COMBAT

Covenant of Mayors
in the Central Baltic Capitals

COMBAT

Report guidelines

Helsinki, Riga, Stockholm and Tallinn

The project partners will

- Reduce CO_2 emissions with more than 20 % by 2020.
- Engage the public in energy saving and climate change awareness.
- Create guidelines to cities joining the Covenant of Mayors.

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CENTRAL BALTIC
INTERREG IV A
PROGRAMME
2007–2013

EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND
INVESTING IN YOUR FUTURE

COMBAT

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Table of contents

1. Introduction

Saving energy is important for all sectors of society and enables reduction of greenhouse gas emissions, environmental impacts and costs. Across Europe, municipalities play a key role in facilitating transformations in various sectors that influence energy demand, e.g. urban planning, housing, transport. Recognising the ability of municipalities to influence and stimulate change, the European Union launched the Covenant of Mayors in January 2008.

The Covenant of Mayors provides a framework for municipalities to make voluntary commitments to increase energy efficiency and use of sustainable energy on their territories. Municipalities signing the Covenant of Mayors commit to producing a sustainable energy action plan, in which they indicate how they will achieve their emission reduction targets. By signing the Covenant of Mayors agreement, the Central Baltic capitals of Helsinki, Riga, Stockholm and Tallinn formalised their commitment to meet and exceed the EU objective of reducing their CO2 emissions by at least 20% by 2020.

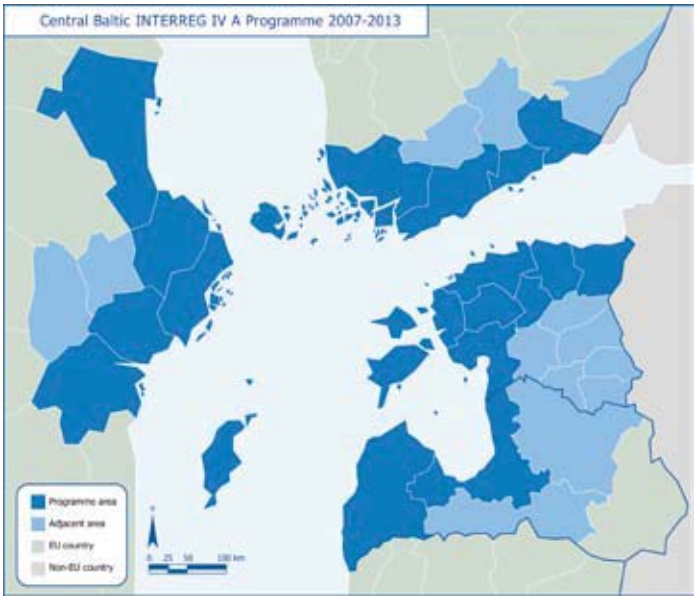
Together and with EU-funding, these four cities then initiated the Covenant of Mayors in the Central Baltic Capitals (COMBAT) project. COMBAT aimed to enable exchange of knowledge, ideas and experiences to improve the preparatory processes for sustainable energy actions plans and increase the quality of implementation in all four cities. The project also aimed to help the cities identify appropriate indicators for their climate work, by increasing cooperation regarding the implementation of the Covenant of Mayors.

One objective of COMBAT was to assess similarities and differences in the cities' processes and to analyse how these factors influenced the development process and resulting sustainable energy action plans. The findings have been collected and are presented in these Guidelines, which present how the four COMBAT cities prepared and developed their sustainable energy action plans and identify critical factors that may be relevant to other municipalities.

These Guidelines complement the manual on how to develop sustainable energy action plans published by the Covenant of Mayors Office. The Covenant of Mayors Office manual was being drafted when the four COMBAT cities were developing their individual sustainable energy action plans, although Riga were able to use it when drafting their sustainable energy action plan. The COMBAT cities worked together on various issues, exchanging ideas and experiences. The COMBAT Guidelines attempt to summarise these experiences and provide helpful input to other municipalities in a format that complements the Covenant of Mayors Office manual.

The Guidelines only provide a description of some of the problems encountered by the COMBAT cities when preparing and implementing the monitoring of their sustainable energy action plans. Links to more detailed guidance on good practice are given in chapters 3-5 and 8-9 of this document or by contacting COMBAT experts.

By sharing the experiences and lessons learnt in COMBAT with other European municipalities that are developing or implementing sustainable energy action plan processes, these Guidelines aim to support implementation of sustainable energy action plans across Europe and thus contribute to the overall success of the Covenant of Mayors. This



work represents a key Central Baltic contribution to the improvement of environmental practices in the Baltic Sea Region and the EU.

The guidelines have the following structure:

- Chapter 2 describes the international and national context of Covenant of Mayors commitment in COMBAT cities, how cities joined the commitment and what was expected from creating the sustainable energy action plan together with general description of the cities
- Chapter 3 describes how the preparation process for creating sustainable energy action plan was started in each city and how it is going to go on after first version has been approved
- Chapter 4 describes how stakeholders were involved during the process and how they will be involved in future and presents criteria for identifying important stakeholders
- Chapter 5 describes how cities calculated their emission inventories and how the required data was collected
- Chapter 6 describes how the measures for sustainable energy action plan were selected, how the impact were assessed and how to plan short-term and long-term measures
- Chapter 7 describes the differences of the decision-making processes in the cities and how it influences the approval process
- Chapter 8 describes the importance of arranging Energy Days and delivers examples from partner cities
- Chapter 9 describes how to monitor and evaluate the implementation and success of the measures
- Chapter 10 describes how unexpected things can happen during the preparation or approval process
- Chapter 11 presents the most important conclusions of the project

The guidelines aim to:

- Reflect upon and analyse the process of developing, implementing and disseminating sustainable energy action plans each partner city
- Compare the processes of the partner cities and highlight valuable lessons for suc-cessful implementation of sustainable energy action plans
- Encourage other cities to take action to join Covenant of Mayors or prepare a sustainable energy action plan as a part of city policy

The recommendations presented here are based on the experiences of four Baltic capitals. The methods and measures chosen vary from city to city and choices depend on the specific national and local contexts. Readers are advised to select the conclusions and recommendations that best suit their own context, resources, ambitions and opportunities.

2. Local issues framing sustainable energy action plans

International and national context of sustainable energy action plans

The launch of the Covenant of Mayors reflects the urgent need to tackle climate change, increase use of sustainable energy and reduce energy consumption. Together, these challenges represent preconditions to the achievement of sustainable growth across the EU, yet in all cases, national and supra-national processes for preparing new or amended legislation, regulations and standards are time-consuming.

For many years, municipalities have played a key role in promoting energy efficiency, sustainable forms of energy and in reducing greenhouse gas emissions. Often municipalities have served as good examples, both within their own countries and to other communities across the EU. The Covenant of Mayors aims to harness the potential of municipal actions and accelerate the spread and replication of good practice among EU Member States and beyond.

When developing a sustainable energy action plan, the purpose and scope of the document should be defined and described in relation to national and regional plans and policies. For example, the four COMBAT cities are capitals where significant aspects of metropolitan life take place outside of the city borders. Development of a coherent climate and energy policy that takes into account different governance structures and decision-making processes thus supports implementation of sustainable energy action plans. In Tallinn, the initial scope for the sustainable energy action plan includes the requirement that all EU Directives and strategies, as well as all national laws, strategies and action plans, be taken into consideration. The sustainable energy action plan may not contradict these documents and should refer to other documents in order to clarify selected actions, methods, etc.

However, sustainable energy action plans should propose and enable actions that go beyond the requirements of EU and national directives. One example of this comes from Helsinki, where the city stipulates that developers achieve "A Class" for new residential buildings constructed on municipal land, which is more than the national building codes requires. Like Helsinki, Stockholm has adopted higher standards for energy efficiency in buildings than the national legislation. In order to ensure compliance with local standards, Stockholm will review energy consumption during the second heating season. Riga's sustainable energy action plan includes an active stance on the legislative and regulatory documents that will need to be drafted and adopted in order to ensure implementation of the sustainable energy action plan. The legislative acts are named and listed in the sustainable energy action plan.

Although the sustainable energy action plan's main focus is on the municipality's geographical area, regional cooperation is often needed in metropolitan areas to coordinate issues such as urban structure and functions such as transport, which are seldom restricted to a municipality's administrative border. The Helsinki metropolitan area has a regional climate strategy setting emission reduction targets for 2030. Each city within the metropolitan area has to make a detailed action plan to achieve this target and these goals are integrated into the Helsinki sustainable energy action plan. In a similar way, the City of Stockholm participates in regional action planning to coordinate actions addressing issues such as biogas production and distribution, development of heating and electricity, efficient waste use and energy efficient city planning.

Voluntary agreements provide another mechanism to support sustainable energy action plans. In Finland, voluntary energy efficiency agreements between the state and municipalities or between the state and private companies have helped engage different stakeholders to reduce CO_2 emissions and promote energy efficiency. Agreements typically establish targets which are then met through actions implemented during an agreed period of time. The current agreement period is based on the requirements of the Energy Service Directive and valuable supporting tools include emissions trading and investment subsidy schemes.

Sustainable energy action plans as policy documents

Although the main objective of sustainable energy action plans are the reduction of CO_2 emissions, increasing energy efficiency and use of sustainable energy, sustainable energy action plans also fulfil other purposes in each city. For example, sustainable energy action plans also act as a management tool enabling provision of better information to decision-makers; establish a framework for monitoring of emissions and energy use; and support dissemination of information.

These purposes vary according to the local context, meaning the format of sustainable energy action plans and their content also reflect differences between cities and their working processes. In Riga, the sustainable energy action plan is designed to support management and coordination processes and pave the way for implementation, whereas in Helsinki and Stockholm the sustainable energy action plan is a management tool for strategic decisionmaking and followup of measures to reduce emissions and energy use. In Tallinn, the sustainable energy action plan provides input to strategic decision-making and defines the city's vision, strategic options, financial possibilities as well as risks associated with the planned actions.

The COMBAT cities aspire to be leading municipalities in the fight against climate change in their countries, the Baltic Sea Region and in the EU. All four COMBAT cities consider the Covenant of Mayors as an important initiative to reduce CO_2 emissions and energy consumption. However, the four cities have different histories and there are some interesting differences in how they approached climate and energy issues prior to COMBAT.

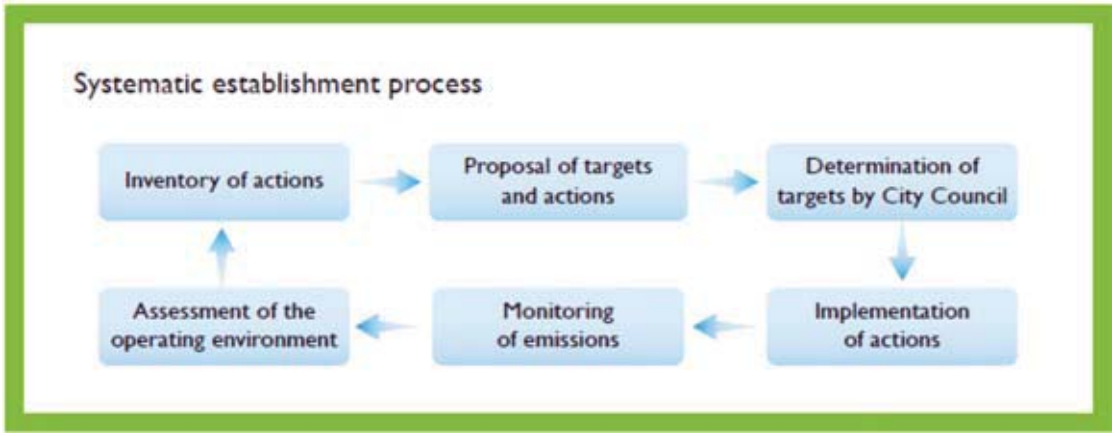
Stockholm and Helsinki had previously set targets for CO_2 emission reduction and committed to increasing energy efficiency. For both cities, the Covenant of Mayors represents another step in their processes and their sustainable energy action plans build upon and reaffirm the targets outlined in other strategies. In Riga and Stockholm, the sustainable energy action plan process has been a "systematic establishment process" similar to the one presented in the Covenant of Mayors Office manual.

This systematic process includes situation analysis of current policy, vision and targets, measures, as well as monitoring and evaluation. Tallinn has used a similar process, whereas in Helsinki, this type of process has been taken place during development of past CO_2 emission reduction commitments and energy efficiency action plans. Helsinki thus focused its approach with sustainable energy action planning on actions.

Sustainable energy action planning processes in the COMBAT cities

The City of Stockholm has a long tradition of ambitious actions to improve the environment and reduce climate impacts (see Chapter 3). The City's systematic process for achieving consensus in advance of political decisions is a strong factor behind this success. Emissions inventories are established and analyses made to determine which measures are cost-efficient and which can be implemeted over coming years. Emission targets are then proposed on the basis of this data. Since climate targets are decided by the City Council, they have an impact throughout the entire organisation. The targets are then followed up (See Figure on next page).

Figure 1. Illustration of a systematic establishment process



For Helsinki, the sustainable energy action plan is a tool for coordinating actions, rather than a tool for setting goals. The Helsinki targets and actions already existed from earlier work and were stated in documents that include a regional climate strategy and voluntary energy efficiency agreements. The sustainable energy action plan aims to provide a management tool to handle existing measures and goals, and to improve the effectiveness of implementation and monitoring. For Helsinki, it was important to build upon existing climate and energy policies and avoid unnecessarily starting the policy cycle from the beginning.

In Tallinn, the long-term development plan for the energy sector from 2002 recommends, for example, promotion and prioritisation of sustainable energy sources in energy supply systems. However, the first politically-accepted targets for changing energy sources were included in the sustainable energy action plan. For this reason, the main focus of the sustainable energy action plan process was on establishing a baseline emissions inventory and agreeing upon common goals. The sustainable energy action plan sets targets but the actions required to achieve these targets will be specified in the future.

In Riga, the sustainable energy action plan not only provides a historical overview of developments and achievements in energy efficiency and the introduction of sustainable energy sources since 1990, but also explains why additional measures are required. In addition, Riga's sustainable energy action plan provides an overview of legal changes that could be made or financial instruments that could be used to implement the EU climate and energy package in the city.

City characteristics – the context for sustainable energy action plans

Contextual factors influence sustainable energy action plans at every stage, from the development process, to content, targets, and means of communication. Factors include issues as diverse as the municipal history of working on climate, energy and environmental issues, the municipality's political and legislative structure, the degree of urbanisation, population size, demography, socio-economic issues, local industrial conditions, natural landscape and resources, transport modes, the energy production and distribution system, etc.

The four COMBAT cities share some similarities. For example, the four cities are capital cities and ports, making them important administrative, economic and transport hubs in their respective nations. The cities also have distinctive locations and topographies. The building stock in the cities is mainly supplied with district heating, although the ownership of energy utilities and fuels used in power plants varies between cities.

However, there are some major differences between COMBAT cities. Finland and Sweden have been

members of European Union for a long time, whereas Estonia and Latvia joined later. Estonia and Latvia have different socio-economic conditions and the global financial crisis had a severe impact on their economies when compared to Finland and Sweden. As a result, the four COMBAT cities have very different circumstances and can make use of different financial tools when implementing their sustainable energy action plans.

Another difference is the extent to which local stakeholders are involved in energy planning and the ways in which they are engaged. For example, Stockholm has a tradition of involving local stakeholders in planning energy efficiency and climate actions, but in Finland this has mainly been the role of the state and not municipalities. Political and administrative structures in each city are different and this also has a significant impact on decision-making and planning processes.

Similarities and differences between the four COMBAT cities are highlighted in the table below and in Chapter 3. The data in the table aims to provide a general overview of the cities and highlight factors that have an impact on CO_2 emissions and energy consumption. For example, a significant share of energy end use takes place in buildings and therefore several figures about buildings are presented. Living space per capita presents the amount of building volume in relation to population. Types of housing describes what the share of apartment buildings and smaller houses is in the building stock.

CO_2 emissions per capita are presented, although these figures should not be compared as different emissions factors and calculation boundaries were used to calculate the figures. Ownership of land and energy utilities is presented to show the sectors where the city can directly influence the emissions.

Table 1: Key data about the COMBAT cities. Data dated 31.12.2010 / 1.1.2011

	Helsinki	Riga	Stockholm	Tallinn
EU member since	1995	2004	1995	2004
Covenant of Mayors signatory since	7.1.2009	30.9.2008	19.12.2008	5.2.2009
Population	589 000	706 413	847 000	405 000
Land area (km²)	214	304	188, of which 40% parks and green areas	159 (Greeneries 141 sqm per capita)
Population density (residents /km²)	2 730	2 322	4 309	2 554
Living space (m²/ capita)	34,2	20	31,3	26,1
Types of housing	13% of dwellings are detached houses. 45% of dwellings are owned by the occupier. 93% heated with district heating.	23 035 residential houses with 241 520 apartments and total area of 16 243 000 m².	90% of the dwellings are apartment houses.	58% of dwellings are single family houses, 35% multistorey houses and from them 49% are 1-2 storeyd. Nearly 94% of households live in apartment houses. 85% of the households own a dwelling.
Share of buildings owned by the city	Approximately 17% (50 % housing, 50% public buildings).	More than 400 buildings.	Approx. 10% of total building stock. 23% percent of the apartment houses.	Approximately 3%.
CO_2 emissions per capita (t)	5,4 (2009)	3.21	3,4 (2009)	3,6 (2007)

Table 1: Continuing

	Helsinki	Riga	Stockholm	Tallinn
Ownership of energy production facilities	Own's an energy production company (CHP and heating plants with fossil fuels).	local energy production with minority ownership.	Minority owner.	No ownership in local energy production
Share of municipality owned land	62%		Approximately 70%	10%
Transport mode	Cars 30% Public transport 32% Walking 30% Bicycle 7% Of all trips in 2008	Cars 79–80%. In 2008 – 246,1 million passengers in public tranportation.	79% public transport in peak hour. Approximately 50% of the transport kilometers in a year is public transport.	
GDP per capita	48 675 EUR (region)	4 285 EUR (3 039 LVL)	45 479 EUR (421 000 SEK)	19 362 EUR
Industrial and commercial activity	10% in industrial sectors, 90% in services.	54,1% of industrial production of Latvia. Main areas: transit, finance, energy, food industry, pharmaceuticals. Types of employment in Riga – 23% trade, 16% - industry, 12% – commercial services; 9% – transport and communication.	10% of the employment is in industrial sectors, 90% in services.	17% industrial sectors, 83% services.
Number of city empolyees	38 000 (including teachers, nurses, caretakers, etc.).	40 000	40 000	1 635

Another important sector for energy end use is transportation and therefore the share of private and public transportation in each city is presented. As economic activity has a significant impact on energy use, GDP per capita in the city area or of the country is presented.

Ability for action

The legal status of a municipality can have a large impact on the municipality's power to decide on climate and energy actions. Some of these factors are presented in Table 1. Legislation on land use and planning, transport and building legislation are key policy measures. Key assets owned by municipalities include energy production, land and real estate.

All four cities are notable owners of housing real estate, where measures can be implemented through budget and directives. Both Helsinki and Stockholm own most of the land in the municipality and can regulate city planning through, for example, detailed city plans and land lease conditions. As building control authorities, the two cities are responsible for promoting sustainable building practices when granting building permits. Helsinki owns the local energy company, whereas Stockholm

is a minority owner and Riga a major owner of the local energy company, meaning the cities can exert different levels of influence over energy production.

Ownership of assets and legislation also affect stakeholders. With streamlined municipal government, as in the case of Tallinn, interaction with external stakeholders becomes very important to successful implementation of plans such as the sustainable energy action plan, because the municipal organisation is smaller and exerts less direct influence over outcomes. This also changes the scope of the sustainable energy action plan. In fields where the city lacks control, coordination and communication are important to achieve success in the implementation of measures.

Observations

- A long-term vision and strategy based on analysis and specific climate targets may support development of an action plan. This should determine the scope of what will or will not be included in the sustainable energy action plan
- Sustainable energy action plans should be put into context – a number of circumstances and factors in the city affect the outcomes of the sustainable energy action plan
- The sustainable energy action plan and its outcomes depend on who in the organisation initiates the process and the organisational structure, resources and influencing power
- The issue of mandate is important in determining who can act and what tasks they have
- Financing of the sustainable energy action plan process and measures should be agreed, including agreement on the overall scope and what is included or not
- It is important to involve stakeholders and ensure acceptance throughout the process

3. Starting the sustainable energy action plan process

Preparing a sustainable energy action plan process

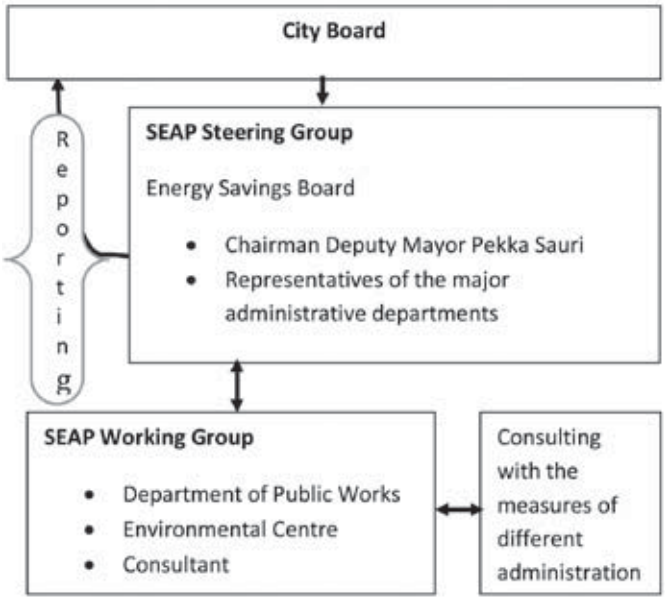
In the four COMBAT cities, the sustainable energy action plan process has been initiated by the city councils and responsible departments or agencies as an obligation of the Covenant of Mayors. In Tallinn and Riga, the sustainable energy action plan was adopted by city councils; in Stockholm it was adopted by the city executive board; and in Helsinki, the Energy Savings Board - appointed by the city board - adopted the action plan. Different city departments have been responsible for drafting the sustainable energy action plans, but in each city, several departments have cooperated in the process (see figures 2, 3 and 4 on management organisations in Helsinki, Riga and Stockholm).

Some cities have pre-existing structures that assume responsibility for the sustainable energy action plan process, whereas others have ad hoc structures or need to establish new structures with a clear mandate for the sustainable energy action plan. None of the four COMBAT cities have made any major administrative changes and the sustainable energy action plan process has been added to the existing municipality work. However, special working groups or steering committees have been formed at different points in time and for different purposes.

In Helsinki, the coordinating role was given to an existing body, the multi-departmental Energy Savings Board (ESB). The ESB was established in 1974 to monitor and coordinate energy savings work in the city's real estate and other operations, as well as to monitor the implementation of energy savings policy. The Public Works Department coordinates the work of the ESB and acts as a coordinator for the sustainable energy action plan process in cooperation with the Environmental Centre (figure 2). The sustainable energy action plan was produced in collaboration with experts from different administrative bodies in several thematic meetings. All measures in existing energy and climate programs were compiled and included in the sustainable energy action plan, including for example, the Climate Strategy for Helsinki Metropolitan Area, energy-saving action plans, Sustainable Building Programme and the City Council Energy Policies.

The next step is public participation and consultation, using tools such as the internet and stake-holder meetings. In the future, the sustainable energy action plan will be implemented and monitored by working groups established by the ESB on themes such as land use and transport, economy, education and communication, procurement and construction.

Figure 2. Preparation process for sustainable energy action plan in Helsinki



In 2011, a binding energy saving target for the entire city administration was introduced. Energy use will be reduced by 2% per year, leading to an overall reduction in energy use of 20% in 2020 compared to 2010 levels. Each city department has to prepare their own energy efficiency action plan, which is to be in line with the sustainable energy action plan and other action plans.

In Stockholm, the Environment and Health Administration has a clear role and a team that has worked on climate issues since 1995. Since then, the Administration's experience, knowledge and resources has gradually increased. The work to produce the sustainable energy action plan is led by a multi-departmental steering committee which allows the strategy to be anchored at the management level in all relevant departments and increases cooperation with and between key stakeholders (energy, property, transport, etc.).

The project group invites officials who are responsible for implementing measures related to energy and climate from all the relevant departments to provide input to the action plan. External stakeholders are involved through workshops and interviews regarding measures the different sectors included in the action plan. During the drafting process, a reference group consisting of national experts is engaged to add their expert input and make sure the action plan is coherent with national ambitions, legislation and science. Consultants are hired to provide support in the drafting process in their areas of expertise.

In Stockholm, the City Management Office is responsible for the administration of the sustainable energy action plan and the Environment and Health Administration is responsible for developing and evaluation of the sustainable energy action plan. Each city administration has their own plan for energy saving (according to the budget, environmental programme and other strategic documents) with different formats and varying levels of ambition. The sustainable energy action plan summarises the efforts of all the administrations and proposes additional measures..

Figure 3. Preparation process for sustainable energy action plan in Stockholm

Box 1. Description of the long-term approach to sustainable energy planning used in Stockholm

Since the mid-1990s, the City of Stockholm has undertaken several important initiatives to reduce greenhouse gas emissions. This has involved setting short- and long-term targets and developing strategies, implementing actions and establishing organisational structures and processes to meet these goals. The City's long-term goal, set by the City Council in 2005, is to continue to reduce greenhouse gas emissions at the same rate as in the past. This will allow Stockholm to become fossil fuel-free by 2050.

From 1995-2000, the City of Stockholm implemented the first of two action programmes to reduce greenhouse gas emissions. The first programme aimed to reduce emissions from electricity, heating and transport to 1990 levels, i.e. 5.4 tonnes of carbon-dioxide equivalents (CO_2e)* per Stockholmer and year. The target was surpassed; by the end of 2000, emissions were approximately 4.5 tonnes CO_2e per resident and year. The second action programme (2000-2005) also achieved its objective, as emissions declined to 4 tonnes CO_2e per Stockholmer and year.

Emissions in Stockholm thus decreased by a total of 655,000 tonnes CO_2e. Taking into account the city's population increase during this period, annual emissions per resident declined from 5.4 tonnes CO_2e to 4 tonnes CO_2e, a decrease of slightly more than 25 per cent. During the same period, total emissions in Sweden declined by 7 per cent. Stockholm is now working with citizens and other stakeholders in the city to achieve the target of 3 tonnes CO_2e per resident and year by 2015. By 2011, emissions in Stockholm had decreased by a total of 895,000 tonnes CO_2e.

The Stockholm Climate and Energy Action Plan 2010 – 2020 is Stockholm's SEAP and constitutes the city's third action plan. The systematic work with action plans that started in 1995 thus continues in an on-going process that has been continuously developed with respect to baseline inventories, monitoring, internal processes, stakeholder involvement, etc. Since its inception in 1995, this process has been based on political governance and close cooperation with the research community and stakeholders. After more than 15 years of systematic work, the processes are still developing, with inspiration from other cities' work on climate issues, not least the Covenant of Mayors signatories.

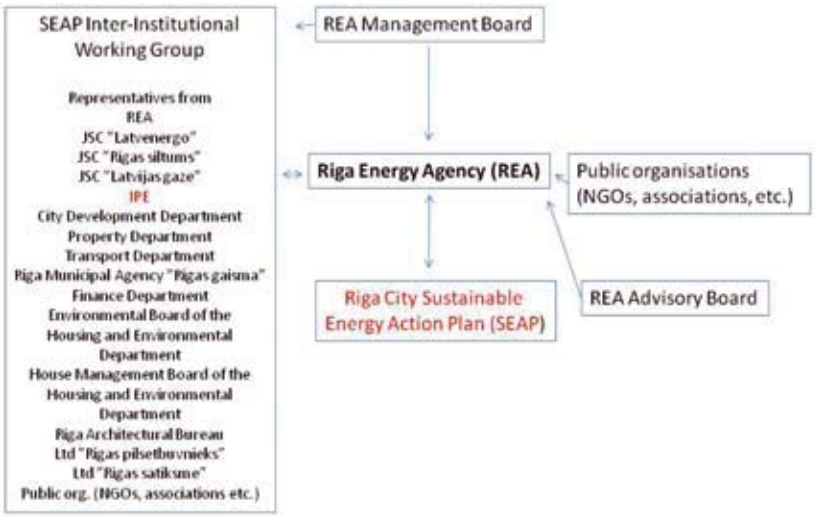
Riga City Council has assigned responsibility to the Riga municipal agency "Riga Energy Agency" (REA) for implementation, management and coordination of its sustainable energy action plan and approved the Management Board of the sustainable energy action plan, as well the sustainable energy action plan inter-institutional working group. REA was established in 2007 with EU co-financing as an independent not-for-profit entity with professional staff and a clear structure. REA has the task of developing and coordinating city energy policy and increasing public awareness on energy efficiency. Its mandate originates from the Law on Public Agencies, which allow cities to establish agencies. The city council votes to appoint the agency's management committee, a group comprising stakeholders from different key groups. All committee members will participate up until 2020 (with the exception of politicians, who are subject to change following every election), as the Energy Agency has the mandate to lead work on the sustainable energy action plan.

REA's main objectives include preparation and updating of long-term energy supply and energy efficiency concepts and programmes, organisation and supervision of the implementation of those documents; attracting financial resources from different national and international investment funds to deal with the energy supply and energy efficiency issues; building energy certification and organisation of building energy audits; and raising public awareness, consulting and training about the reduction of energy consumption.

In Tallinn, the municipal Environment Department is responsible for development of the sustainable energy action plan, whereas other departments are responsible for implementation of the proposed actions and the planning department manages strategic planning issues. All departments were involved in the process of compiling the sustainable energy action plan.

The process of securing decisions from the council and bargaining between departments can be fairly bureaucratic. The process establishes long-term

Figure 4. Preparation process for sustainable energy action plan in Riga.



targets which can be adapted to accommodate short-term targets, reflecting the fact that the city's politicians and departments often have to concentrate on short-term operative targets and have a lack of data supporting long-term trend analysis. Resources and staffing are limited and subject to political changes.

Developing goals and actions

All four cities started the work to prepare their sustainable energy action plans by completing emission inventories. Establishing an emission inventory requires expert knowledge and places a special burden on organisations. In Helsinki and Stockholm, one person in each city organisation was assigned the responsibility of calculating emissions, whereas in Riga and Tallinn, calculations were carried out either by the university or a consultant. A more detailed description of emission monitoring is given in chapter 5.

If all the detailed knowledge about emission calculations is located outside the city organisation and the calculation methods and assumptions are not documented carefully, there is a significant risk of losing important information about the basis for calculations in the long run. In principle, the same risk exists if only one person in the city organisation is responsible for emission calculations.

In Helsinki and Stockholm, the action inventories were based on on-going and planned measures. In Helsinki these included only the city's own organisation, while in Stockholm other stakeholders that have the right of disposition over relevant measures were also included. More detailed description on measures is included in Chapter 6.

In Stockholm seminars with experts in different fields are used to analyse the energy system and recommend conceivable measures for future emissions reductions in an unbiased format. The recommendations are then evaluated by consultants with respect to CO_2 reduction potential, cost efficiency and right of disposition. A business as usual scenario (BAU) for future emissions shows the expected development of the emissions and energy use resulting from measures and changes outside of Stockholm's system boundaries (i.e. international and national initiatives,

expected trends in economy and population). Finally the emissions inventory, BAU-scenario, on-going and planned measures and conceivable measures have to be compiled into a coherent system which is as accurate and balanced as possible. Various types of problems (coherence, bias, double counting, etc.) are addressed during this process. These issues can be alleviated by thorough analysis and proper choice of system boundaries.

One of the sustainable energy action plan goals is "to achieve 20-20-20 before 2020". Continuous implementation of actions is necessary. The sustainable energy action plan should be viewed as a process, not just a project to list actions with emission reduction calculations. Forming a process involves regular monitoring and evaluation as well as participation and crafting of actions.

The basic idea with the Helsinki sustainable energy action plan is to make it more of an evolving process than a finished product. This means that the action plan will be constantly updated as actions are implemented. The Stockholm process is supposed to be reiterated and evaluated every two years, which will result in monitoring emissions, energy use and measures implementation. In Tallinn, a more detailed action plan is made for three-year periods. The first action plan is for the period 2010-2013 and the second action plan (2014-2016) will include a more detailed cost analysis of the actions. Monitoring and evaluation are described in detail in chapter 9.

In Riga, annual reporting to the City Council will take place and mid-term evaluation is foreseen in 2015. The monitoring of the implementation of sustainable energy action plan will be done with the involvement of all stakeholders engaged at Riga Energy Agency Management Board – politicians, business and university representatives, non-governmental organisations.

Conceptualising the long term sustainable energy action planning process

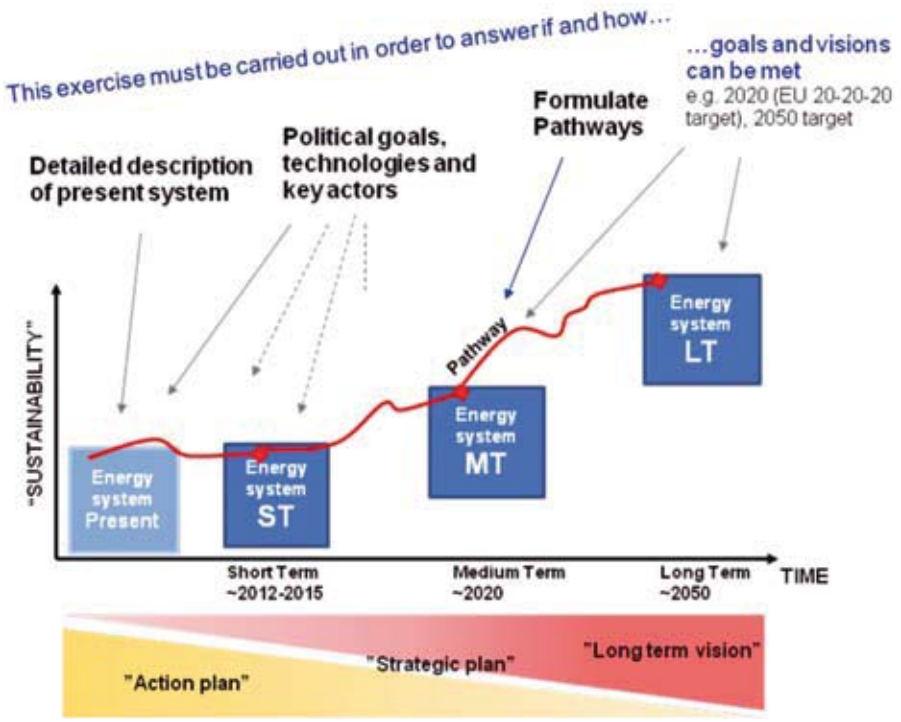
The sustainable energy action plan stretches to the year 2020, which is a medium-term time frame. This means that the sustainable energy action plan designs a pathway to a different and more sustainable energy system envisioned for the year 2020. This is manifested either by incorporating the sustainable energy action plan in existing strategic goals for energy and climate, as in Stockholm, or by formulating strategic goals to be adopted together with the sustainable energy action plan, as in Tallinn.

The mandatory parts of the sustainable energy action plan process, which every Covenant of Mayors partner has to fulfil, include a detailed description of the present system (i.e. emission inventory) and a range of concrete short-term measures that go beyond the expected development. These two parts constitute the actual action plan. Covenant of Mayors also demands a description of the current system (baseline emission inventory), which is very useful for analysis of current trends and helpful when making decisions on the focus of political goals and concrete measures.

An important aspect of the whole sustainable energy action plan concept, which is not demanded by the Covenant of Mayors, is to develop a vision for the long-term sustainable energy system to clearly define what sustainability means for the city. This is useful as a compass to direct the short-term measures and medium-term strategy and enables risk elimination in terms of negative lock-in effects, due to choice of inappropriate short-term measures or refraining from developing new types of measures because they are not envisaged. 2050 is not far away considering that roads can have a lifetime of a century, power plants a lifetime of 40 years and personal vehicles a lifetime of almost 20 years.

Bearing in mind the above-mentioned aspects of long-term sustainable energy planning in a city, the concrete work to achieve the goals must be viewed as a process which continually builds a strategy,

Figure 5. Illustration of steps in a long-term process



Source: Jonas Lodén, Chalmers University. Intelligent Energy Europe PATH2RES project

vision and proposes new measures. In the Covenant of Mayors, this is manifested by the demand to update the sustainable energy action plan every two wears. By updating the sustainable energy action plan, it is implied that the quality of monitoring, direction and size of measures, quality of the strategy and realisation of the visions gradually improve. The organisation around the sustainable energy action plan and the involvement of stakeholders gradually improve.

Starting the sustainable energy action plan process in 2010 naturally involves a basic inventory of emissions, a basic set of (hopefully) financed measures and formulation of a medium-term target (2020). Revising the plan every second year means that the continuous gradual improving process can be repeated five times, giving ample opportunity to monitor sustainable energy action plan practice, learn from previous work and try new methods and fields of action. Sustainable energy action planning is an adaptive long-term process. Every city will have to adapt the process in its own way considering their own conditions, though many lessons can be learned from those who have already been through the previous stages.

Lessons Learned

- Developing a sustainable energy action plan is a process, not a project
- An energy leadership role should be integrated into the daily work, thus facilitating the implementation of measures. Both the central leadership (politicians and senior managers) and informal leadership (city employees, local business and community groups) need to be involved to achieve a smooth coordination, planning and implementation of the project.
- An active and committed steering group for sustainable energy action plan preparation is an important body to guide and support preparatory work. If possible, the steering group should consist of high-level city officers to help the approval, commitment and implementation after the preparation phase.

Figure 6. Sustainable energy action plan preparation as a continuous and developing process

- For implementation, the establishment of an internal organisation for energy and environmental measures is recommended. This includes a steering group with representatives from relevant departments and companies, who act as channels to their own organisations.
- A stakeholder analysis is necessary at an early stage of the project. This enables key stakeholders to be involved in the project management, e.g. as participants in the steering group
- Roles and responsibilities need to be clarified at an early stage. This enables an effective drafting process.
- The sustainable energy action plan short-term targets need to be detailed and measurable but long-term targets may be less detailed. Long-term targets are necessary to define what goals to strive for. Specific short-term targets enable smooth implementation and enable monitoring of the implementation.
- Ideally, there should be a short-term, medium-term and long-term target with clear roadmaps on how to achieve the goals. This ensures that all measures are directed towards the long-term goal and that sub-optimising can be avoided. Development of a BAU scenario will support development of targets and illustrate progress over time.
- The energy/environment planning should be integrated with the operations planning and budget allocation in the organisations participating in the sustainable energy action plan.
- Evaluation, follow-up and reporting intervals are crucial.
- Indicators and routines for evaluation are crucial. They need to be set-up in the beginning of the process. Matters of particular importance are: design, implementation, statistics

4. Involving stakeholders

Cities and local stakeholders

A key prerequisite of success in addressing energy issues and climate change is a common vision and combined efforts of local decision makers and citizens. There is also a need for a major behavioural change in order to encourage all people that live, work and invest in the city to act in a coordinated manner and this is also enforced through being one of the requirements of the Covenant of Mayors. Cities of Helsinki, Riga, Stockholm and Tallinn each have developed their own approaches to involve stakeholders that vary depending on the timing, financial resources, complexity of issues to be addressed at the time of drafting the sustainable energy action plan.

For developing their sustainable energy action plans, main stakeholders have been identified based on their decision-making and financial power, own energy use and impact on energy use of others, ability to influence local processes as well as those whose interests will be most affected by the new or renewed local energy and climate policy and those who have knowledge and information tools. Among these are decision makers, various departments of the city administration responsible for planning, building, transport, energy suppliers, housing maintenance companies, big real estate owning bodies, local and national energy agencies, relevant ministries, public transport companies, business community, educational and research institutions – universities, professional organizations of architects, engineers, NGOs, inhabitants and professional media.

General principles of the cooperation that have been applied in COMBAT cities include transparent and democratic decision making, engagement of stakeholders through giving them active role, building understanding and developing common approaches to reduce CO_2 emissions, and setting priorities in the sustainable action plan taking into account initiatives and concerns of the stakeholders.

In close cooperation with both internal and external stakeholders responsible for the measures to reduce energy use and CO_2 emissions Riga's and Stockholm's sustainable energy action plan were drafted. Tallinn engaged its stakeholders when the first draft of the sustainable energy action plan was ready and published for discussion. Helsinki had no external input in the first phase of the process and involved only internal stakeholders. External stakeholders were brought to discussion when the first version of sustainable energy action plan was put together.

All cities are planning to engage stakeholders in the implementation, monitoring, evaluation and improvement of the sustainable energy action plan. In Riga the major internal stakeholders are working together in the working group of the sustainable energy action plan responsible for the coordinated performance in the city, and both internal and external stakeholders' representatives are represented at the management board responsible for monitoring the implementation of the sustainable energy action plan. The representatives of stakeholders engaged in this work have been given mandate by the City Council up to the year 2020.

Success determining factors in the engagement of local stakeholders are quite similar in the COMBAT cities. Helsinki and Riga together with stakeholders identify projects to cooperate on, but Tallinn's stakeholders can use the recommendations

elaborated in the SEAP for their own strategies and actions. Stockholm sees the benefit in reducing energy costs and the opportunities to share good examples e.g. within the Climate Pact.

Capacity building of stakeholders is very important and highly valued. It is often a part of EU projects including COMBAT project. All partner cities arrange seminars and meetings with stakeholders. Stockholm and Helsinki additionally provide training for the operational staff on energy saving in their workplaces for city owned companies and city administrations. All the cities involve universities, accredited training institutions and municipal experts in providing capacity building activities.

Box 2. Stockholm Climate Pact

The Stockholm Climate Pact is cooperation between the City of Stockholm and its business community that provides a forum for networking, development and sharing expertise and experience in the company's efforts to reduce the climate impact. The Climate pact started with five companies in 2007 and today it has almost 150 member companies. Parties of the Climate Pact act according to their own imperatives, but all work towards the common goal of reducing the CO2 emissions.

Regular communication with the stakeholders and feedback on the implementation of the sustainable energy action plan is a key to the success to achieve 20-20-20 goals. Helsinki started new information campaigns in 2011 using EU projects promoting examples of best practices in energy efficiency and creating the local Climate Change Partnership. The debate on the Sustainable Energy Action Plan for the citizens in Internet has been also a success. Riga regularly holds round tables and consultations, provides publications and information on the Internet and receives visitors at the Energy Efficiency Information Centre. Stockholm keeps on-going dialogue within networks, but Tallinn uses e-mails and open meetings to keep stakeholders informed.

Helsinki, Stockholm, Riga and Tallinn pay attention to use of environmentally friendly and advanced technologies providing information for stakeholders on the cities web sites. Additionally Stockholm provides Energy advice service at www.energiradgivningen.se and through outreach activities. Riga ensures that information reaches all interested by the Riga Energy Agency website www.rea.riga.lv, but Tallinn reaches stakeholders using own public broadcasting service and a city newspaper that among others address the energy issues.

Working with international stakeholders

Regional networking is considered important in Baltic Sea area. In line with the EU strategy for the Baltic Sea Region, many cities have created networks and partnerships and benefit from the European Union cross-border cooperation and transnational cooperation programmes and membership in Union of Baltic Cities. Cities recognise the value of learning from others and create projects, develop their follow-up activities and integrate energy and climate policies into regular co-operation activities as it is foreseen after the COMBAT project.

Helsinki, Riga, Stockholm and Tallinn are engaged in European and international networks of local authorities that provide larger cooperation in supporting local governments in the implementation of sustainable development at the local level.

Cities raise their concerns and participate in the development of international policies through the memberships in the most recognised associations dealing with climate change mitigation at EU level and worldwide, such as Energy Cities, the European association of local authorities inventing their energy future, EUROCITIES, the network of major European cities and ICLEI - Local Governments for Sustainability, the international association of local governments who have made a commitment to sustainable development. Annual meetings, conferences, seminars, projects and networking brings to the cities know-how and allows cities to share their best practises. Stockholm as the first European Green Capital in 2010 organised a number of successful international thematic seminars and workshops and as other COMBAT cities, receives many delegations to study the local policies and actions taken.
It goes without saying that European Commission and its Directorate-General for Energy, Commit-

tee of the Regions as well as Covenant of Mayors Office are instrumental to local authorities to exchange knowledge, share ideas and altogether achieve 20-20-20 goals.

Capital cities have some privileges being the location for offices of international institutions and foreign representations. Riga has developed a very close cooperation with international stakeholders represented at local level. Experts' support, public consultations, workshops, international conferences in Riga have been prepared and carried out in these partnerships every year.

Lessons learnt

- A major challenge for cities in fulfilling the emission reduction objectives is how to impact on the energy consumption and emissions of the private sector: companies, private housing, industry and cars. In general, cities often do not have authority to regulate the emissions of local stakeholders
- Delivering information, setting an example, establishing motivating co-operation schemes and creating financial incentives are the successful approaches
- It is never too late to engage stakeholders, but it is also never too early
- Start small and expand gradually
- Try to understand stakeholders' expectations and objectives, make things relevant for them and find win-win solutions
- The more parties undertake responsibility to implement cities' climate policy providing human and other resources, the closer is the success
- Keep your stakeholders informed and motivated
- Smaller municipalities are as capable as larger municipalities to design and implement energy efficiency measures with active participation of stakeholders. In the latter instance the cooperation tends to be closer due to sheer numbers of stakeholders to be engaged
- Like all other work on climate issues, working with awareness raising is a process. Starting on a small scale with well identified target groups and planned communication is recommended and reuse of results should always be considered
- The dynamics in developments of EU requirements and technical progress requires regular update of information presented at awareness raising activities to stakeholders
- Implementation of practical energy efficiency raising activities in everyday-life by stake-holders targeted is the desirable outcome of awareness raising actions
- Creativity, innovation and use of new technologies attract more people to share the 20-20-20 goals
- Energy Days helps to create a platform for communication with citizens and other stake-holders. Once established it can be used for a continuous development of the communication work in the cities

In short

- It is never too late to start
- Start small, gradually increase - the process should continually expand
- Use success factors from other cities
- Motivate stakeholders
- Understand stakeholders' objectives/expectations = make things relevance for them and find win-win solutions
- Informed and engaged stakeholders are the major success factor

5. Monitoring emissions

The cities that sign the Covenant of Mayors commit themselves to establishing ambitious goals for energy efficiency and greenhouse gas reductions. These goals should be achieved through a set of measures, formalised in the sustainable energy action plans. An integral part of this process is to design a model for evaluating the targets and monitoring the reductions of emissions and energy use to see if the targets will be met. This "process within the process" is important, as it involves compiling a Baseline emission inventory (BEI) and annual Monitoring emission inventories (MEI). These inventories enable municipalities to analyse changes in emissions for both the city as a whole and for specific sectors, which is valuable decision-making material.

This enables detailed monitoring of the progress of the sustainable energy action plan and helps municipalities to design new measures to mitigate specific problems. Moreover, the development of the inventories requires cooperation with key stakeholders and presents an excellent opportunity to help stakeholders improve their own internal processes, improve their knowledge and to standardise use of metrics and parameters across the different organisations. All of this will greatly enhance the quality and accuracy of the data collected in the MEI.

System Boundaries

The four COMBAT cities included the basic sectors heating, electricity use and transport within the city's geographical area in the BEI. However, there are large differences in how the sectors are accounted for and which sub-sectors are included. In the transport sector, Helsinki and Stockholm have included working machinery in their BEI. Stockholm has also included maritime transportation and a small portion of aviation emissions from the city airport. The emissions of these small sub-sectors are highly uncertain and difficult to monitor.

Tallinn has included local electricity production in their emission inventory as there are measures in their sustainable energy action plans that concern electricity production. All partner cities except Helsinki are far from being self-sufficient in electricity production, so the larger part of electricity use is produced outside of the city. To estimate the climate impact of electricity use, all cities are using the emission factor of the national electricity production except Stockholm, who have chosen to use the "Nordic Mix" emission factor, which represents the average emissions for electricity production in the unified Nordic electricity market. Other differences between the cities approaches to the BEI are shown in Table 2.

Stockholm is the only one of the four cities that has chosen to use emission factors including Life Cycle (LCA) emissions. LCA emissions give valuable information, especially for renewable fuels, whose climate impact may vary significantly depending on the production method. LCA is useful when comparing different renewable fuels and when estimating the effect of measures which consist of converting from fossil fuels to renewable.

Large differences in energy use often occur in different years. Parts of the differences are explained by the temperature fluctuations over the years. Helsinki,

Riga and Stockholm use climate correction for the energy use in the heating sector in order to eliminate these fluctuations. Every city has chosen a different method according to the availability of data in their city. Even after climate corrections have been made, large changes in energy use over the years can occur due to poor quality of data. In these cases, one must search for alternate sources of data or estimate a figure which better matches reality. The state of the economy is a factor which can sometimes explain unexpected changes in emissions.

The process of monitoring emissions i s highly technical and time-consuming. Activity data has to be collected every year, recalculated, analysed and reported. It is recommended that the Covenant city establishes the expertise and resources within its own organisation to carry out annual monitoring and continuously improve the quality of the BEI. The benefits are that good decision-making material can be provided and it is easier to communicate energy and climate issues.

One specific issue that must be carefully considered is how best to fill gaps in the data. Records may not have been kept or may be incomplete, meaning some assumptions may be necessary to complete the BEI. Once the monitoring process is underway, it may be possible to test the accuracy of these assumptions and even amend or correct the data. Stakeholders may be able to con tribute to this process and help to refine data or targets. Information may also be available in, for example, studies of energy consumption in different sectors, such as households or transport. A lot of work is required to increase the credibility, precision and accuracy of data and adapt it to the BEI format, yet it may still be impossible to obtain or record some data.

Conclusions

To ensure the quality of statistics, it's important to document how and where the data has been collected. National statistics provide one good source, although its quality may need evaluation as national statistics do not always have the necessary levels of accuracy. Direct input from larger stakeholders, such as energy companies, can provide good source materials, as long as the data can be supplied on a regular basis in the same format over the years. It is important to have good communication with the data suppliers and discuss what the data specifically refers to. All the sources and assumptions need to be clearly documented.
Communication about emissions to the public and stakeholders needs to be easy to understand, clear and transparent. It is important to prepare a communication plan for energy and climate so information about emissions is communicated accurately, i.e. not only parts that distort the full picture. An important question is how to deliver information for best understanding.

Box 3. External influences on a city

As future emissions will be affected by factors outside of the influence of the city, a "Business as Usual" (BAU) scenario is compiled, in order to (1) make the scenarios for future emissions and goal fulfillment as accurate as possible and (2) Separate and highlight the results of measures taken in the structure of the city itself. The factors of importance that were studied by the City of Stockholm are;

1) General factors: Economic and population growth, price of oil and electricity, development of the Nordic electricity production, climate and energy taxes.
2) Factors influencing the residential and service sector: Energy standard of future buildings, reference development (based on current trends) in use of town gas and district heating, energy efficiency standards and trends in existing dwellings, electricity efficient lighting in households.
3) Factors influencing the transport sector: Trends in road traffic (vehicle kilometres), development of the vehicle fleet, (reference) development of use of bioethanol, trends in maritime traffic.

Compiling a reference forecast scenario is recommended in order to make the scenarios for future emissions and goal fulfilment as accurate as possible, but also to separate and highlight the results of measures taken in the structure of the city itself. Future emissions will be strongly affected by factors outside of the city's scope of influence, so a BAU scenario should be compiled regarding expected outcomes resulting from the identified external factors.

Lessons learned

- Involve stakeholders and use their data. Monitoring emission factors and sharing these with stakeholders can help both the municipality and stakeholders, by providing a service to them and

helping to standardise the data received by the municipality. Soliciting data from stakeholders will encourage them to develop better monitoring practices.

- It is very important to thoroughly record how monitoring is done and any changes in methodology. In case of staff changes, the recording enables a continued gradual improvement process.
- Monitoring is important but also time-consuming. For municipalities in the beginning of their sustainable energy action plan process, it is recommended to start small and improve gradually. Don't be over-ambitious!
- Monitoring needs to be continuously improved. As knowledge improves new information about energy use and emission is discovered and the accuracy of data is improved. In these cases, it is justified to change old emission and energy use values to the right ones.
- Assumptions can be made but must be clearly described and documented.

Further reading

Covenant of Mayors guidelines Part II – Emission inventory
http://www.eumayors.eu/mm/staging/library/sustainable energy action plan_gl/docs/001_Complete_version.pdf

Table 2: The system boundaries of the partner cities. Nordic mix refers to the average emissions of electricity production in the unified Nordic electricity market.

Attribute in the system	Helsinki	Riga	Stockholm	Tallinn
Base year	1990	1990	1990	1990
Air transportation	Not included	Not included	Partially included (less than 1% of total emissions)	Not included
Maritime transportation	Not included	Not included	Included (1% of total emissions)	Not included
Working machinery	Included	Not included	Included (less than 1% of total emissions)	Not included
Waste management	Not included	Not included	Not included	Not included
Local power production	Not included	Not included	Not included	Yes

Table 2: Continuing

Attribute in the system	Helsinki	Riga	Stockholm	Tallinn
Electricity production	National mix. Benefit allocation method for heat and power. Five year average of annual averages.	National mix	Nordic mix	National mix
Heat production	Several CHP plants (over 90% of heat demand) and heating plants with different fuels. CHP-heat emissions calculated with benefit allocation method. Calculation with and without annual weather adjustment. Electrical and oil heating calculated by estimated consumption with and without weather correction.	District heating system - 72%. CHP plants and heating plants with different fuels, emissions calculated with benefit allocation method. Two largest CHP (efficiency > 90%) are located in Riga which ensure production of electricity of around 20% of the total energy consumed in the country.	District heating supplies approximately 80% of the heating demand. The fuels in the local energy production system are 70% renewable.	
GHG gases included	CO_2	CO_2	CO_2, CH4, N20	CO_2
LCA	No	No	Yes (approximately 5% of total emissions)	No
Emission factor average	Five year average for electricity	Annual average	Five year average for electricity and heating.	Annual factors
Weather correction	Yes and No, both degree-day method and absolute values	Yes, degree-day method	Yes, degree-day method.	No

6. Selecting measures

Selecting measures to reach the targets established in the sustainable energy action plan is a key part of the process and requires input from a wide range of stakeholders. Step-by-step planning enables development of single actions into integrated packages of measures that become interdependent and whose outputs serve as inputs into subsequent actions, establishing a continuous cycle of progression towards the ultimate targets.

Careful planning of measures can ensure that resources are used optimally and that positive impacts of sustainable energy action plans are not undermined by contradictory actions elsewhere. The selection of measures and the order in which they are implemented will have an impact upon, for example, organisational structures and budgets. In some cases, choices will be controversial and may require additional communication efforts or other actions. Therefore, it is important to select measures in an appropriate manner.

Common approaches to selecting measures could be described as incremental change, projections and back-casting. "Incremental change" represents selection of measures on the basis of ease or simplicity, working unsystematically and without clear reference to long-term targets. Such an approach is inappropriate for municipalities working with sustainable energy action plans. Another approach is "projection", in which measures are selected to ensure compliance with a future target on the basis of what is considered viable given current conditions. This approach is much closer to the normal practice of many municipalities when implementing sustainable energy action plan processes.

A third approach is "back-casting", in which actions are defined with reference to the requirements of a future target, in contrast to "projection", where measures are defined by present conditions. A "back-casting" approach may be more visionary or ambitious, but may also require more use of assumptions about issues such as technological development.

The process of designing a sustainable energy action plan provides a good opportunity for stakeholders to meet and coordinate their actions. The focus of the sustainable energy action plan process should be on added value, which is mostly reached through dialogue between the stakeholders. For the sustainable energy action plan project group it is essential to know and understand the stakeholders' circumstances, restrictions and opportunities. Communication and coordination is of major importance in order to succeed with energy efficiency plans.

Baseline data on sources of emissions needed to be gathered and in some cases data gaps need to be filled before the sustainable energy action plan can be drafted. The scope of the sustainable energy action plan needs to be defined, e.g. which type of transportation modes should be included? Moreover, as the sustainable energy action plan addresses both production and consumption, the way energy is used by different groups needs to be understood more comprehensively.

External experts and consultants are sometimes used by cities to help in the selection of measures and provide additional support where the city lacks human resources. The quality of such input is often dependent on the description of tasks given to the experts or consultants, which itself reflect the state of the process inside the city. Thus it may be problematic to assign work to experts or consultants at an early stage if the city's own internal processes

and expectations are not clear. That said, external expertise can add value to the sustainable energy action plan process. It is important, however, that the city retains ownership of the sustainable energy action plan process and treats it as process, not a project.

Selecting measures in the COMBAT cities

The COMBAT cities have used different approaches to select their measures, reflecting their different backgrounds and experiences of climate and energy planning. For Helsinki and Stockholm many of the measures contained in their sustainable energy action plans were already planned as part of other municipal strategies, whereas for Tallinn, the sustainable energy action plan process involved adopting new processes and redefining many aspects of the city's work in a climate of political and economic uncertainty.

The Tallinn process showed that whilst it was relatively simple to achieve political consensus for signing the Covenant of Mayors, it was more complicated to embed the sustainable energy action plan process across the City's organisation by agreeing on details such as targets and relevant milestones, indicators, metrics, and costs. In short, Tallinn found that the sustainable energy action plan process requires intensive information, both within the city administration and with external stakeholders. Such a process is not always easy, but as the examples of Helsinki and Stockholm show, it does become normal once it has been established and made routine.

Helsinki and Stockholm carried out inventories of the actions in existing programmes as well as those on-going or planned in other city departments. In Helsinki, data from other departments was first collected from other programmes and then supplemented in meetings with the project group and department representatives.

- Ensure that everyone knows where to find funding for measures
- Riga has made an inventory on financial measures on EU, national and municipal level to aid implementation.

In Stockholm, along with a list with specifications of all energy efficiency measures, the departments filled in a questionnaire regarding their current and expected future use of energy, and status and needs in the energy efficiency work. The questionnaire and measures list solicited was accompanied by a document explaining the context of the inventory and specifying in detail what kind of information was solicited.

Sweden's official data for heating oil use suggests an unfeasibly large use in Stockholm, which fluctuates heavily from year to year. When the City of Stockholm and other municipalities realised this, a large project was initiated by Statistics Sweden to improve the quality of municipal energy data.

After the information was collected, it was analysed and shaped to fit into the model including the Business as Usual scenario. Mostly The expected energy use reported was mainly used to calculate the effect of the measures within the city. The on-going and planned measures outside of the city organisation were collected through contact with a selection of large private companies. The measures of the energy company were also included.

Planning for long-term actions

The sustainable energy action plan targets and the time scope for measures are set to year 2020, but the nature of long-term planning varies within different sectors. While some sectors have forecasts integrated in their everyday practices, other sectors are more operative in nature and long-term planning is more challenging. For example, most of the organisations consulted in Helsinki and Stockholm did not have plans beyond 2015.

However, there are exceptions such as public transport and land use planning. In Stockholm, the measures that are now being planned for public transport are not expected to be completed before 2015. In Helsinki and Stockholm, the demands for higher energy efficiency in land use planning is currently tested in pilot areas where the lessons learned are replicated later on a larger scale.

A number of required measures are also listed in the sustainable energy action plan, although their more detailed planning takes place later. In Tallinn, long-term energy efficiency actions include, for example, complex renovation of multi-apartment buildings, use of heat pumps in buildings heat supply, use of solar collectors for preparation of hot water in the multi-apartment buildings, utilisation of city waste water heat, as well as use of biofuels in city public transport.

It is also important to highlight the parts or areas of the sustainable energy action plan where the cities do not have the right to decide, but still show the politically desired development. By providing suggestions on actions the local government acquires knowledge on what is possible to achieve. One example is energy companies, who play a crucial role for the success of the sustainable energy action plans in all four COMBAT cities.

In Stockholm, energy companies are involved in several ways, although the city owns only a limited part of the local utility. For example, dialogue can take place on sustainable energy sources to increase the share of combined heat and power, or opportunities to streamline production processes by connecting networks, etc. In another example from Stockholm, the city established collaboration with the utility company Vattenfall that aims to accelerate the introduction of electric cars by making a national electric car procurement to lower the price of the cars in Sweden.

The complexity of long-term planning is also well-presented in the Helen 2020+ development programme in Helsinki. Development steps until 2020 include continuation of eco-efficient trigeneration (producing district heat, district cooling and electricity in the same processes), further construction of hydropower and nuclear power, and investment in sustainable energy in the form of offshore wind power and forest-based biomass. The cost-efficiency of these measures is very much connected to the national energy and climate policy.

Box 4. The Riga SEAP chapters:

1. Key EU guidelines on implementation of sustainable urban energy policy
2. Initial report on CO_2 emissions in Riga City and forecasts for reduction thereof
3. Potential for reduction in energy consumption and increase in energy efficiency and use of this potential in Riga.
4. Utilisation potential of renewable energy sources and their inclusion in the energy mix of Riga
5. Management structures for implementation of the Action Plan
6. Public involvement in implementation of the Action Plan
7. Financial instruments and financial amounts for implementation of measures under the Action Plan
8. EU, national and municipal support measures for implementation of the Action Plan
9. Legislative and regulatory documents required for implementation of the Action Plan
10. Criteria for assessment of progress in achieving the objectives of the Action Plan
11. Information sources and studies used

Assessing impacts

All the cities have assessed or are planning to assess measures with respect to their reduction po tential in energy consumption, CO_2 emissions and costs. This enables the cities to prioritise measures.

In Helsinki, the calculation of the reduction potential in energy consumption and CO_2 emissions is based on reported impacts of saving measures (calculated and realised saving/reduction potentials in energy audits and implemented actions), low energy building guidelines of the city, upcoming changes in regulation (e.g. new building code, and several assumptions (e.g. rate of building renovations, rate of new building projects, rate of population growth). Stockholm and Riga have made cost assessments of measures in the first version of their sustainable energy action plans. Helsinki and Tallinn will introduce cost assessments in the second version of their sustainable energy action plans. Tallinn has also identified the risks that are related to fulfilment of the objectives. The list includes e.g. financial, political and social risks. Assessing the impact of long-term measures is complicated as technologies develop, markets mature and politics influences all these areas.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Lessons Learned

- Define the timescales of measures for your city
- Cooperation and action planning depends on resources, capacities and knowledge, especially about how to implement actions and about the priorities of other actors
- Be flexible and expect the unexpected
- Ensure management-level support and engagement among stakeholders
- Be clear that stakeholders own the actions
- Secure financing for the process and its measures and related activities
- Analyse and highlight possible social benefits, e.g. labour efforts.
- Future measures should be planned to be in line with the long-term vision of sustainability. Consider how best to maximise synergies and avoid lock-ins.
- The planning context for long-term energy and climate policy on the local level is complex. Integrated and coherent planning is a challenge to be addressed.
- Actions should enable achievement of targets

7. Decision-making process

In each of the COMBAT cities, the decision-making process required to sign the Covenant of Mayors was similar. Local politicians responded to the EU's initiative at an early stage and in some cases contributed to the development of the Covenant itself. Once the initiative was launched, local politicians decided to sign the Covenant of Mayors, with the task of fulfilling its requirements delegated to responsible departments and agencies. In this way, the process of signing the Covenant of Mayors represents a relatively straightforward, one-off decision on the political level.

In theory, such clear political support should simplify the process of developing a sustainable energy action plan. However, the sustainable energy action plan process requires a large range of decisions, both within and outside of municipal organisations. These decisions vary in both scale and complexity, meaning there is increased scope for disagreement both prior to and at the moment of decision and beyond. The sustainable energy action plan process may highlight the fact that, whilst it is easy to agree upon a target, it is not always simple to agree on the steps required to reach the target.

Tallinn held discussions with Helsinki and Stockholm about the sustainable energy action plan process prior to signing the Covenant of Mayors. The decision-making process for signing the Covenant, joining COMBAT and approving the sustainable energy action plan involved the following steps: the basis for decision was sent to a City Government meeting attended by all heads of municipal departments and then to the elected City Council for approval. Inside the Council, two working groups (commissions) on finance and environment scrutinised the proposals. Once these commissions approved the proposals, the issue was passed to the general session of the Council, who decided to approve the decision and delegate financial obligations and responsibility to the Environment Department, who in turn appoint a project team to work on the issue.

Different types of arguments and evidence were required to support informed decision-making at different stages in the process. For example, the Environment Department has provided several departments in Tallinn with financial feasibility studies to help them plan measures and gain approval from the city's financial department. This again shows that approval of the sustainable energy action plan measures is more complicated due to its emphasis on operative actions rather than general obligations. Moreover, implementation requires strong administrative structures to enable monitoring and evaluation of the process and integration across all departments. This is a challenge for cities such as Tallinn, where the municipality employs fewer staff members than many of its European peers.

An alternative approach is to establish an energy agency with specific responsibility for sustainable energy action plan issues. This has been in Riga, which was the first EU capital to sign the Covenant of Mayors. Riga Energy Agency was given the task of developing and implementing the city's sustainable energy action plan and, using the Covenant of Mayors Office manual as the basis for its approach, engaged all municipal departments in the process. However, there is no dedicated budget for implementation of the measures in Riga's sustainable energy action plan, many of which require additional co-financing. The City has allocated co-financing and REA is in the process of identifying other sources of finance to ensure implementation of sustainable energy action plan actions.

To support decision-makers, each city needs to inform politicians and key officials about the types of measures planned, the timeline and sequence for measures, long-term impacts, cost and benefits, etc. To do this, the cities use a variety of tools and indicators. For example, in its communications, REA analyses the impact of other departmental plans of the implementation of the sustainable energy action plan in Riga. Members of the City Council in Riga receive regular newsletters, reports and information at committee meetings. Riga has also held ”visiting sessions” of the Envi ronment and Housing Committee at external locations to study, for example, the city's co-generation plant. The most common formats are official memos (for the Mayor) and newsletters to councillors. Stockholm writes an annual report to its politicians on the progress of the mitigation work towards the reduction targets and Helsinki reports annually to City Board and Ministry of Trade and Industry about energy consumption, CO_2 emissions and implemented energy-saving measures.

When preparing their sustainable energy action plans, Helsinki and Stockholm built upon existing action plans and environmental management systems. Both cities have worked for many years on these issues, meaning relevant routines were already in place and politicians were accustomed to decision-making on many of the sustainable energy action plan themes, a point reflected by the fact that Stockholm's politicians have approved the methodology for calculating baseline emissions.

Stockholm required no new budget for the production costs of its sustainable energy action plan as these costs were covered by ordinary budget. The majority of measures in the plan were already on-going or planned within existing budgets. For implementation of measures in the building stock, an extra budget of €1 billion was allocated for a five year period of time. Energy Days were a new innovation for Stockholm, but have been integrated in the city's ordinary communication work to support the implementation of technical measures.

In Helsinki, no formal political decision was required to approve the sustainable energy action plan, as the objectives mentioned in the sustainable energy action plan had previously been approved. The document compiles a list of approved measures and is scrutinised by the City's Energy Savings Board. However, Energy Savings Board has formally approved the sustainable energy action plan with a mandate from City Board. Departments allocate budget for implementation of sustainable energy action plan actions but there is no overall sustainable energy action plan budget. Smaller working groups have been established to handle specific topics and increase the speed of implementation.

Decision-making process in Stockholm

Figure 7. Decision-making process in Stockholm

Following the political decision to reduce greenhouse gas emissions, staff from the Executive Office and Environment and Health Administration make a formal order to create an action plan, which outlines the purpose of the plan and the organisational structures established for the work.

When the project organisation has completed a proposal for the action plan, it is sent back to the project management committee, who after approval, send the plan to all city departments and companies for further consultation. The written answers of the city departments and companies are incorporated into the action plan by the Executive Office. After the consultation round is complete, the action plan is sent to the City Executive Board consisting of political representatives from all the parties in city council, who prepare the decision to be approved by the City Council.

Since 1995, when Stockholm's first action plan against greenhouse gas emissions was adopted by the City Council, the political majority has changed at most elections. The SEAP developed within the Covenant of Mayors was the third action plan for Stockholm. The plan is currently being updated for decision on adoption by the City Council in June 2012, and will thus be the fourth plan of the city. The political changes over time shows that, irrespective over which parties form the political majority, there is a consensus on the climate issue and the importance of systematic work with concrete actions to cut greenhouse gas emissions and energy use.

8. Energy Days

How the Cities Approached the Energy Days

Energy Days are an integral tool in promoting energy efficiency and renewable energy sources; these encompass an event or chain of events promoting sustainable future and responsible resource management, and allowing citizens to benefit from advantages of more intelligent energy use. For the signatories of the Covenant of Mayors, organising the Energy Days is also a commitment to European Union. During the COMBAT project the partner cities developed the Energy Day concepts and organized the events with contributions from local and international stakeholders and experts.

The aims and approaches for Energy Days may vary. COMBAT partner cities have planned different activities to reach their target audiences as effectively as possible.

Riga tries to inform and engage wide range of target groups – citizens, scientists and engineers, businesses, local municipalities, and other local and international stakeholders – by providing a platform for exchange of opinions, sharing knowledge and learning from the experience of the various countries involved. The basis for the Energy Day was different in Stockholm, where the main objective was to engage the citizens of the city in a dialogue about climate and energy issues, to gather feedback and suggestions from the citizens that would contribute to the continued de-velopment and review of the climate change and energy action plan. In Helsinki Energy Day was likewise aimed primarily for citizens but designed to combine entertainment and having fun with delivering information and new ideas.

Riga Energy Days has expanded to a very wide programme of events together with diverse representation and involvement of stakeholders. The core event every year is a four days long international exhibition "Environment and Energy" with two international conferences on energy efficiency and renewable energy sources. In Stockholm and Helsinki, Energy Days have been linked to the chain of earlier energy efficiency communication campaigns and events for citizens. In both cities Energy Days were arranged as one-day events.

As a part of the agreement of the Covenant of Mayors, the COMBAT cities have been actively engaging mass media in dissemination of information, knowledge and experiences from Energy Days and informing citizens. The most used means of communication with media have been press releases, social networks and personal contacts with journalists.

To reach the inhabitants of the city, Stockholm used the city website which featured the program of the event; the Energy Day was also advertised in the major daily newspaper in Stockholm. In addition, the citizens were given out free entrance tickets via the Internet. The communication channels of the Museum of Science and Technology were also used for marketing the event. In addition to traditional printed media and websites, Helsinki utilises social media such as Facebook and e-mails together with radio advertisements to promote these events and engage interested audience.

All partners use their websites to take the results and outcomes of the Energy Days further publishing on city website e.g. their sustainable energy action plans, suggestions gathered from citizens for future developments and improvements, information about events during the Energy Days, pro-

grammes, speakers' presentations, photos, etc. All partners have also shared their results internationally. One of the most visible events was an European workshop on how to involve citizens in cities' climate work. The event was one of the international activities of Stockholm while being the first European Green Capital. At the workshop Stockholm and Riga with five other cities presented and discussed their work with involving citizens in the cities' climate work, including arranging Energy Days. All partner cities have been actively sharing their experiences at the Sustainable Energy Week in Brussels, at the conferences and seminars of the cities' networks nationally and internationally.

The number of participants of Energy Days in COMBAT partner cities reflects that these methods have been successful in reaching the target audiences.

Direct interaction with citizens can be used in the evaluation of how successful the cities are in communicating with the citizens. In Stockholm, one of the many conclusions following the Energy Day was that there is no need for the City's helpdesk in the Internet, where citizens could e-mail their questions and comments on the sustainable energy action plan. Citizens found direct interaction and discussion with the city's experts more important.

It is also important for all engaged and interested bodies to be informed of the forthcoming events. Every year directly after Energy Days Riga publishes the following year date for international exhibition that is the central event of the Energy Days and starts the development of the partnerships and events.

Organising Energy Days in four Baltic capitals

City of Helsinki engaged several partners among them WWF Finland, Helsinki Energy, Helsinki Region Transport, British Council, many bicycling networks and also private companies. Ilmastoinfo, the new climate information centre of Helsinki was coordinating the partners. Energy Day was decided to be arranged as a separate event from the annual national Energy Saving Week, which takes place in October. The Energy Day in Helsinki was organised on Saturday, 26th of March, during the day of Global Earth Hour under the title "Energy Factory" (Energiatehdas) and took place in a huge hall in the southern-west parts of Helsinki. The event focused on kinetic energy: dancing & cycling with lots of tips available for sustainable lifestyle, thus combining entertainment with useful information.

The event started with a focus on families with children and ended at in the evening on a dance floor with trendy DJs reaching out for young people and adults. Earth Hour festivity was organized in the evening with fire shows. Upon arrival every visitor received a visual map of the whole event area and they could start to collect stamp from each interactive stand to receive a prize. The stands provided information about, for example, climate friendly cooking, energy-efficient lighting, CO_2 emissions of transportation, reducing waste and recycling.

On COMBAT project stand people were encouraged to contribute ideas for Sustainable Energy Action Plan of Helsinki, particularly on how the city can contribute to citizens leading a more energy efficient lifestyle. The organizers had presented different areas of SEAP as branches of a tree to encourage people to leave specific comments on public transportation, public premises, communication and education, procurement, private sector involvement, buildings and land use and city planning.

Riga Energy Days is the biggest information, education and awareness raising event in the region on combating climate change, aiming to raise competences of the politicians and professionals on the energy efficiency and introducing renewable energy sources, offering seminars, round table discussions, presentations and exhibitions taking place in October every year. Riga City and Riga Energy Agency along with stakeholders and partners – Investment and Development Agency of Latvia, Embassy of Austria in Latvia, BT-1, Ministry of Environment, Latvian Chamber of Commerce and Industry and daily business newspaper among others – provide possibilities to exchange opinions, learn from the

experiences of various countries and share knowledge in different locations – Riga City Hall, hotels' conference rooms, exhibition halls etc. Riga is inviting speakers directly involved in promoting EU Climate and Energy policies – the commissioner, DG ENERGY representa-tives, Covenant of Mayors office or Energy Cities. Each year the programme is richer and longer.

A special conference for the implementation of the obligations under Covenant of Mayors took place in order to gather expertise from cities in Latvia, Baltic Sea region and European Union.

The two themes that are the focus of Riga Energy Days are energy efficiency and renewable energy sources. Riga is promoting energy efficiency by educating, sharing and exchanging knowledge and practices and motivating all the stakeholders. The City and its Energy Agency has been successful in engaging decision makers, experts and businesses in the activities. Riga succeeded to provide the floor for mayors to share their visions and international guests to share the best practise and introduce new technologies. In order to reach a larger audience, Riga provides simultaneous interpretation during the event and very often web streaming of the event in two languages. Events organised by Riga Energy Agency are free of charge.

Stockholm Energy Day was conducted in collaboration with the National Museum of Science and Technology at its premises on Saturday, May 8, 2010. The City invited the citizens to a dialogue about the City's energy and climate change initiatives on which the citizens could potentially impact. During the event Stockholm's new sustainable energy action plan – "Stockholm action plan for climate and energy 2010-2020" was presented. Climate experts, energy advisors, communicators and project managers of the Environmental Administration were present to explain and discuss the action plan and give advice on energy saving.

Children attending the event were given balloons in exchange for suggestions from their parents or themselves on how the city could improve the climate and energy efficiency work; this was especially useful to attract the visitors for further dialogue. Information stands placed strategically in the museum were also used to attract visitors into the exhibition.

Meanwhile the Museum had a number of activities with the focus on energy. Throughout the year, the museum had the interactive exhibition "The Energy Game" – game on knowledge about energy and climate – produced in cooperation with the city's energy advising service. "The Energy Game" was therefore used as the starting location for the visitors of Energy Day, with the museum's educational staff on site. Other activities included the exercise bicycle, where visitors could make their own milkshake using the energy they had themselves generated by riding a bicycle, and the workshop where children could try wind and energy experiments.

Tallinn has built its Energy Day through learning from partner cities. Tallinn decided to arrange their Energy Days on the 17th – 19th of February, 2011 focusing on three main target groups – the students of elementary and secondary schools, the Tallinn city employees engaged in development of the sustainable energy action plan and relevant non-governmental organisations and citizens of Tallinn. In cooperation with Tallinn Science Energy Centre, an experimental workshop on energy for students was arranged. A one day conference for local, national and Baltic region experts and NGOs was held to discuss various aspects of the implementation of the sustainable energy action plans. Finally, a large exhibition of alternative heating techniques and a public discussion with presentation was held. All the events have allowed and enabled the representatives of the different target groups to actively engage – either through experimenting or in discussion and constitute the success of the events.

Lessons learned

- Arranging Energy Days in cooperation with other stakeholders can give a significant added value to the content, visibility, attendance and funding of the event

- The planning of the participation of international and EC representatives should be done well in advance
- It is advisable to organize the Energy Day coinciding with an important international or national event (Earth Hour, theme exhibition etc.)
- Energy Days should preferably be arranged on weekends to reach as many citizens as possible
- Good marketing with previous target group analysis is important in order to reach as many citizens as possible
- Personal contact and interaction at the event is important and should be prioritized
- City's own experts responsible for the development of the sustainable energy action plan should meet the citizens in direct dialogue, which requires staff resources from the city. This has to be considered and budgeted for
- Very few citizens use Helpdesk on the web. Personal contact is therefore important and should be prioritized
- Attracting visitors with entertaining program activities encourages them to a dialogue with the experts
- It is possible to have both numerous and valuable comments from citizens by using interactive and creative methods and tools

FOTO: SVARTPUNKT AB

In the Hammarby Sjöstad area in Stockholm the waste is transported through an underground tunnel system to a collection terminal. The waste is burned and used in the district heating system.

9. Monitoring and evaluating impacts

Monitoring and evaluation is an integral part of the sustainable energy action plan process for two reasons. Firstly, analysis and follow-up of the work with the action plan enables municipalities to learn about the process and adapt their strategies. Secondly, analysis of the progress can be communicated to stakeholders and citizens.

As with all aspects of the sustainable energy action plan process, monitoring and evaluation improves with time. However, monitoring and evaluation are often the last aspects of the sustainable energy action plan process to be considered. This may mean insufficient resources are dedicated to the processes, which in turn reduces the quality of the processes and the potential added value of their outputs in terms of, for example, identifying problem issues or areas of potential.

In practice, monitoring of the sustainable energy action plan means compiling emission inventories for each year, following up the progress of the measures and analysing these two aspects together to evaluate impacts. The results consist of conclusions about the results of the efforts to reduce emissions and adaptation of the strategies for better results. Monitoring also enables review of methodology against realty and adaption of the methodology to include new knowledge.

Good practice in monitoring involves developing a number of detailed indicators for each main sector (e.g. heating, electricity, transports) so that all relevant aspects of the progress in each sector can be monitored in a systematic manner. This means that using only one indicator for greenhouse gas emissions or one for each main sector is insufficient, as deeper knowledge is required. For example, when monitoring energy efficiency in city-owned buildings, it is not inconceivable to monitor each individual building or area of similar buildings. Stockholm and Tallinn are currently planning to develop more detailed and systematic indicators.

Reporting progress

Helsinki conducts annual environmental reporting to the city council, which among other things involves greenhouse gas emissions, local energy production and the energy use of city-owned buildings. Helsinki also participates in a voluntary national energy efficiency scheme and produces an annual report with more detailed information about energy consumption of the city organisation, i.e. different types of buildings, municipal street lighting and public transportation.

The report includes electricity and heat production and small-scale energy production with renewables. This report also describes the actions taken that year to improve energy efficiency and increase use of renewables and estimates the impact of these actions on energy consumption/production and CO_2 emissions. Additional resources and methods were required to monitor implementation of the sustainable energy action plan; one solution has been to establish working groups for different sectors and topics under the Energy Savings Board. These groups work actively to develop energy efficiency measures in their field, to provide and collect information on investment costs required and cost savings achieved, and to report progress of the actions listed in the sustainable energy action plan.

Stockholm has a similar system, where the implementation of the environmental programme – which includes energy and greenhouse gas emis-

sions and contains targets for every fourth year – is subject to annual monitoring. Stockholm also produces an annual monitoring report to the political board of the Environment and Health Administration, which assesses energy use and green-house gas emissions. These documents give an overview of the current situation and recent developments, explanations for recent developments and recommendations for the direction of further work. Results are communicated in part via the publicly-accessible "Environmental barometer", a web application for environmental data.

Riga has started its monitoring process, which involves employing experts who monitor and coordinate the implementation of the measures in the sustainable energy action plan. Tallinn plans to monitor and evaluate the implementation of its sustainable energy action plan to meet both the Covenant of Mayors requirement on reporting every second year and the City's own routines, which require revision of strategic development plans every third year.

Communicating progress and results

Climate change and energy can be very confusing for the public. At the same time as there are many actions underway and that local emissions sometimes decrease, scientists are concerned that not enough is happening and that more should be done, faster, to limit the impacts of climate change. Thus, as long as municipalities do not have well thought-out communication policies for the issue, there is a risk of adding to this confusion and deterring citizens from playing a constructive role in the discussion on climate change and energy.

It is important to communicate the full picture and relate achievements in the implementing the sustainable energy action plan to the requirements for fighting climate change and resource scarcity. This means it is important to communicate a long-term vision of what climate change means for our cities. Staff working with communications need support to ensure that detailed statements and figures are accurate and cannot be taken out of context. This is another reason for using clearly-defined and logical indicators and maintaining a clear record of data sources. It must be clearly stated which emission sectors are monitored with statistics and which are not monitored.

Lessons Learned

- Allocate sufficient budget and resources for monitoring and evaluation
- Monitor emissions and energy use on an annual basis and arrange regular (annual) revision of plans
- Available statistics may be weak or unreliable in several sectors
- At an early stage, decide what to measure and how to measure it
- Decide early in the process whether to focus on emissions per capita or total emissions
- Indicators of success have to be decided
- You will need to ensure the support and participation of all actors who must report
- Success will depend on effective communications
- Be prepared to scrutinise results and advise stakeholders
- Develop processes for follow-up and reporting, as well as amending and improvement of the plan
- Explain variations in data and results in a transparent manner

10. Handling the unexpected

The process of preparing and implementing strategic documents such as sustainable energy action plans is complex and municipalities often encounter unexpected problems or opportunities. The COMBAT cities are no exception and a selection of experiences are presented below.

Helsinki's sustainable energy action plan preparation process became more complicated than expected. Working with several departments of the city to improve their commitment to implementation was a successful working method, but new important internal stakeholders and issues were identified in most meetings and that led to an expanding meeting schedule. Even though there were several existing action plans and strategies, most issues and actions needed to be thoroughly discussed and acquiring new and supplementary data (e.g. about expected investment costs, cost savings, timing of the actions) turned out to be quite difficult.

In Tallinn, a major hurdle to successful implementation of the city's sustainable energy action plan arose because of unexpected factor. When drafting the plan, the City of Tallinn repeatedly invited numerous stakeholders to provide input and make comments on the proposals. Surprisingly, many bodies were reluctant to participate. However, when the draft sustainable energy action plan was submitted to the council for approval, numerous stakeholders objected to its content and successfully lobbied against the plan. This led to a substantial revision of the plan and delayed its implementation by some months. The experience showed that it is advisable to spend extra time to ensure stakeholders participate in the process at an early stage – this saves time and resources and avoids potentially damaging disputes with key actors. Fortunately, Tallinn was able to overcome these problems and its revised sustainable energy action plan was approved.

In Riga, the unexpected factor was the level of support the sustainable energy action plan process received from politicians and other stakeholders. The sustainable energy action plan development and discussion process stimulated creation of new networks and associations that committed themselves to become partners of Riga City Council and Riga Energy Agency in implementation of the sustainable energy action plan. For instance, Riga Energy Agency identified and invited stakeholders from businesses and associations to a seminar on electric cars, leading to the formation of a network aiming to implement related goals in the sustainable energy action plan.

Another measure proposed in the sustainable energy action plan - to use geothermal energy in the city energy supply – was the focus of a number of meetings, debates and seminars including an international conference organised in Riga. This has led to the formation of the result Latvian National Geothermal Energy Association, which become the partner in promoting legislatory change and increasing knowledge. Thus, the unprecedented levels of political support for the sustainable energy action plan in Riga have played a key role in motivating and stimulating the interest and participation of other stakeholders.

Lessons Learned

- Good structures and routines mitigate unexpected events. Document and manage the process.
- Consider which factors may influence the process, e.g. elections, changes to budgets or staff.

- Be realistic and don't encourage over-optimism. Some stakeholders may not be fully aware that the process – both to develop and implement the sustainable energy action plan – may be complex and long. Inform participants at regular intervals about plans and next steps.
- Provide or establish clear definitions of key factors and explain complex issues, such as those related to data management
- Avoid playing the blame game when things don't go according to plan. The process must be inclusive and constructive to ensure participation and good results.
- Be patient and sensitive to the political context

11. Conclusions from COMBAT

Creating a sustainable energy action plan is a learning process for most cities. Depending on the previous climate strategy work carried out by the municipality and the municipal organisation and decision-making processes, the sustainable energy action plan can serve different purposes in different cities, in addition to presenting the most important measures for reducing CO_2 emissions in the city area.

The sustainable energy action plan process itself takes time with several consecutive and concurrent phases: identifying the format of the document to be created, establishing a working team to work on it, collecting data for baseline emission inventory, listing actions, estimating impact of actions on energy and CO_2 emissions, estimating investments required for implementing the actions, scheduling and prioritising, involving stakeholders, etc. During the COMBAT project, it was a general conclusion of the partners that one year is not enough to make all this happen. All four cities needed to apply for extension for creating the sustainable energy action plan.

If cities start their planning and organisational processes before signing the Covenant of Mayors, they may be able to develop the sustainable energy action plan within the given time-line. Providing the sustainable energy action plan working team with a sufficient mandate and with good steering will also help in creating a comprehensive and useful document with good quality.

A significant part of the commitment to the Covenant of Mayors is involving local stakeholders in the preparation process of the sustainable energy action plan. Cities alone are not responsible for the all energy consumption and CO_2 emissions in their area and it is of utmost importance to get stakeholders committed to implement climate actions. Receiving comments and ideas from the different communities in the area provides valuable feedback to the municipality. If stakeholder involvement in climate actions is a new form of interaction for the city, it is good to start with moderate volume and expand slowly, analysing the experiences gained and finding ways to keep participants motivated. Involving stakeholders can be started in any phase of the sustainable energy action plan process, i.e. in planning, in preparation or after first draft versions. It is valuable to get stakeholder input to the sustainable energy action plan process at an early stage, but sometimes it is easier to start co-operation with something to present, such as with a list of ideas for actions.

A major challenge in fulfilling the emission reduction objectives is how to have an impact on the energy consumption and emissions of the private sector: companies, private housing, industry and private transportation. In general, cities do not have authority to regulate the emissions of local stakeholders. Delivering information, showing a good example, establishing motivating co-operation schemes and creating financial incentives are ways to do this, but do not reach all stakeholders.

Compiling a baseline emission inventory is essential to monitor the progress achieved with implementing actions. Compiling an emission inventory requires a lot of data, knowledge about emission calculations and the ability to choose suitable emission factors for calculations. Very often, available data is not completely exhaustive or accurate, but this does not prevent the compilation of inventories. The level of detail of the data can be improved constantly over time if data collection methods improve.

Monitoring emission inventories are to be calculated as attachments to follow-up of sustainable energy action plan. It is very important to document in detail the system boundaries, assumptions, calculation methods and sources, and maintain good communication with data suppliers to be able to update the inventory on a similar basis.

More calculations are needed to estimate the impact of measures listed in sustainable energy action plans. Estimating energy saving, increase of renewable energy sources, reduction in CO_2 emissions and investments needed for implementing the measures is a challenging task. Reference scenarios are a useful tool for comparing the alternative emission levels in the future, as most cities expect changes, e.g. in the number of inhabitants or the level of economic and industrial activities.

In order to report the results and evaluate the impact of of actions, it is very important to follow the implementation of measures and emission reductions achieved. Parallel reporting is resource-intense and exhausting for most organisations. Consequently it is recommended to bundle environmental reports, energy consumption reports and climate action reports as tightly together as possible. Combining several reports is easier when this objective has been identified in advance and when planning the target-setting, success indicators and reporting procedures.

Usually while creating a sustainable energy action plan the knowledge and understanding of climate and energy issues and importance of involving different types of stakeholders increase inside the city. Preparation process can be planned carefully in advance and in detail, but often something unexpected or difficult might occur. Even if everything goes according to plan, reflecting on the preparation process often reveals many things that could have been done differently. The partners of the COMBAT project conclude that creating a sustainable energy action plan is not a project but a process. By the time the first final version of sustainable energy action plan is ready, several proposals for improvements and additions will already have been made.

Implementation of measures should be started as soon as the ideas have been approved. The preparation of sustainable energy action plans can take a long time, but implementation of the best and most important measures do not necessarily need to wait for the completed sustainable energy action plan to be approved.

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