. 3. b) (hh)	**Urban building projects (housing, industrial, district centres) in the districts - Oberaltenallee Südteil/ formerly P&W spaces (Workshop)**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/007	V. 3. b) (gg)	**Urban building projects (housing, industrial, district centres) in the districts - Häferblöcken area in Billstedt**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/008	V. 3. b) (bb)	**Urban building projects (housing, industrial, district centres) in the districts - Jenfelder Au (ehemals formerly Lettow-Vorbeck Barracks) in Jenfeld**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/018	IV. 3. b) (ff)	**Project "No school over 200"**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 0 11,400,000 11,400,000	
2007/020	IV. 3. b) (gg)	**Hamburg South model: construction and management of schools in "Public Public Partnership projects"**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/021	IV. 3. b) (hh)	**IBA - Educational Centre "Gateway to the World"**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 2,426,028 1,300,000 3,726.028	KM: 1,000,000 VE: 1,000,000 13,333,235 3,500,000 17,833,235
2007/023	IV. 3. b) (ii)	**Exemplary project "School modernisation to zero-emissions standard"**	in progress	CAP Specialist title Third party Total (excl. VE)		

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2007/027	V. 3. a) (ff)	**Energy savings potentials in historic buildings**	in progress	CAP Single-shell brickwork Double-shell brickwork Specialist title Third party Total (excl. VE)	KM: 44,988 VE: 0 KM: 124,236 VE: 0 169,224	
2007/028	IV. 3. b) (aa)	**Energy-efficiency modernisation of public buildings - building envelope modernisation (police and fire stations)**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 1,200,000 VE: 0 1,200,000	KM (a): 1,500,000 KM (b): 4,284,136 VE: 0 5,784,136
2007/033	XI. 3. a) (cc)	**Amendment of requirements profile "EnEV 2007" before 2009**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/041	XI. 3. b) (cc)	**Inter-district definition of specifications in zoning plans**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/044	III. 3. a) (ff)	**Target for energy tender Eastern HafenCity 120 kg CO_2/MWh heat**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/062	XI. 3. b) (bb)	**Decree of climate action ordinance**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/095	V. 3. a) (ee)	**Thermal insulation in existing buildings**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 1,000,000 VE: 1,000,000 1,000,000	KM: 1,000,000 VE: 1,000,000 1,000,000
2007/140	V. 3. b) (aa)	**New housing programme of Hamburgische Wohnungsbaukreditanstalt**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/142	V. 3. a) (dd)	**Energy-efficiency modernisation of rented housing (WK) and new housing programme of WK**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 3,000,000 VE: 0 15,600,000 0 18,600,000	KM (a): 2,000,000 KM (b): 1,000,000 VE: 0 3,000,000
2007/159	IV. 3. c) (bb)	**Energy-efficiency modernisation of public buildings - modernisation of building equipment**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 1,100,000 0 1,100,000	
2007/183	IV. 3. b) (dd)	**Energy eficiency in new building of HafenCity University Hamburg - University of architecture and city development**	in progress	CAP Specialist title Third party Total (excl. VE)		

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2007/187	IV. 3. b) (ccc)	**Energy-efficiency optimisation of terminal building of Cruise Center II**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/188	V. 3. b) (ee)	**Urban building projects (housing, industry, district centres) in the districts - Südlicher Brookdeich**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/189	IV. 3. b) (bbb)	**Include climate standards in real estate contracts at FB/IM**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/190	IV. 3. b) (cc)	**Urban building projects (housing, industry, district centres) in the districts - BSU administrative building**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/192	IV. 3. b) (ee)	**Energy-efficiency roof modernisation of Kampnagel Performing Arts Centre**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/197	V. 3. a) (bb)	**Funding for installation of modern electricity and gas meters (Smart Metering)**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/210	V. 3. b) (jj)	**IBA - urban building projects (housing, industrial, district centres) in the districts - climate houses Haulander Weg**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 40,000 VE: 60,000 40,000	KM: 60,000 VE: 60,000 60,000
2007/211	V. 3. b) (mm)	**IBA - urban building projects (housing, industrial, district centres) in the districts - Open House - Vogelhüttendeich**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 420,000 VE: 0 420,000	
2007/212	V. 3. b) (qq)	**IBA Dock**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/213	V. 3. b) (pp)	**New building of swimming baths / open-air pool Neuenfelder Strasse**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/001	IV. 3. b) (kk)	**Investment agreement for energy-efficiency modernisation of social infrastructure - pre-school Öjendorfer Weg 4**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/002	IV. 3. b) (ll)	**Investment agreement for energy-efficiency modernisation of social infrastructure - pre-school Eddelbüttelstrasse 9**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/003	IV. 3. b) (mm)	**Investment agreement for energy-efficiency modernisation of social infrastructure - pre-school Eckermannstrasse 3**	in preparation	CAP Specialist title Third party Total (excl. VE)		

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2008/004	IV. 3. b) (ll)	**Investment agreement for energy-efficiency modernisation of social infrastructure - pre-school Sanitasstrasse 11**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/005	IV. 3. b) (ll)	**Investment agreement for energy-efficiency modernisation of social infrastructure - pre-school Paul-Roosen-Strasse 24**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/006	IV. 3. b) (ll)	**Investment agreement for energy-efficiency modernisation of social infrastructure - pre-school Rotenhäuser Damm 90**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/007	IV. 3. b) (ll)	**Investment agreement for energy-efficiency modernisation of social infrastructure - pre-school Wohlers Allee 40**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/008	IV. 3. b) (mm)	**Investment agreement for energy-efficiency modernisation of social infrastructure - school Sterntaler Strasse 42**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 6,410,000 0 6,410,000	
2008/009	V. 3. a) (hh)	**Practical example Lokstedt Lohkoppelweg (belongs to: EU project Housing Qualities, No. 2007/143)**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/012	IV. 3. b) (oo)	**Energy optimisation of Hamburg House**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 1,400,000 0 1,400,000	
2008/024	XI. 3. b) (aa)	**Amendment to Hamburg Climate Action Act**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/025	IV. 3. e) (ee)	**Identification and establishment of climate model districts**	in progress	CAP Specialist title Third party Total (excl. VE)		KM: 200,000 VE: 0 200,000
2008/055	V. 3. b) (nn)	**IBA - Schlossinsel/Harburg Binnenhafen - sub-project Veritaskai**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 200,000 VE: 310,000 200,000	KM: 310,000 VE: 0 310,000
2008/056	V. 3. b) (oo)	**Schlossinsel/Harburger Binnenhafen - sub-project Marine Competence Center**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2008/057	V. 3. a) (kk)	**Veringhöfe heritage buildings spaces for art**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/059	V. 3. b) (ss)	**IBA - experimental housing in Stadtpark Wilhelmsburg**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 230,000 VE: 130,000 230,000	KM: 130,000 VE: 690,000 130,000

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*00+000** 000000 No indication = a

Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2008/060	V. 3. b) (ee)	**Urban building projects (housing, industrial, district centres) in the districts - South Brookdeich**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/064	XI. 3. b) (ee)	**Legislation to ensure climate relevant requirements in building permit procedures**	completed	CAP Specialist title Third party Total (excl. VE)		
2008/066	V. 3. a) (ii)	**Increased orientation of number of modernisation projects in existing housing to the goals of climate action, including establishment of appropriate monitoring**	completed	CAP Specialist title Third party Total (excl. VE)		
2008/068	V. 3. a) (jj)	**Introduction of quality controlling for energy-efficiency modernisation in existing buildings**	completed	CAP Specialist title Third party Total (excl. VE)		
2008/069	V. 3. a) (aa)	**Negotiation of agreement with the associations for introduction of an ecological rent scale**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/114	IV. 3. b) (pp)	**Town Hall Forum Harburg**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/115	V. 3. a) (cc)	**Urban design and climate action; development of a criteria, district and building typology catalogue (examination mandate to deal with section 2 of doc. 19/929)**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/002	IV. 3. b) (mm)	**Investment agreement for energy-efficiency modernisation of social infrastructure - Öjendorf Comprehensive School, Öjendorfer Höhe 12**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 0 VE: 0 5,867,000 0 5,867,000
2009/003	IV. 3. b) (mm)	**Investment agreement for energy-efficiency modernisation of social infrastructure - Horn Comprehensive School, Snitgerreihe 2**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/004	IV. 3. b) (mm)	**Investment agreement for energy-efficiency modernisation of social infrastructure - Changing rooms at public sportsground Öjendorfer Weg**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/005	IV. 3. b) (mm)	**Investment agreement for energy-efficiency modernisation of social infrastructure - Changing rooms at public sportsground von-Elm-Weg**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/006	IV. 3. b) (mm)	**Investment agreement for energy-efficiency modernisation of social infrastructure - Changing rooms at public sportsground Grunewaldstrasse 74**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/008	V. 3. b) (ll)	**IBA - Neue Hamburger Terrassen, Baufeld 1**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 50,000 VE: 110,000 50,000	KM: 70,000 VE: 0 70,000

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2009/017	IV. 3. b) (eee)	**Economic stimulus programme of Federation: Hamburger theatres; here: Deutsches Schauspielhaus**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/018	IV. 3. b) (eee)	**Economic stimulus programme of Federation: Hamburger theatres; here: Thalia Theater**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/026	V. 3. a) (ll)	**Energy modernisation and refurbishment projects in Mümmelmannsberg**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/034	IV. 3. b) (jjj)	**Youth Centre: Haus der Jugend - Oberer Landweg 2**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/035	IV. 3. b) (kkk)	**District depot - Marmstorfer Weg 31**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 16,000 0 16,000	
2009/036	IV. 3. b) (lll)	**Forester's house Eissendorf**	discontinued	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 88,000 0 88,000	
2009/043	IV. 3. b) (qqq)	**Replacement of strip windows in multi-purpose hall of Goldbekhaus**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2009/044	IV. 3. b) (rrr)	**Replacement of window glass in Spielhaus Lokstedter Weg**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2009/046	-	**Former old people's and nursing home Finkenau / Oberaltenallee – carbon-neutral energy-efficiency district**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/047	V. 3. b) (tt)	**Am Weissenberg – establishment of a carbon-optimised housing area on about 12.5 ha between Sengelmannstrasse, Maienweg, Suhrenkamp and JVA Fuhlsbüttel**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/048	V. 3. b) (uu)	**Dieselstrasse / Schlicksweg – development of a carbon-optimised housing area on land of former Model Ship Testing Facility**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/051	IV. 3. b) (ttt)	**Energy-efficiency recording and optimisation of public authority buildings (Eimsbüttel district council)**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 35,000 VE: 0 35,000	
2009/057	IV. 3. b) (mm)	**Investment agreement for energy-efficiency modernisation of social infrastructure - school in Potsdamer Strasse, specialist class tract**	in preparation	CAP Specialist title Third party Total (excl. VE)		

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*00+000** 000000 b: Other projects (application deadline 31/08/2011)
*00+000** 000000 No indication = a

Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2009/058	IV. 3. b) (mm)	**Investment agreement for energy-efficiency modernisation of social infrastructure - school Sander Strasse, sports hall**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/059	IV. 3. b) (mm)	**Investment agreement for energy-efficiency modernisation of social infrastructure - school Altonaer Strasse, sports hall**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/068	IV. 3. b) (xxx)	**Pilot project for new construction of childcare centre in Rissen to zero-emissions standard (North Elbe Church)**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/069	V. 3. b) (vv)	**IBA - Harburger Schlossinsel - housing on Schlossinsel (building phase 2)**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 190,000 VE: 320,000 190,000	KM: 320,000 VE: 0 320,000
2009/072	V. 3. a) (mm)	**Complete examination of building**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 150,000 VE: 0 150,000	
2009/076	IV. 3. b) (ddd)	**Climate action and building: energy performance standards for public buildings**	in progress	CAP Specialist title Third party Total (excl. VE)		
2010/011	NEW	**Measurements for examination of building project Schlettstadter Strasse**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 36,178 VE: 0 36,178	
2010/016	NEW	**Examination: binding specifications for building and energy-efficiency standards for non-residential buildings**	in progress	CAP Specialist title Third party Total (excl. VE)		
2010/017	XI. 3. a) (cc)	**Summer thermal protection in Energy Performance Ordinance (EnEV)**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2010/031	NEW	**Pilot projects for funding energy-efficient non-residential building**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 500,000 VE: 0 500,000
2010/041	NEW	**Long-term conservation of Hamburg post-war facades**	transferred to another project	CAP Specialist title Third party Total (excl. VE)		
2010/047	NEW	**Ecological housing estate Hausbruch 35**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2010/053	NEW	**Energy-efficiency in extension at Finkenau Art and Media Campus**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 0 VE: 0 822,848 0 822,848

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2010/059	NEW	**Energy-efficiency modernisation of buildings - analysis of portfolio of buildings used by City of Hamburg**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 80,000 VE: 20,000 80,000
2010/061	NEW	**Development of a funding programme for urban design and climate action (Brick building fund) and implementation of demonstration projects**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 400,000 VE (a): 400,000 VE (b): 400,000 400,000
TOTAL BUILDINGS						**KM (a) 7,570,000** **KM (b) 5,284,136** **VE (a) 3,970,000** **VE (b) 500,000**

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
MOBILITY SECTOR						
2007/026	IV. 3. c) (cc)	**Fleet management for City of Hamburg vehicles**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/119	VI. 3. a) (cc)	**Development of diesel hybrid buses of HVV (Hamburg Public Transport) or comparable systems ready for series production**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/120	VI. 3. d) (bb)	**City toll (examination mandate)**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/122	VI. 3. d) (cc)	**Restriction of parked vehicles in central area of city by increasing parking chages**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/124	VI. 3. c) (aa)	**Increasing appeal of walking to encourage pedestrians**	in progress	CAP Specialist title Third party Total (excl. VE)		KM: 200,000 VE: 200,000 200,000
2007/125	VI. 3. a) (aa)	**Increasing frequencies of U-Bahn (underground) on working days**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/126	VI. 3. a) (bb)	**Extension of Park&Ride facilities**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/127	VI. 3. b) (bb)	**Increase in Bike&Ride facilities**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 175,000 VE: 0 175,000	KM: 246,875 VE: 175,000 246,875
2007/128	VI. 3. d) (aa)	**Traffic management**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/129	-	**Extension of traffic-related network control**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/130	VI. 3. d) (dd)	**Extension of flow control on motorways in Hamburg**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/131	VI. 3. d) (hh)	**CarSharing**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 40,000 VE: 0 40,000	

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2007/132	VI. 3. d) (ii)	**Car-free Sundays, compensation of loss of revenues for HVV due to free-of-charge public transport use**	in progress	Einnahmeausfall + Öffentlichkeitsarbeit CAP Specialist title Third party Total (excl. VE)	KM: 375,000 VE: 0 375,000	KM: 500,000 VE: 500,000 500,000
2007/133	VI. 3. d) (jj)	**Commuter Portal**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/134	VI. 3. e) (aa)	**Creation of new roundabouts**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/135	VI. 3. e) (bb)	**Energy optimisation of traffic lights**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/136	VI. 3. e) (cc)	**Optimisation of street lighting and replacement of illuminated road signs**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/137	VI. 3. f) (cc)	**Reinforcement of inland navigation**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 15,000 0 15,000	KM: 0 VE: 0 15,000 0 15,000
2007/153	VI. 3. f) (aa)	**Examination of reduction in pollutant emissions of ships in port - climate-neutral energy supply**	in progress	CAP Specialist title Third party Total (excl. VE)		KM: 60,000 VE: 0 60,000
2007/154	VI. 3. g) (bb)	**Funding of improved hull technologies (Hamburg University of Technology)**	completed	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 392,025 0 392,025	
2007/164	VI. 3. g) (cc)	**Climate action at Hamburg Airport**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 20,000 VE: 0 20,000	KM (b): 75,000 VE: 0 0 275,000 350,000
2007/165	VI. 3. f) (bb)	**Shifting transport from road to inland waterways and feeder vessels**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/166	VI. 3. f) (dd)	**High-tech wind propulsion systems**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/200	IV. 3. d) (mm)	**Carbon emissions offset for official travel (air travel)**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/022	VI. 3. f) (ff)	**Introduction of budget-neutral bonus for climate-friendly ships**	in preparation	CAP Specialist title Third party Total (excl. VE)		

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2008/023	VI. 3. g) (aa)	**Introduction of emission-related landing charges**	completed	CAP Specialist title Third party Total (excl. VE)		
2008/029	IV. 3. d) (ii)	**Introduction of official bicycles as part of public authority fleets, at suitable locations**	completed	CAP Specialist title Third party Total (excl. VE)		
2008/051	VI. 3. d) (ff)	**Establishment of low-emissions zone, especially for commercial traffic, in this parliamentary session**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/052	VI. 3. d) (gg)	**Development of programmes for innovative propulsion technologies in motor vehicle transport (e.g. electric vehicles)**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 197,250 VE: 200,000 197,250	KM: 200,000 VE: 0 200,000
2008/065	VI. 3. b) (dd)	**Introduction of cycle hire system**	completed	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 2,500 0 2,500	KM: 0 VE: 0 2,000 0 2,000
2008/083	VI. 3. b) (aa)	**Implementation of cycling strategy of Cycle Forum**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 2,300,000 VE: 1,000,000 8,541,000 0 10,841,000	KM (a): 2,000,000 KM (b): 1,000,000 VE (a): 2,000,000 VE (b): 1,000,000 4,751,000 0 7,751,000
2008/084	VI. 3. b) (cc)	**Improvement of cycle carrying factilities in public transport (HVV)**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/033	-	**Electric vehicles in the port**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 0 216,381 216,381	
2009/052	VI. 3. b) (ee)	**Climate friendly mobility promotion for clients and staff of Eimsbüttel district council by creating additional cycle stands which can be supervised**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2009/061	VI. 3. a) (bb)	**P&R facility at Ochsenzoll U-Bahn station**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/071	-	**Eco-mobile from the fleet "HH = more" ("Hamburg ModelRegion for Electro-Mobility")**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/084	IV. 3. d) (nn)	**Carbon emissions offset for official travel (rail travel)**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2010/007	VI. 3. a) (ff)	**Examination: conversion of propulsion power for railbound traffic in public transport to 100% renewable energies**	completed	CAP Specialist title Third party Total (excl. VE)		

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2010/012	NEW	**Nationwide harmonisation in Road Traffic Act for charging points for electric vehicles**	in progress	CAP Specialist title Third party Total (excl. VE)		
2010/030	NEW	**Eco-taxis for Hamburg: award of an environment or climate label**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 22,484 VE: 0 22,484	
2010/033	NEW	**Coordinated green traffic lights for cyclists**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM (a): 400,000 KM (b): 200,000 VE: 0 600,000
2010/034	NEW	**Implementation of existing feasibility study for improvement of cycle routing in selected streets**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 310,000 VE: 500,000 0 0 310,000
2010/035	NEW	**100 cycling streets programme**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2010/042	NEW	**Cycle station Harburg Railway Station**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2010/052	NEW	**Workshop "Energy efficiency measures for shipping"**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 10,000 VE: 0 10,000	
2010/056	NEW	**Introduction of low-floor tram**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2010/057	NEW	**Promotion of cycling by creation of a model district**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2010/065	NEW	**Electric vehicles - pilot project introduction of E-Smart ED**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 279,888 0	KM: 70,000 VE: 210,000 70,000
2010/073	NEW	**Guidelines for purchasing of low-emission vehicles for public authorities vehicle fleet**	in progress	CAP Specialist title Third party Total (excl. VE)		
TOTAL MOBILITY						**KM (a) 3,986,875** **KM (b) 1,275,000** **VE (a) 3,585,000** **VE (b) 1,000,000**

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
INDUSTRY AND PLANT TECHNOLOGY SECTOR						
2007/038	IV. 3. c) (ee)	**Waste water disposal process "Hamburg Water Cycle"**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/048	III. 3. b) (ww)	**National Innovation Programme hydrogen and fuel cell technology (NIP)**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 115,000 VE: 0 115,000	
2007/051	VII. 3. c) (aa)	**Implementation of voluntary self-commitment of industrial companies (LOI)**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/052	VII. 3. c) (cc)	**Integration of climate action in retailing concepts**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 100,000 VE: 0 100,000
2007/063	XI. 3. a) (bb)	**Advance implementation of "Top Runner" approach at EU level and extend to passenger cars**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/064	VII. 3. a) (aa)	**Extension of Environment Partnership to 2013**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/068	VII. 3. a) (cc)	**Increase range of climate action programmes by active inclusion of companies previously not involved, via business organisations: HK-Mobil / ZEWU-Mobil**	in progress	CAP HK-Mobile ZEWU-e Specialist title Third party Total (excl. VE)	KM: 125,484 VE 2011: 132,365 VE 2012: 132,365 KM: 86,070 VE 2011: 90,000 VE 2012: 90,000 150,000 91,371 452,925	KM: 222,365 VE: 222,365 222,365
2007/069	VII. 3. b) (bb)	**"Companies for resource conservation" - Energy and thermal concepts for Hamburg industry**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/070	VII. 3. b) (aa)	**Extension of programme "Companies for resource conservation"**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 1,500,000 VE: 1,500,000 3,000,000 4,500,000	KM (a): 1,500,000 KM (b): 500,000 VE: 500,000 3,000,000 5,000,000
2007/071	VII. 3. b) (cc)	**"Companies for resource conservation" - Climate action loan of Hamburgische Wohnungsbaukreditanstalt**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/072	VII. 3. b) (dd)	**"Companies for resource conservation" - HeatCheck**	in progress	CAP Specialist title Third party Total (excl. VE)		

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2007/073	VII. 3. b) (ee)	**"Companies for resource conservation" - LightCheck**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/074	VII. 3. b) (ff)	**"Companies for resource conservation" - Efficiency initiative**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/075	VII. 3. b) (gg)	**"Companies for resource conservation" - DriveCheck**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/076	VII. 3. b) (hh)	**"Companies for resource conservation" - New technology-related programme focal points; here: High-efficiency lighting for industry and households**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/077	VII. 3. b) (ii)	**"Companies for resource conservation" - Network for cooling efficiency Hamburg**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/103	VII. 3. c) (ff)	**Building equipment trade show**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/146	VII. 3. c) (gg)	**Programme of funding for trade fairs abroad for small and medium sized enterprises (funding programme)**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/147	VII. 3. c) (ii)	**Investment promotion for energy savings in horticulture and agriculture**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 120,000 1,000,000 1,120,000	KM: 0 VE: 0 120,000 1,000,000 1,120,000
2007/150	VII. 3. c) (ee)	**Hamburg Environmental Award for Logistics**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/160	IV. 3. c) (aa)	**Energy savings in buildings with high base load**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 170,000 0 170,000	
2007/162	IV. 3. b) (ww)	**Energy saving contracting**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/163	VII. 3. c) (bb)	**Economic stimulus (implement climate action as a criterion)**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/195	IV. 3. c) (ff)	**Energy optimisation for Köhlbrandhöft/Dradenau sewage treatment plant group**	in progress	CAP Specialist title Third party Total (excl. VE)		

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2007/196	IV. 3. c) (gg)	**Conversion of aeration system at Dradenau sewage treatment plant**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/034	IV. 3. b) (xx)	**Introduction of "climate action bonus" for Management Boards and Managing Directors of public companies for carbon reduction measures for public buildings**	completed	CAP Specialist title Third party Total (excl. VE)		
2008/035	IV. 3. b) (aaa)	**Certification of public companies with the goal of carbon reduction in public buildings**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/062	VII. 3. b) (jj)	**Companies for resource conservation - reduction of energy consumption for information and communication technologies**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/073	VII. 3. c) (kk)	**Subsidy programme for climate action in product development for technological innovations in energy generating and conversion**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 500,000 VE: 1,750,000 0 0 500,000	KM: 750,000 VE: 0 0 0 750,000
2008/104	IV. 3. d) (ff)	**Systematic recording of enetgy profile for use of communication and information technology at Hamburg public authority offices**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/106	VII. 3. c) (ll)	**Further development of Master Plan for Industry (includes for example competence clusters for Renewable Energies and Fuel Cell Technology)**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/110	VII. 3. c) (mm)	**Potential and data analysis for a programme for "Innovation climate and energy"**	transferred to another project	CAP Specialist title Third party Total (excl. VE)		
2009/032	IV. 3. d) (gg)	**Consolidation measures in HPA computing centre ("Green IT")**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 30,000 VE: 0 217,500 0 247,500	KM: 0 VE: 0 217,500 0 217,500
2009/049	IV. 3. b) (sss)	**Energy modernisation of technical equipment of canteens Grindelberg and Lokstedt**	transferred to another project	CAP Specialist title Third party Total (excl. VE)		
2009/067	IV. 3. b) (yy)	**Further development of "climate action bonus" for public companies for carbon reduction measures in public buildings**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/082	VII. 3. c) (hh)	**Examination: promotion of Climate & Energy subjects by Hamburg as a Trade Fair location**	completed	CAP Specialist title Third party Total (excl. VE)		
2009/085	III. 3. b) (xx)	**Fuel cell heating system for Hamburg Waste (HSR)**	in progress	CAP Specialist title Third party Total (excl. VE)		

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2009/087	IV. 3. d) (oo)	**Climate-neutral parcel dispatch by Hamburg administration within Germany**	in progress	CAP Specialist title Third party Total (excl. VE)		
2010/019	NEW	**Climate action strategies in public companies**	in progress	CAP Specialist title Third party Total (excl. VE)		
2010/058	NEW	**Replacement of lighting systems in South Hall and North Hall (Deichtorhallen)**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM (b): 300,000 VE (b): 300,000 300,000
2010/062	NEW	**Antares DLR H2 (motor glider with fuel cell propulsion)**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 208,333 0 208,333	KM: 0 VE: 0 208,333 0 208,.333
2010/063	NEW	**Cabin technology and multifunctional fuel cell**	in progress	CAP Specialist title Third party Total (excl. VE)		
2010/064	NEW	**"Airport 2030"**	in progress	CAP Specialist title Third party Total (excl. VE)		
TOTAL INDUSTRY AND PLANT EQUIPMENT						**KM (a) 2,572,365** **KM (b) 800,000** **VE (a) 1,722,365** **VE (b) 300,000**

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
NATIONAL AND INTERNATIONAL COOPERATION SECTOR						
2007/035	X. 3. b) (cc)	**Improvement of sewage sludge disposal in seven Chinese cities**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/042	X. 3. b) (dd)	**Networking ("econet china") due to Ecobuild Shanghai**	transferred to another project	CAP Specialist title Third party Total (excl. VE)		
2007/049	X. 3. a) (ff)	**Development of climate action concept for/with metropolitan region**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/050	XI. 3. a) (dd)	**Initiative for sanctions for climate-damaging clearing of forests and illegal international timber trade**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2007/053	X. 3. b) (ff)	**Energy efficient building in big cities - signing of a Memorandum of Understanding with Chicago**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/055	X. 3. a) (bb)	**Cooperation in climate initiative of the US Clinton Foundation**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2007/106	X. 3. a) (aa)	**Climate Action Network EU Covenant of Mayors for energy efficiency**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/107	X. 3. a) (dd)	**Cooperation with Vienna and Zurich**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/108	X. 3. b) (bb)	**Cooperation with India in the framework of Clean Development Management**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2007/116	-	**EU project for increased use of shallow geothermal potential**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2007/138	X. 3. a) (cc)	**Membership of European cities network "Polis"**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/194	X. 3. b) (ee)	**Hamburg participation in EXPO 2010 in Shanghai**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/198	X. 3. b) (aa)	**Inclusion of companies from climate action and energy sectors in official international travel of Mayor**	in progress	CAP Specialist title Third party Total (excl. VE)		

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*00+000** 000000 b: Other projects (application deadline 31/08/2011)
*00+000** 000000 No indication = a

Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2007/202	-	**Network conference with European metropolitan regions (METREX)**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/203	X. 3. a) (ee)	**Lead management of EUCO2 80/50 Interreg IVC project**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 50,000 VE: 0 50,000	KM: 40,000 VE: 0 40,000
2008/013	X. 3. b) (jj)	**European Green Capital**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 1,000,000 VE: 0 1,000,000	
2008/075	X. 3. b) (mm)	**Introduction of purchasing of public transport organisations together with other European cities**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/087	X. 3. a) (ii)	**Membership of ICLEI - Local Governments for Sustainability**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/088	X. 3. a) (jj)	**Membership of Climate Alliance**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/089	X. 3. a) (gg)	**Membership of HyRAMP**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 5,000 VE: 0 5,000	KM: 5,000 VE: 0 5,000
2008/090	X. 3. a) (hh)	**Membership of Connected Urban Development Programme (CUD)**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/113	X. 3. b) (ll)	**Lead parternship in INTERREG Baltic Sea project "Climate Change & Heritage"**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/011	X. 3. b) (hh)	**Hamburg City Climate Conference 09 (16-18/11/2009)**	completed	CAP Specialist title Third party Total (excl. VE)	KM: 80,489 VE: 0 80,489	
2009/077	X. 3. b) (oo)	**Climate 2009 - International Climate Conference of Hamburg University of Applied Sciences**	completed	CAP Specialist title Third party Total (excl. VE)		
2010/008	X. 3. b) (ii)	**First Climate Youth Convention**	discontinued	CAP Specialist title Third party Total (excl. VE)		
2010/014	NEW	**Specialist events, symposia and working meetings in the framework of the European Green Capital 2011**	in progress	CAP Specialist title Third party Total (excl. VE)		

* a: Priority projects (application deadline 31/03/2011)
*00+000** 000000 b: Other projects (application deadline 31/08/2011)
*00+000** 000000 No indication = a

Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2010/026	X. 3. b) (nn)	**Translation of Climate Action Plan**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 16,666 VE: 0 16,666	KM: 20,000 VE: 0 20,000
2010/067	NEW	**Climate 2010 - International Climate Conference of Hamburg University of Applied Sciences**	completed	CAP Specialist title Third party Total (excl. VE)	KM: 20,000 VE: 0 20,000	
2010/068	NEW	**Conference "Regenerative Cities"**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 250,000 VE: 0 250,000
TOTAL NATIONAL AND INTERNATIONAL COOPERATION						**KM (a) 315,000** **KM (b) 0** **VE (a) 0** **VE (b) 0**

* a: Priority projects (application deadline 31/03/2011)
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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
CLIMATE IMPACT MANAGEMENT SECTOR						
2007/037	XI. 3. b) (dd)	**Review of scale of charges for withdrawal of cooling water**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/104	VIII. 3. c) (bb)	**Area-related species register for development of conservation of nature and biodiversity**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/105	VIII. 3. c) (aa)	**Increased consideration of requirements of biodiversity in energy-efficiency modernisation of buildings**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/112	VIII. 3. b) (dd)	**Flood protection**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/113	VIII. 3. b) (cc)	**Implement requirements of Federation for inland flood protection**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/114	VIII. 3. b) (aa)	**Surface drainage and rainwater management (RISA)**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/115	VIII. 3. b) (bb)	**Adaptions in ecology of waters**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/151	VIII. 3. c) (cc)	**Protection and development of soils in their climate function for the urban area**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 50,000 VE: 0 50,000	KM: 75,000 VE: 75,000 75.000
2007/182	II. 3. c) (dd)	**Use of knowledge from research network "Earth and Environment"**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/046	II. 3. b) (mm)	**Extreme storm floods on open coasts and estuary areas: risk determination and mastery in climate change**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/080	VIII. 3. a) (aa)	**Hamburg strategy for adaptation to climate change**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 51,900 VE: 20,000 51,900	KM: 50,000 VE: 50,000 50,000
2008/091	IV. 3. e) (cc)	**Maintenance of permanent green spaces**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/099	II. 3. a) (dd)	**Feasibility study modelling of urban climate**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 86,000 VE: 0 86,000	KM: 50,000 VE: 50,000 50,000

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2008/107	VIII. 3. b) (ff)	**Further development of ecological tidal Elbe management**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 0 900,000 900,000	KM: 0 VE: 0 0 9,000,000 9,000,000
2009/007	VIII. 3. c) (ff)	**Urban climate inventory and assessment for Hamburg landscape programme**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/065	-	**Economic stimulus programme of Federation: conversion of Geelebek retention basin on street Hagendeel East, No.33, 22529 Hamburg, incl. new building of small basin at Wehmerweg opp. No.2, 22529 Hamburg**	in progress	CAP Specialist title Third party Total (excl. VE)		
2010/020	NEW	**Low water events**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2010/021	NEW	**IBA - dike park for Wilhelmsburg - climate impact management in the framework of climate action plan Renewable Wilhelmsburg**	in progress	CAP Specialist title Third party Total (excl. VE)		KM: 70,000 VE: 80,000 70,000
2010/032	NEW	**Developmenet of climate parameters**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 40,000 VE: 0 40,000	
2010/040	NEW	**Development of overall urban strategies and measures for sustainable securing and development of natural ecology functions as a basis for combating climate change**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2010/044	NEW	**Support for conferences on climate change**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 60,000 VE: 0 60,000	KM (b): 40,000 VE (b): 100,000 40,000
2010/048	VIII. 3. c) (gg)	**Street tree monitoring in climate impact management**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 200,000 VE: 200,000 200,000
TOTEL CLIMATE IMPACT MANAGEMENT						**KM (a) 445,000** **KM (b) 40,000** **VE (a) 455,000** **VE (b) 100,000**

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
AWARENESS RAISING SECTOR						
2007/009	IX. 3. b) (aa)	**Climate action in curricula of general and vocational schools**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/010	IX. 3. b) (dd)	**Participation of Hamburg schools in programmes for implementation of quality management in focal area climate action and resource conservation**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 10,000 VE: 10,000 10,000 0 20,000	KM: 10,000 VE: 10,000 10,000 0 20,000
2007/011	IX. 3. b) (ee)	**Central climate action day for schools**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 8,500 VE: 0 10,000 8,000 26,500	KM: 8,500 VE: 8,500 10,000 8,000 26,500
2007/012	IX. 3. b) (hh)	**Institute of Weather and Climate Communication - "Schools observe climate"**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 42,667 VE: 88,500 42,667	KM: 88,500 VE: 0 88,500
2007/013	IX. 3. c) (dd)	**Programmes of vocational education and further training**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/014	IX. 3. b) (ff)	**Courses on climate action for school classes**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 15,000 VE: 0 15,000	KM: 15,000 VE: 15,000 15,000
2007/015	IX. 3. d) (ff)	**Contractors and energy efficiency – more intensive education and training for Hamburg's skilled trades**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 100,000 VE: 100,000 100,000	
2007/016	IX. 3. d) (gg)	**Training module "Climate action advice for estate agents"**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/017	IX. 3. d) (ii)	**Centre for "Forward looking building"**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/025	IV. 3. d) (bb)	**Success project fifty/fifty at schools**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/029	IX. 3. c) (aa)	**Climate action in the "Hamburg educational recommendations for education and schooling of children at day centres" (education recommendations)**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/030	IX. 3. c) (bb)	**Specialist school project Climate action for kids**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 14,000 VE: 0 14,000	
2007/031	-	**Development of guidelines for sustainable, climate-effective building**	completed	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 20,000 0 20,000	

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2007/045	IX. 3. a) (aa)	**Communication concept**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/046	IX. 3. a) (bb)	**Competition "Sustainable (environment friendly) households in Hamburg"**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/047	IX. 3. a) (cc)	**Internet portal on climate change**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/056	IX. 3. b) (gg)	**Germanwatch - climate expedition in Hamburg schools**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/057	IX. 3. c) (ee)	**UN Decade Education for Sustainable Development 2005 to 2014**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/058	IX. 3. c) (ff)	**Climate action as a task for out-of-school environmental education**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 20,000 VE: 45,000 20,000	KM: 20,000 VE: 45,000 20,000
2007/059	IX. 3. c) (gg)	**Environment themepark Karlshöhe (UPK) – Educational centre for climate action in everyday life**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/060	IX. 3. c) (hh)	**Expansion of posts in the framework of the Voluntary Ecological Year**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 60,000 VE: 0 60,000	KM: 61,000 VE: 3,000 61,000
2007/080	IX. 3. d) (aa)	**First contact in energy consulting for private households ("Climate Action Pilots" of the Consumer Centre)**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 213,675 VE: 426,600 213,675	KM: 213,300 VE: 213,300 213,300
2007/081	IX. 3. d) (bb)	**Consulting and training measures - Use of renewable energies in existing buildings and new buildings**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 150,000 0 150,000	KM: 0 VE: 0 170,000 0 170,000
2007/082	IX. 3. d) (dd)	**Training for architects and skilled trades - IMPULS programme**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 20,000 0 20,000	KM: 0 VE: 0 25,000 0 25,000
2007/083	IX. 3. d) (ee)	**ELBCAMPUS – Future circles for skilled trades**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 200,000 VE: 201,000 200,000	KM: 201,000 VE: 0 201,000
2007/099	IX. 3. d) (cc)	**Extension of Hamburg Energy Performance Certificate**	in progress	CAP Specialist title Third party Total (excl. VE)		KM: 100,000 VE: 100,000 100,000

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*00+000** 000000 No indication = a

Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2007/118	IX. 3. d) (hh)	**Internet based consulting tool for skilled trades for geothermal potential in Hamburg**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/155	IX. 3. a) (ff)	**Pilot project "From the region – for the region"**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 75,000 VE: 60,000 20,000 0 95,000	KM (a): 147,000 KM (b): 250,000 VE (b): 370,000 30,000 0 427,000
2007/156	IV. 3. e) (bb)	**Afforestation as CO_2 sink**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 25,000 VE: 0 25,000	
2007/184	IV. 3. d) (aa)	**Extend contract award legislation: "Environment friendly purchasing"**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/185	IV. 3. d) (hh)	**Efficient use of paper**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/186	-	**Electricity efficiency in information and communication sector**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/191	IX. 3. a) (dd)	**Hamburg Planetarium – Climate change information and education centre**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 315,000 VE: 0 315,000	KM: 95,000 VE: 45,000 95,000
2007/201	IV. 3. d) (jj)	**Driver training for energy-efficient, environment-friendly driving**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/218	-	**Programmes for climate action at pre-schools**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/219	IX. 3. b) (cc)	**Teaching materials and supporting programmes for climate action**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/020	IX. 3. d) (kk)	**Adjustments in education and training in renewable energies**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/043	III. 3. a) (kk)	**Etablishment of an Energy Agency**	completed	CAP Specialist title Third party Total (excl. VE)		
2008/045	-	**Revision of concept of Karlshöhe Environment Centre**	in progress	CAP Specialist title Third party Total (excl. VE)		

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2008/063	IX. 3. d) (ll)	**Climate action advice for households of Turkish origin in Hamburg Altona**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 18,450 0 18,450	KM: 52,000 VE: 0 18,450 0 70,450
2008/071	IV. 3. b) (jj)	**Cooperation in climate action between the Senate and the North-Elbe Churches**	in progress	CAP Specialist title Third party Total (excl. VE)		
2008/082	IX. 3. b) (bb)	**Climate action at Hamburg schools (supporting schools in preparation of a climate action plan)**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 240,000 VE: 50,000 0 0 240,000	KM (a): 190,000 KM (b): 50,000 VE: 50,000 240,000
2008/096	IX. 3. a) (hh)	**Examination of transfer of Fifty/Fifty model to recipients of unemployment benefits and social benefits**	completed	CAP Specialist title Third party Total (excl. VE)		
2009/019	IV. 3. b) (fff)	**Economic stimulus programme of Federation: schools as climate action entrepreneurs**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 500,000 0 500,000	
2009/021	IX. 3. c) (ii)	**Environment and watersports centre Neuländer See - innovative combination of nature conservation, environmental education and watersports**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/022	IV. 3. d) (ee)	**Green ICT - energy consumption in administration**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/028	II. 3. a) (ee)	**Exhibition "Urban Climate - facts we need to know" in the framework of the European Green Capital**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 104,850 VE: 0 104,850	KM: 60,000 VE: 0 60,000
2009/031	IX. 3. d) (mm)	**Sustainability guide Logistics**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/042	IV. 3. b) (ppp)	**Energy performance certificate for all public authority owned facilities of district council Hamburg-Nord (youth leisure centres)**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/045	IX. 3. c) (jj)	**Support for educational measures for children and young people**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/050	IV. 3. d) (ll)	**Conduct of Eco-profit for Eimsbüttel district office**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/055	IX. 3. c) (kk)	**Preparation of a concept for educational work on "Climate Action" in the Eimsbüttel district council office**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 10,000 VE: 0 10,000	

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2009/056	IX. 3. c) (kk)	**Expert report on concept for educational work on "Climate action" in the Eimsbüttel district**	transferred to another project	CAP Specialist title Third party Total (excl. VE)		
2009/062	IV. 3. d) (kk)	**Training and further education meaures for climate action in district council office Hamburg-Nord**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/063	IV. 3. d) (cc)	**fifty/fifty junior**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 16,000 VE: 40,000 9,813 25,813	KM: 65,000 VE: 65,000 65,000
2009/064	IX. 3. a) (cc)	**Improvement of Climate Portal www.klima.hamburg.de**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/070	IX. 3. c) (ll)	**Hamburg environmental counselling communicates sustainability**	in progress	CAP Specialist title Third party Total (excl. VE)		
2009/073	IX. 3. a) (ii)	**Study on "Sustainable Hamburg"**	completed	CAP Specialist title Third party Total (excl. VE)		
2009/079	IX. 3. a) (jj)	**Solar ship at Port Festival ("Hafengeburtstag")**	completed	CAP Specialist title Third party Total (excl. VE)	KM: 45,000 VE: 0 0 35,000 80,000	
2009/080	IX. 3. a) (gg)	**Promotion of climate-friendly food, especially at restaurants**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/081	IV. 3. d) (pp)	**Climate neutral conduct of large-scale events**	in progress	CAP Specialist title Third party Total (excl. VE)		
2010/005	III. 3. b) (bbb)	**Micro wind turbines**	transferred to another project	CAP Specialist title Third party Total (excl. VE)		
2010/029	NEW	**Hamburg Climate Week**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 50,000 VE: 0 50,000	KM: 100,000 VE (b): 100,000 100,000
2010/043	NEW	**Wind turbine at grammar school Gymnasium Allee**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 0 33,000 33,000	KM: 13,100 VE: 0 33,000 0 46,100
2010/046	NEW	**Harburg Climate Action Portal and Project Harburg 21**	in progress	CAP Specialist title Third party Total (excl. VE)		KM: 50,000 VE: 50,000 50,000

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2010/049	NEW	**"RUK" - Ressources, Environment, Climate action Establishment of a climate action network at vocational training schools**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 150,000 VE: 0 150,000
2010/050	NEW	**H_2Expo - International Conference and Exhibition on Hydrogen, Fuel Cells and Electric Drives**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 50,000 VE: 0 0 237,783 287,783
2010/054	NEW	**Building and operation of small wind turbines on Georgswerder waste tip, with scientific monitoring**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 50,000 VE: 50,000 50,000
2010/071	NEW	**Flight emissions offset with regional component**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 40,000 VE: 0 0 20,000 60,000	
2010/072	NEW	**Sustainable, climate-friendly food**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 180,000 VE: 0 180,000
2010/074	NEW	**"Hamburg learns action - justice in climate change" - educational work and networking on climate action and global justice via Information Centre for Climate Justice (IKG) in schools, church communities and at public meetings**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM (b): 49,387 VE: 0 49,387
TOTAL AWARENESS RAISING						**KM (a) 1,919,400** **KM (b) 349,387** **VE (a) 654,800** **VE (b) 470,000**

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
RESEARCH SECTOR						
2007/098	III. 3. b) (nn)	**Building of demonstration system for production of micro-algae and coupling with CO_2 elimination from flue gas for CO_2 reduction**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/111	III. 3. c) (aa)	**Study for recording of potentially suitable deep geological formations for carbon storage in the Hamburg area**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/168	II. 3. b) (ee)	**Model project for environment friendly air conditioning system (Hamburg University of Technology)**	in progress	CAP Specialist title Third party Total (excl. VE)		KM: 200,000 VE: 200,000 200,000
2007/169	II. 3. a) (aa)	**Further development of German Climate Computing Centre (DKRZ)**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/170	II. 3. a) (bb)	**Excellence application for interdisciplinary climate research project "Integrated Climate System Analysis and Prediction" (CliSAP)**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 1,653,400 0 1,653,400	KM: 0 VE: 0 1,653,400 0 1,653,400
2007/171	II. 3. b) (kk)	**Centre for Climate Impact Engineering and Climate Impact Management (KLIFF)**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 75,000 VE: 0 75,000	KM: 80,000 VE: 80,000 80,000
2007/172	II. 3. b) (aa)	**Establishment of new key research area "Climate friendly energy and environmental engineering" at Hamburg University of Technology**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/173	II. 3. b) (gg)	**Establishment of a new key research area "Energy Independence Technology" at the Hamburg University of Applied Sciences**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 150,000 VE: 0 0 589,155 739,155	KM: 0 VE: 0 567,000 0 567,000
2007/174	II. 3. b) (cc)	**Masters programme "Environmental Engineering" at HafenCity University Hamburg - University for architecture and city development**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/175	II. 3. b) (bb)	**Establishment of key research area "Resource efficiency in architecture and planning" at HafenCity University Hamburg - University for architecture and city development**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/176	II. 3. b) (dd)	**Research project "Microbial methane oxidation in landfill cover strata – MiMethox" (Hamburg University and Hamburg University of Technology)**	in progress	CAP Specialist title Third party Total (excl. VE)		
2007/177	II. 3. b) (ll)	**"KLIMZUG-NORD": strategic adaptation approaches to climate change in North Germany**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 71,892 0 71,892	KM: 0 VE: 0 64,048 0 64,048

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Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2007/178	-	**Combined project for area management and disaster management of flood-risk areas (Hamburg University of Technology)**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/179	II. 3. b) (nn)	**Research project on impact of climate change on cancer diseases (University Hospital Hamburg-Eppendorf - UKE)**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2007/180	II. 3. c) (aa)	**North German Climate Office**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/181	II. 3. c) (bb)	**Hamburg scientists in German Climate Consortium**	completed	CAP Specialist title Third party Total (excl. VE)		
2007/209	II. 3. a) (cc)	**Preparation of "Climate Change Assessment Reports" for North Germany**	completed	CAP Specialist title Third party Total (excl. VE)		
2008/014	II. 3. d) (bb)	**Application for large-scale research facility (e.g. a Fraunhofer Institute) for energy or resource efficiency**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/015	II. 3. d) (cc)	**Examination: benefits of spatial concentration of research focus point "Renewable Energies"**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/016	II. 3. b) (jj)	**Support for establishment of an internationally oriented inter-university post-graduate college in the "Energy" sector, in the framework of the Excellence Initiative**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 300,000 0 300,000	
2008/017	II. 3. b) (ff)	**Support for application of HafenCity University Hamburg - University of architecture and city development, for a Leibniz Institute dedicated to ecological building**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/019	-	**Examination: closure of Institute of Waste Management, with retention of the skills available there**	completed	CAP Specialist title Third party Total (excl. VE)		
2008/044	II. 3. b) (hh)	**Establishment of a Competence Centre for Renewable Energies and Energy Efficiency – CC4E of the Hamburg University of Applied Sciences**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 150,000 VE: 0 0 384,000 534,000	KM: 100,000 VE: 0 0 223,800 323,800
2008/092	IV. 3. b) (uu)	**Installation of a photovoltaic system on the roof of the Hamburg University of Applied Sciences in Hamburg-Bergedorf**	completed	CAP Specialist title Third party Total (excl. VE)		
2008/100	II. 3. c) (cc)	**Climate Service Center (CSC) in Hamburg**	in progress	CAP Specialist title Third party Total (excl. VE)		

* a: Priority projects (application deadline 31/03/2011)
*00+000** 000000 b: Other projects (application deadline 31/08/2011)
*00+000** 000000 No indication = a

Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
2009/012	II. 3. d) (aa)	**Establishment of a funding area "Climate Action" at Science Foundation**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2009/083	II. 3. b) (ii)	**Fuel Cell Lab - establishment of a centre for applied aviation research with integrated laboratory for applied fuel cell research**	in preparation	CAP Specialist title Third party Total (excl. VE)	KM: 0 VE: 0 3,700,000 0 3,700,000	
2010/002	II. 3. d) (dd)	**Examination: more intensive efforts to gain third-party funding in applied sciences**	in progress	CAP Specialist title Third party Total (excl. VE)		
2010/051	NEW	**E-Harbours smart power load management for Port of Hamburg (participation in INTERREG project)**	in preparation	CAP Specialist title Third party Total (excl. VE)		KM: 0 VE: 0 0 187,000 187,000
2010/055	NEW	**German Climate Computing Centre (DKRZ) - Increase in energy efficiency in high-power computing centre**	in progress	CAP Specialist title Third party Total (excl. VE)		KM: 120,000 VE: 80,000 120,000
TOTAL RESEARCH						**KM (a) 500,000** **KM (b) 0** **VE (a) 360,000** **VE (b) 0**

* a: Priority projects (application deadline 31/03/2011)
*00+000** 000000 b: Other projects (application deadline 31/08/2011)
*00+000** 000000 No indication = a

Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *
EVALUATION AND MONITORING SECTOR						
2007/199	IV. 3. d) (qq)	**Show climate action impact on lead page of all documents**	completed	CAP Specialist title Third party Total (excl. VE)		
2008/018	II. 3. d) (ee)	**New appointment of Climate Advisory Board with the goal of reinforcing presence of representatives from scientific bodies**	in preparation	CAP Specialist title Third party Total (excl. VE)		
2008/026	-	**Specification of target for 40% reduction of CO_2 emissions by 2020**	transferred to another project	CAP Specialist title Third party Total (excl. VE)		
2009/001	IV. 3. f) (aa)	**Climate Action Masterplan**	in progress	CAP Specialist title Third party Total (excl. VE)		
2010/001	-	**CO_2 monitoring and evaluation of Hamburg Climate Action Plan**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 75,000 VE: 0 75,000	KM (a): 165,000 KM (b): 85,000 VE: 100,000 250,000
2010/022	IV. 3. f) (bb)	**Human resources cost fund incl. computer workplace allowance**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 1,044,477 VE: 0 1,044,477	KM: 1,375,000 VE: 0 1,375,000
2010/023	IV. 3. f) (ee)	**Further development of climate action software: update of eBIS Climate**	in progress	CAP Specialist title Third party Total (excl. VE)		KM: 60,000 VE: 0 60,000
2010/024	IV. 3. f) (dd)	**Expert report by Wuppertal Institute on monitoring and evaluation concept for the Hamburg Climate Action Plan**	completed	CAP Specialist title Third party Total (excl. VE)		
2010/025	IV. 3. f) (cc)	**Cost of Coordination Centre for Climate Issues**	in progress	CAP Specialist title Third party Total (excl. VE)	KM: 45,000 VE: 0 45,000	KM: 60,000 VE: 0 60,000
TOTAL EVALUATION AND MONITORING						**KM (a) 1,660,000** **KM (b) 85,000** **VE (a) 160,000** **VE (b) 0**
TOTAL OF ALL SECTORS						**KM (a) 23,488,640** **KM (b) 7,833,523** **VE (a) 11,282,165** **VE (b) 3,170,000**

* a: Priority projects (application deadline 31/03/2011)
*00+000** 000000 b: Other projects (application deadline 31/08/2011)
*00+000** 000000 No indication = a

Project no.	doc. 19/4906	Title of measure	Status	Funding sources	2010	2011 *

Status	Explanations
in preparation	A project is in preparation for the whole of the period before implementation. That includes both the preliminary examination and planning with specification of concept details.
in progress	A project is in progress as soon as the preparatory phase has been completed. This is the implementation of the previous planning .
completed	A project is completed when it has been implemented.
discontinued	A project is discontinued if, for example, preliminary examination showed that it is not appropriate to continue the project. That may occur for example if the underlying circumstances have changed, so that it would not be useful to continue the project, or if it is not possible to allocate sufficient resources to implement the project.
transferred to another project	A project is transferred to another project for example if there is reduplication of projects. The project is continued in the framework of another project. The idea is retained, but there may be a change in the organisational set-up (responsibilities, project title, etc.).

* a: Priority projects (application deadline 31/03/2011)
*00+000** 000000 b: Other projects (application deadline 31/08/2011)
*00+000** 000000 No indication = a

Annex 2 – Projects Funded

Climate Action in Hamburg

Update 2010/2011

Overview of main expenditure areas by fund allocation 2010 and planned fund allocation 2011 for Hamburg Climate Action Plan 2007-2012

B02 BSU -Annex 2- List of projects funded

Fund allocation 2010

Energy	3,282,493
Renewable Energies competence cluster	**499,000**
Large-area thin-film photovoltaic systems on industrial hall roofs	**86,000**
Promotion of use of biofuels	**200,000**
"Solar thermal energy and heating" funding programme in the framework of the "Jobs and climate action" initiative	**500,000**
Heat supply concept for Hamburg – costs and consequences of public ownership of energy grids	**400,000**
CHP initiative: implementation of a programme for increase in Combined Heat and Power systems (CHP) with Hamburg companies in the manufacturing, services and housing areas (continuation of funding programme)	**350,000**
Provision of city-owned real estate for CHP	**200,000**
IBA energy group New Centre Wilhelmsburg	**100,000**
IBA Climate Action concept Renewable Wilhelmsburg	**200,000**
IBA model project Deep Geothermal Energy	**600,000**
New housing in Neugraben-Fischbek/ former Röttiger Barracks	**17,493**
Solar Potential Analysis 150,000 roofs	**130,000**

Forecast fund allocation 2011

Energy	A-Tranche	B-Tranche
	4,520,000	**0**
Renewable energy systems (esp. photovoltaic systems) on schools "Climate action on schools"	**100,000**	
IBA - Renewable energy in the framework of IBA "Wilhelmsburg Energy Bunker"	**500,000**	
Promotion of use of biofuels	**200,000**	
"Solar thermal energy and heating" funding programme in the framework of the "Jobs and climate action" initiative	**1,000,000**	
CHP initiative: implementation of a programme for increase in Combined Heat and Power systems (CHP) with Hamburg companies in the manufacturing, services and housing areas (continuation of funding programme)	**500,000**	
IBA energy group New Centre Wilhelmsburg	**200,000**	
IBA Climate Action concept Renewable Wilhelmsburg	**210,000**	
IBA – New Hamburger Terrassen, heating network	**90,000**	
Implementation of projects in the framework of Renewable Energies cluster Hamburg	**300,000**	
Energy-efficient lighting concept for subways and tunnels of the 60s and 70s in Harburg city centre	**20,000**	
Solar Potential Analysis II	**250,000**	
Energy Campus	**150,000**	
Heating supply for St. Katharine's Church (NEK)	**600,000**	
Load management in public buildings with smart meters	**400,000**	

B02 BSU -Annex 2- List of projects funded

Fund allocation 2010

Buildings	6,727,294
Energy savings potentials for heritage buildings; here: single-shell brickwork	**44,988**
Energy savings potentials for heritage buildings; here: double-shell brickwork	**131,128**
Energy efficiency modernisation of public buildings – building envelope modernisation (police and fire stations)	**1,200,000**
Climate action programme: “Thermal insulation in existing buildings” in the framework of “Jobs and climate action” initiative	**1,000,000**
Energy efficiency modernisation of rented housing (WK) and new building programme of WK	**3,000,000**
IBA – urban building projects (housing, industrial, district centres) in the districts – Climate Houses Haulander Weg	**40,000**
IBA – urban building projects (housing, industrial, district centres) in the districts – Open House – Vogelhüttendeich	**420,000**
IBA – Schlossinsel/Harburger Binnenhafen – sub-project Veritaskai	**200,000**
IBA – Experimental housing in Stadtpark Wilhelmsburg	**230,000**
IBA – Neue Hamburger Terrassen, phase 1	**50,000**
Energy recording and optimisation of official buildings (District council office Eimsbüttel)	**35,000**
IBA – Harburger Schlossinsel – Living on the Schlossinsel (phase 2)	**190,000**
City-wide examination of buildings	**150,000**
Measurements on building project Schlettstadter Strasse	**36,178**

Forecast fund allocation 2011

Buildings	A-Tranche	B-Tranche
	7,570,000	**5,284,136**
Education centre “Gateway to the World” (IBA)	**1,000,000**	
Energy efficiency modernisation of public buildings – building envelope modernisation (police and fire stations)	**1,500,000**	**4,284,136**
Climate action programme: “Thermal insulation in existing buildings” in the framework of "Jobs and climate action” initiative	**1,000,000**	
Energy efficiency modernisation of rented housing (WK) and new building programme of WK	**2,000,000**	**1,000,000**
IBA – urban building projects (housing, industrial, district centres) in the districts – Climate Houses Haulander Weg	**60,000**	
Identification and establishment of climate model districts	**200,000**	
IBA – Schlossinsel/Harburger Binnenhafen – sub-project Veritaskai	**310,000**	
IBA – Experimental housing in Stadtpark Wilhelmsburg	**130,000**	
IBA – Neue Hamburger Terrassen, phase 1	**70,000**	
IBA – Harburger Schlossinsel – Living on the Schlossinsel (phase 2)	**320,000**	
Pilot projects for promotion of energy-efficient non-residential buildings	**500,000**	
Energy efficiency modernisation of buildings – analysis of portfolio of buildings used by City of Hamburg	**80,000**	
Development of a funding programme for urban design and climate action (brick-built fund) and implementation of demonstration projects	**400,000**	

B02 BSU -Annex 2- List of projects funded

Fund allocation 2010

Mobility	3,139,734
Expansion of Bike&Ride facilities	**175,000**
CarSharing	**40,000**
Car-free Sundays; compensation of revenue shortfall HVV and additional transport provision, and certain traffic routing activities and PR work	**375,000**
Climate action at Hamburg Airport	**20,000**
Development of programmes for innovative propulsion systems in automotive transport (including electric vehicles)	**197,250**
Implementation of cycling strategy of Cycling Forum	**2,300,000**
Eco-taxis for Hamburg: award of environment label or climate label	**22,484**
Implementation of existing feasibility studies for improvement of cycle routing in selected streets	
Workshop “Energy efficiency measures for shipping”	**10,000**

Industry and plant technology	2,356,554
National Innovation Programme for hydrogen and fuel cell technology (NIP); here: infrastructure for fuel cell propulsion systems	**115,000**
Increase in scope of climate action programmes by active involvement of companies not previously participating, through business institutions; here: HK-Mobil project	**125,484**
Increase in scope of climate action programmes by active involvement of companies not previously participating, through business institutions; here: ZEWU-Mobil project	**86,070**
Expansion of programme “Companies for resource conservation” (UfR)	**1,500,000**
Funding programme for climate action in product development and technological innovations in energy generating and conversion	**500,000**
Consolidation measures at computing center of HPA (“Green IT”)	**30,000**

Forecast fund allocation 2011

Mobility	A-Tranche	B-Tranche
	3,986,875	1,275,000
Increasing appeal of walking for pedestrians	**200,000**	
Expansion of Bike&Ride facilities	**246,875**	
Car-free Sundays; compensation of revenue shortfall HVV and additional transport provision, and certain traffic routing activities and PR work	**500,000**	
Examination of reduction of pollutant emissions from ships in port – climate-neutral power supply	**60,000**	
Climate action at Hamburg Airport		**75,000**
Development of programmes for innovative propulsion systems in automotive transport (including electric vehicles)	**200,000**	
Implementation of cycling strategy of Cycling Forum	**2,000,000**	**1,000,000**
Coordinated green traffic lights for cyclists	**400,000**	**200,000**
Implementation of existing feasibility studies for improvement of cycle routing in selected streets	**310,000**	
Electric vehicles – pilot project for introduction of E-Smart ED	**70,000**	

Industry and plant technology	A-Tranche	B-Tranche
	2,572,365	800,000
Integration of climate action in retail concepts	**100,000**	
Increase in scope of climate action programmes by active involvement of companies not previously participating, through business institutions; here: HK-Mobil project	**132,365**	
Increase in scope of climate action programmes by active involvement of companies not previously participating, through business institutions; here: ZEWU-Mobil project	**90,000**	
Expansion of programme “Companies for resource conservation” (UfR)	**1,500,000**	**500,000**
Funding programme for climate action in product development and technological innovations in energy generating and conversion	**750,000**	
Replacement of lighting systems in South Hall and North Hall (Deichtorhallen)		**300,000**

B02 BSU -Annex 2- List of projects funded

Fund allocation 2010

National and international cooperation	1,172,155
Lead management in EUCO2 80/50 Interreg IVC project	50,000
European Green Capital	1,000,000
Membership of HyRAMP	5,000
Hamburg City Climate Conference	80,489
Translation of Climate Action Plan	16,666
Climate 2010 – International Climate Conference of Hamburg University of Applied Sciences	20,000

Climate impact management	287,900
Protection and development of soils in their climate function for the urban area	50,000
Hamburg strategy for adaptation to climate change	51,900
Feasibility study, modelling of urban climate	86,000
IBA – dike park for Wilhelmsburg – Climate impact management in the framework of the Renewable Wilhelmsburg climate action concept	40,000
Support for conferences on Climate Change	60,000

Forecast fund allocation 2011

National and international cooperation	A-Tranche	B-Tranche
	315,000	0
Lead management in EUCO2 80/50 Interreg IVC project	40,000	
Membership of HyRAMP	5,000	
Translation of Climate Action Plan	20,000	
Conference “Regenerative Cities”	250,000	

Climate impact management	A-Tranche	B-Tranche
	445,000	40,000
Protection and development of soils in their climate function for the urban area	75,000	
Hamburg strategy for adaptation to climate change	50,000	
Feasibility study, modelling of urban climate	50,000	
IBA – dike park for Wilhelmsburg – Climate impact management in the framework of the Renewable Wilhelmsburg climate action concept	70,000	
Support for conferences on Climate Change		40,000
Street tree monitoring in climate impact management	200,000	

B02 BSU -Annex 2- List of projects funded

Fund allocation 2010

Awareness raising, consulting and training	1,604,692
Participation of Hamburg schools in programmes for implementation of quality management for focal action point “Climate and resource conservation”	**10,000**
Central Climate Action day for schools	**8,500**
Institute for weather and climate communication “Schools observing climate”	**42,667**
Courses on climate action for school classes	**15,000**
Skilled trades and energy efficiency – more intensive training and further education for Hamburg contractors	**100,000**
“Climate action for kids” – programme for energy saving in pre-schools	**14,000**
Climate action as a task for out-of-school environmental education	**20,000**
Expansion of positions in the framework of the Voluntary Ecological Year	**60,000**
First contact in energy consulting for private households (“Climate Action Pilot” by Consumer Centre)	**213,675**
ELBCAMPUS – Future groups for skilled trades	**200,000**
Pilot project “From the region – for the Region”	**75,000**
Afforestation as CO_2 sink	**25,000**
Planetarium Hamburg – Climate Change Information Centre	**315,000**
Climate action at Hamburg schools (support to schools in preparation of climate action plan)	**240,000**
Exhibition “Urban Climate – Facts we need to know”	**104,850**
Preparation of a concept for educational work on Climate Action in Eimsbüttel district	**10,000**
fifty/fifty-junior	**16,000**
Solar ship on Alster for Port Festival (Hafengeburtstag)	**45,000**
Hamburg Climate Week	**50,000**
Flight offset with regional components	**40,000**

Forecast fund allocation 2011

Awareness raising, consulting and training	A-Tranche	B-Tranche
	1,919,400	**349,387**
Participation of Hamburg schools in programmes for implementation of quality management for focal action point “Climate and resource conservation”	**10,000**	
Central Climate Action day for schools	**8,500**	
Institute for weather and climate communication “Schools observing climate”	**88,500**	
Courses on climate action for school classes	**15,000**	
Climate action as a task for out-of-school environmental education	**20,000**	
Expansion of positions in the framework of the Voluntary Ecological Year	**61,000**	
First contact in energy consulting for private households (“Climate Action Pilot” by Consumer Centre)	**213,300**	
ELBCAMPUS – Future groups for skilled trades	**201,000**	
Expansion of Hamburg Energy Performance Certificate	**100,000**	
Pilot project “From the region – for the Region”	**147,000**	**250,000**
Planetarium Hamburg – Climate Change Information Centre	**95,000**	
Climate action consulting for households of Turkish origin in Hamburg Altona	**52,000**	
Climate action at Hamburg schools (support to schools in preparation of climate action plan)	**190,000**	**50,000**
Exhibition “Urban Climate – Facts we need to know”	**60,000**	
fifty/fifty-junior	**65,000**	
Hamburg Climate Week	**100,000**	
Wind turbine at school Gymnasium Allee	**13,100**	
Harburg Climate Action Portal and project Harburg 21	**50,000**	
“RUK” – Action for Resources, Environment and Climate – Establishment of a climate action network at vocational training schools	**150,000**	
H_2Expo - International Conference and Exhibition on Hydrogen, Fuel Cells and Electric Drives	**50,000**	
Building and operation of small wind turbines on Georgswerder waste tip, with scientific monitoring	**50,000**	
Sustainable, climate-friendly food	**180,000**	
“Hamburg learns action – justice in climate change” – educational work and networking on climate action and global justice via Information Centre for Climate Justice (IKG) in schools, church communities and at public meetings		**49,387**

B02 BSU -Annex 2- List of projects funded

Fund allocation 2010

Research	375,000
Centre for Climate Impact Research – KLIFF (Hamburg University of Technology)	75,000
Establishment of new research focal area "Energy Independence Technology" at University of Applied Sciences	150,000
Establishment of a Competence Centre for Renewable Energies and Energy Efficiency – CC4E (University of Applied Sciences)	150,000

Evaluation and monitoring	1,164,477
CO_2 monitoring and evaluation of Hamburg Climate Action Plan	75,000
Human resources cost fund incl. computer workplace allowance (annual cost minus months of unfilled positions, plus computer workplace allowance)	1,044,477
Costs of Coordination Centre for Climate Issues	45,000

Forecast fund allocation 2011

Research	A-Tranche	B-Tranche
	500,000	0
Model project for environment friendly air conditioning system (Hamburg University of Technology)	200,000	
Centre for Climate Impact Research – KLIFF (Hamburg University of Technology)	80,000	
Establishment of a Competence Centre for Renewable Energies and Energy Efficiency – CC4E (University of Applied Sciences)	100,000	
German Climate Computing Centre (DKRZ) – increase in energy efficiency of high-performance computer centre	120,000	

Evaluation and monitoring	A-Tranche	B-Tranche
	1,660,000	85,000
CO_2 monitoring and evaluation of Hamburg Climate Action Plan	165,000	85,000
Human resources cost fund incl. computer workplace allowance (annual cost minus months of unfilled positions, plus computer workplace allowance)	1,375,000	
Further development of climate action software	60,000	
Costs of Coordination Centre for Climate Issues	60,000	

Annex 3 – CO_2 Monitoring

Climate Action in Hamburg

Update 2010/2011

Interim status CO_2 monitoring
for Hamburg Climate Action Plan 2007-2012

CO_2 monitoring of Hamburg Climate Action Plan
Interim status 25/11/2010

Note: the data shown here give the interim status of CO_2 monitoring of the Hamburg Climate Action Plan, status 25 November 2010.
The data may change for individual activities if and when improved data are obtained, re-calculation can be made on the basis of improved data, or data can be acquired for measures which give emission reduction effect only from 2011 onwards.

Project no.	Title	Measured or calculated CO_2 reduction in tonnes						Procedure of expert team	Data quality
		2007	2008	2009	2010	2011	2012		
Activities with measured or calculated emission reduction									
2007/006	Urban building project Oberaltenallee (Southern part)	0	0	0	0	79	79	C	3
2007/018	Project “No school over 200”	0	0	684	1,300	2,000	2,700	C	2
2007/019	Renewable energy systems on schools – “Climate action at school”	0	2	15	30	45	60	C	2
2007/025	Success project fifty/fifty at schools	0	7,400	8,380	8,860	11,260	12,460	A	1/3 (2010ff.)
2007/028	Energy efficiency modernisation of public buildings – building envelope refurbishment (police and fire stations)	0	0	151	220	266	266	B	1
2007/070	“Companies for resource conservation” – extension of programme (funding programme)	32,294	61,612	93,466	117,119	148,000	175,000	A	1

Project no.	Title	Measured or calculated CO_2 reduction in tonnes						Procedure of expert team	Data quality
		2007	2008	2009	2010	2011	2012		
2007/086	Large-area thin-film photovoltaic systems on industrial hall roofs (funding programme)	0	427	947	1,282	1,282	1,282	B	1
2007/088	Renewable energy at IBA – “Wilhelmsburg biogas project”	0	0	0	0	0	974	B	2
2007/089	Renewable energy at IBA – “Renewable Energy Hill Georgswerder” (IBA)	0	0	0	287	574	6,077	B	2
2007/090	Economic stimulus programme of Federation: Renewable Energy in the framework of BA – “Wilhelmsburg Energy Bunker” (IBA)	0	0	0	0	0	500	B	2
2007/092	Promotion of the use of biofuels (funding programme)	888	2,942	3,701	4,600	5,200	5,800	A	1
2007/093	Wood-fired heating plant SAGA/GWG	0	0	11,669	16,670	16,670	16,670	B	1
2007/095	Climate action programme “Thermal insulation in existing buildings” in the framework of the “Jobs and climate action” initiative (funding programme)	4,542	11,698	20,214	25,380	33,380	41,380	B	1/3 (2010ff.)
2007/100	Climate action programme “Solar thermal energy and heating” in the framework of the “Jobs and climate action” initiative	896	6,377	10,297	13,395	17,395	21,395	B	1
2007/117	Optimisation of waste management in Hamburg (recycling initiative)	0	0	0	0	1,813	7,251	C	2
2007/119	Development of diesel hybrid buses of HVV (Hamburg Transport) or comparable systems ready for series production (NIP)	0	0	0	128	146	534	B	1

Project no.	Title	Measured or calculated CO_2 reduction in tonnes						Procedure of expert team	Data quality
		2007	2008	2009	2010	2011	2012		
2007/127	Expansion of Bike&Ride facilities	0	0	0	0	244	244	C	3
2007/130	Expansion of traffic flow control on motorways in Hamburg	0	0	0	0	700	700	C	3
2007/131	CarSharing	0	0	0	540	540	540	C	3
2007/134	Creation of new roundabouts	0	400	400	400	400	400	C	3
2007/135	Energy-efficiency optimisation of traffic light systems		0	0	1,684	1,684	1,684	B	1
2007/136	Optimisation of street lighting and replacement of illuminated road signs		283	519	525	525	525	B	1
2007/140	New housing programme of Hamburgische Wohnungsbaukreditanstalt (funding programme)	1,354	2,536	5,679	7,075	8,471	9,867	B	1/3 (2010ff.)
2007/142	Energy-efficiency modernisation of rented housing (funding programme)	0	11,864	30,004	37,504	49,504	61,504	B	1/3 (2010ff.)
2007/158	Electricity purchase of municipal facilities: increase to 100% renewable energy sources	0	132,398	132,360	132,360	0	0	A	1
2007/159	Energy-efficiency modernisation of public buildings – modernisation of building equipment			450	1,163	1,425	1,425	A	1/3 (2010ff.)

Project no.	Title	Measured or calculated CO_2 reduction in tonnes						Procedure of expert team	Data quality
		2007	2008	2009	2010	2011	2012		
2007/160	Energy saving in buildings with high base load demand	0	42	76	150	193	193	A	1
2007/161	Solar water heating	0	0	36	72	72	72	A	2
2007/192	Roof refurbishment of Kampnagel Performing Arts Centre	0	0	0	301	301	301	A	1
2007/193	Photovoltaic system on Kampnagel Performing Arts Centre	0	0	46	46	46	46	A	1
2007/195	Energy optimisation for Köhlbrandhöft/Dradenau sewage treatment group	8	0	119	1,362	1,362	1,362	B	2
2007/196	Conversion of ventilation system at Dradenau sewage treatment facility	0	0	1,536	1,536	1,536	1,536	B	2
2007/201	Driver training for energy-efficient, environment friendly driving	0	0	4,205	2,000	2,000	2,000	C	3
2007/211	IBA – urban building projcts (housing, industry, district centres) in the districts – Open House – Vogelhüttendeich	0	0	0	0	110	110	A	2
2007/212	IBA Dock	0	0	0	35	35	35	A	1
2007/215	New building of Rahlau depot – use of renewable energy sources (solar thermal, photovoltaic)	0	0	1	2	2	6	A	1
2008/003	Investment agreement for energy efficiency modernisation of social infrastructure – pre-school Eckermannstrasse 3	0	0	0	94	94	94	A	1

Project no.	Title	Measured or calculated CO_2 reduction in tonnes						Procedure of expert team	Data quality
		2007	2008	2009	2010	2011	2012		
2008/004	Investment agreement for energy efficiency modernisation of social infrastructure – pre-school Sanitasstrasse 11	0	0	64	64	64	64	A	1
2008/005	Investment agreement for energy efficiency modernisation of social infrastructure – pre-school Paul-Roosen-Strasse 24	0	0	92	92	92	92	A	1
2008/006	Investment agreement for energy efficiency modernisation of social infrastructure – pre-school Rotenhäuser Damm 90	0	0	8	8	8	8	C	2
2008/012	Economic stimulus programme of Federation: promotion of energy efficiency – energy efficiency optimisation of Hamburg Haus Eimsbüttel in Doormannsweg	0	0	9	91	91	91	A	1
2008/041	Enabling repowering of existing wind turbines.	0	0	0	0	9,000	12,500	C	3
2008/053	Energy group New Centre Wilhelmsburg (IBA)	0	0	0	0	0	2,000	A	2
2008/055	Schlossinsel/Harburg Inland Waterways Dock – sub-project Veritaskai (IBA)	0	0	0	0	0	735	A	2
2008/057	Veringhöfe existing buildings – Spaces for art (IBA)	0	0	0	0	0	260	A	2
2008/083	Implementation of cycling strategy of Cycling Forum	5,494	5,494	5,494	13,736	13,736	13,736	A	3
2008/092	Installation of photovoltaic system on roof of Hamburg University of Applied Sciences in Hamburg Bergedorf		3	3	3	3	3	A	1
2008/102	Measures to increase share of renewables in energy mix for Hamburg (funding programme)	0	0	0	138	138	138	A	3

Project no.	Title	Measured or calculated CO_2 reduction in tonnes						Procedure of expert team	Data quality
		2007	2008	2009	2010	2011	2012		
2009/017	Economic stimulus programme of Federation: Hamburg theatres; here: Deutsches Schauspielhaus	0	0	0	0	76	49	A	3
2009/018	Economic stimulus programme of Federation: Hamburg theatres; here: Thalia Theater	0	0	0	0	26	26	A	3
2009/024	Expansion of photovoltaic system on works and storage hall of Rahlau depot	0	0	0	43	43	43	3	3
2009/026	Energy-efficiency modernisation and refurbishment projects in Mümmelmannsberg	0	0	0	344	1,663	1,663	A	1
2009/032	Consolidation measures in HPA computer centre (“Green IT”)	0	0	0	0	127	127	C	3
2009/047	Am Weissenberg – Establishment of a CO_2 optimised residential area (12.5 ha)	0	0	0	0	79	79	C	2
2009/068	Pilot project: building of a childcare centre in Rissen to zero-emissions standard (North Elbe Church)	0	0	0	5	5	5	C	3
2009/069	Harburger Schlossinsel – living on the Schlossinsel (phase 2)	0	0	0	0	0	112	A	2
2009/074	Wind turbines on Dradenau sewage treatment plant	0	0	0	0	7,656	7,656	B	2
2009/075	Biogas processing and feed-in at Köhlbrandhöft sewage treatment plant	0	0	0	0	2,937	2,937	A	2
2009/078	Photovoltaic systems of Hamburg Waste (HSR)	19	20	20	22	39	39	A	2

Project no.	Title	Measured or calculated CO_2 reduction in tonnes						Procedure of expert team	Data quality
		2007	2008	2009	2010	2011	2012		
2010/030	Eco-taxis for Hamburg: award of environmental label or climate label	0	0	0	0	2,520	5,400	A	2
2010/053	Energy efficiency in extension building on Finkenau Art and Media Campus	0	0	0	0	0	29	C	3
2010/055	German Climate Computing Centre. Increase in energy-efficiency at high-performance computer centre	0	0	0	0	118	118	C	3
	Total	**45,496**	**243,498**	**330,646**	**390,667**	**345,774**	**422,981**		

Legend:

Procedure of expert team

A = Checked by expert team

B = Calculated by expert team

C = No data available

Data quality:

1 = Very good. Specific data are available, relatively small degree of uncertainty

2 = Plausible estimate, medium degree of uncertainty

3 = Uncertain or ex ante estimate, high degree of uncertainty

1/3 = Data very good up to 2010, estimates from 2011 onwards

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