After Lisbon, the role of regional and local authorities in a new strategy for sustainable growth and better jobs

LOCAL SUSTAINABLE ENERGY STRATEGIES:

OPPORTUNITIES AND CHALLENGES

The study was written by the Ecologic Institute (Berlin) together with the ICLEI – Local Governments for Sustainability, European Secretariat and the Regional Environment Center for Central and Eastern Europe, REC. It does not represent the official views of the Committee of the Regions.

More information on the European Union and the Committee of the Regions is available online at http://www.europa.eu and http://www.cor.europa.eu respectively.

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Abbreviations

AGENEAL	Agência Municipal de Energia de Almada
ALEA	Alba Local Energy Agency (Alba Iulia)
ASPIRE project	Achieving Energy Sustainability in Peripheral Regions of Europe
BELIEF	Building in Europe Local Intelligent Energy Forums
CHP	Combined Heat & Power Plants
CoM	Covenant of Mayors
CoMO	Covenant of Mayors' Office
CoR	Committee of the Regions
DHC	District heating and cooling
EIB	European Investment Bank
EMAS	European Environmental Management and Audit Scheme
ERDF	European Regional Development Fund
ESCOs	Energy Securing Companies
EU	European Union
GHG	Greenhouse Gas
GIS	Czech Republic Green Investment Scheme
ICLEI	ICLEI – Local Governments for Sustainability
IEE	Intelligent Energy Europe
IEE	Intelligent Energy for Europe Programme
ISO	International Standard Organisation
LEAs	Local and regional energy actors
MoU	Memorandum of Understanding
NGO	Non-governmental organisation
OP	Operational Programme
PPP	Public Private Partnership
RE	Renewable Energy
RES	Renewable Energy Sources
SEAP	Sustainable Energy Action Plan

SEC	Sustainable Energy Community (Rožnovsko)
SEK	Swedish Crowns
SSB	Stakeholders Steering Board (Rožnovsko)
Sustainable Now	Sustainable Now: European Sustainable Energy Communities – effective integrated Local Energy Action today
TENs	Trans-European Networks

Executive Summary

Rationale of the report

This report investigates how regional and local authorities contribute to the objectives of the Europe 2020 strategy, using efforts to promote sustainable energy and climate mitigation as examples. It analyses experiences and best practices of local and regional authorities in transforming their energy systems, thereby contributing significantly to the implementation of the EU 20/20/20 targets. Finally, the report proposes a set of recommendations for future improvements to the framework in which municipalities operate.

A substantial number of cities and regions across Europe are very active in the field of climate and energy policy. Most notably, many of them have adopted local or regional climate and energy strategies with specific climate mitigation targets. Since 2008, the EU Covenant of Mayors (CoM) has provided a new EU forum for these activities. By signing up to the Covenant, cities and regions commit themselves to ambitious mitigation targets and to developing a Sustainable Energy Action Plan (SEAP) which lays out how these targets will be achieved. Since August 2010, 1 900 cities have signed up to the initiative.

Based on eight case studies, this report analyses the constraints facing cities and regions when developing, implementing and monitoring SEAPs. In a second step it provides insights into how these constraints could be loosened in the future.

In particular, the report examines:
1. The kind of actions (to be) undertaken in the SEAPs;
2. The constraints cities and regions are facing on the institutional, technical, financial and cognitive levels;
3. The degree to which national and EU-level organisations can support local communities in their ongoing climate policy initiatives;
4. The possible effects of multilevel governance aspects;
5. The potential for cooperation between cities and regions.

Conclusions

Defining and implementing a Sustainable Energy Action Plan (SEAP) usually encompasses the following **steps**:
- Creating a governance mechanism to consult and decide on the SEAP's direction, including stakeholder participation, interdepartmental cooperation and cooperation across city borders;

- Taking an inventory of status-quo emissions in the area, broken down into sectors and according to energy sources;
- Proposing and deciding on a long-term reduction target for either CO_2 or several greenhouse gas emissions and, potentially, additional interim targets;
- Developing and prioritising reduction measures and developing a timeline for implementation;
- Securing funding for implementation of the SEAP;
- Setting up a monitoring mechanism to evaluate progress toward the SEAP target.

The principal **constraints** facing cities and regions during the SEAP process are:
- Collecting and managing basic data on energy consumption and production patterns and greenhouse gas emissions within the territory;
- Establishing and maintaining an effective governance and management process;
- Securing continuous political support from policy-makers, high-level personnel in the administration and stakeholders;
- Securing funding to implement climate mitigation measures.

Data availability

Availability of detailed data on energy consumption and production within the territory was determined as one of the crucial challenges for designing SEAPs, particularly in those cities without a long tradition of sustainable energy planning. Local statistics are often patchy or do not exist at all. In some cases, gas and energy companies have been reluctant to give out data on local consumption. Yet, a good data basis is indispensable for assessing the status quo, determining an adequate emission reduction target and measuring progress made towards the target. City administrations react by interpolating local data from regional statistics and setting up their own data collection systems, often based on software tools and in cooperation with stakeholders. Other authorities are aspiring to establish similar databases but state that doing so would require technical support from the outside.

Governance and management process

For the development and the implementation of a SEAP to be successful, an inclusive and effective governance structure is a key requisite. Through the institutional arrangement the leading department needs to ensure that all relevant departments within the administration are involved in decision-making and support the process. Potential conflicts need to be mediated early on in the process. It is equally important to engage with stakeholders outside the administration, such

as business actors, utilities, elected officials (if not part of the administration), and civil society organisations, as they can bring extremely valuable knowledge to the process. By involving stakeholders, administrations can create ownership for the SEAP – an essential basis for effective implementation at a later stage. Furthermore, the process of creating a SEAP becomes more transparent and overarching if stakeholders are involved. Moderating a SEAP development process where all relevant organisations participate and ensuring efficient and timely delivery at the same time is of course challenging. The leading departments may, thus, have to balance a certain trade-off between effectiveness and efficiency.

Once the municipality or region moves from SEAP development to implementation, a well-functioning management system needs to be designed. Its objective should be to routinely integrate climate mitigation concerns into all decision-making processes within the administration, and ideally, even within companies and private households. In addition, a realistic breakdown of the reduction target is another key element for the successful implementation of a SEAP. The overall reduction target must be broken down into individual sector targets. In a second step, responsibility for meeting these targets in a given time frame and the duty to monitor progress can be assigned to the leaders of different departments and units within the city administration.

Securing continuous political support
The analysis in this report clearly shows that the best governance structure can only work if it builds on and further builds up continuous political support for the implementation of climate mitigation measures. Support needs to come from both elected representatives and senior officers in the administration as well as from major local businesses and city residents. It is most critical with respect to budget decisions and when regulatory changes are discussed, some of which might be unpopular with certain societal groups. In this process, governance and management need to be transformed from singular projects like buildings and other types of visible infrastructure to conceptual sustainable development based on citizens' needs.

Securing funding
Most climate mitigation measures carry high up-front capital costs, even though these costs might be more than offset by reduced energy costs over the lifetime of the capital good. Energy efficiency measures in buildings are a classic example. As a consequence, securing funding for the implementation of mitigation measures is probably the most important challenge facing local authorities. It is also one of the areas where partnership with other governance levels matters most. None of the cities and regions surveyed in this report can shoulder the costs for SEAP implementation on its own. Two municipalities use a combina-

tion of local and national funds while all other cities receive funding from various levels, including the local, national and EU levels. EU funds include support from the European Investment Bank, the Intelligent Energy Europe Programme and – of high importance for the new Member States – structural funds. In two cities, private sources also play a role, e.g. through the establishment of private-public partnerships or by using energy service companies (ESCOs).

The recent financial crisis puts additional pressure on municipal budgets. Even though several of the national stimulus programmes encompassed funds for "green investments" on the local level, overall the economic downturn appears to increase competition between municipal departments for scarce funds. This emphasises the importance of national and EU level funding for climate mitigation measures.

<u>Policies and measures included in SEAPs</u>

There is a great variety of policies and measures available to cities and regions for achieving the greenhouse gas reduction targets they committed to under the CoM. Each of the SEAP reviewed in this study encompassed at least one hundred measures, most of them more. The surveyed city administrations addressed all relevant sectors and used a diverse set of instruments to achieve the desired outcome, ranging from regulatory instruments and changes in the planning regime to green procurement, feasibility studies and concrete investments in sustainable energy infrastructure. Moreover, information and awareness-raising are also important fields of municipal and regional efforts to combat climate change. The analysis thus confirms that an increasing number of cities and regions contribute significantly to the EU climate and energy agenda by establishing innovative policies and measures.

At the same time, the list of "significant actions" collected in the case studies also hints at a tendency to favour awareness-raising and demonstration projects. One reason might be that compared to regulatory changes or subsidy schemes these projects are often cheaper and pose less danger of being unpopular. Yet, to secure substantial and lasting emissions reductions, measures will have to include widespread financial incentives or ambitious regulatory measures (or both). For this to happen, an appropriate regulatory framework at the national level is an indispensable prerequisite.

Moreover, there is some room for future improvement with respect to how measures are described in the SEAPs. As a basis for effective implementation, descriptions should provide a sufficient degree of detail; specific targets and timetables as well as an estimation of costs and benefits. To achieve greater standardisation and "implementation readiness" in all SEAPs, signatory cities would benefit enormously from detailed feedback from the CoM and best-practice exchanges with other cities.

Recommendations

Cooperation between cities and regions
The exchange of adequate policies and measures between cities and regions in the process of developing a SEAP could be improved in the future. For instance, the CoM could introduce an interactive, web-based tool for cities and regions to learn about best practice examples of policies and measures.

The opportunities and funding for cooperation were perceived as extremely helpful by most of the case studies. Peer review systems and forums for SEAPs between cities and regions would be especially helpful if less experienced cities and regions were matched with more experienced ones.

Funding
Since multilevel governance requires coordinated action between levels of government, the financial burdens of policies should be shared even though the policies are implemented only at the local level. For instance, if local governments reduce their greenhouse gas emissions, those of the national state as well as the EU will also be reduced statistically. Consequently, both the EU and national level should provide direct financial support for climate mitigation measures. We recommend focussing this direct support on financially weak communities.

Finally, EU structural funds are particularly important, especially in new Member States. Owing to national co-funding, structural funds can have enormous leverage. EU structural funds should therefore be directly used to support the implementation of SEAP measures. More generally, it should be ensured that expenditure of funds enhances sustainable development aims.

Appropriate regulatory framework
We recommend strengthening the regulatory framework at the national level – including climate mitigation targets both for a short-term and long-term time frame. In addition, we recommend introducing European-wide standards for GHG inventories and monitoring at the local level. These standards would build the foundation for effective management.

Expertise and capacity-building
Dissemination and constant improvement of the existing SEAP guidelines forms the basis for capacity-building within local governments. We recommend translating the existing guidelines into the major EU languages and providing a platform for discussion in an internet forum, perhaps in the form of a wiki.

Furthermore, we propose developing standard training packages for the development and implementation of SEAPs. These could be complemented by in-country training courses following the standard training packages. This procedure would allow for the inclusion of all levels of government in the process. In this respect, national focal points could also serve as focal points for local governments, and funding for training workshops on guidelines or specific subjects therein could be provided or politically supported.

Multilevel governance
Various case studies indicate that both the regional and local levels play a prominent role in implementing SEAPs, while the national level involvement in the process appears to be of less importance. Most cooperation took place between the EU level and different cities or regions throughout Europe. This is particularly true for the stages involving the design of SEAPs and the evaluation of their progress. Although cooperation with the EU can help support the actions undertaken, it cannot in any way replace national involvement. Indeed, mainstreaming SEAP implementation would be greatly facilitated by appropriate supporting structures at the national level.

Role of the CoM
Since its creation in 2008, the CoM has managed to attract considerable attention from local authorities in Europe and beyond, playing a high-profile, high-visibility card, benefitting its members and the sustainable energy movement in general through good promotional benefits.

The interest of cities and regions in joining the CoM and developing a SEAP has been substantial. The initiative clearly is a great success so far. The high number of signatory cities does, however, also bring new challenges, mainly the risk that the institutional structure put in place by the initiative may not be able to deliver on the promised support services, including adequate validation of SEAPs and verification of implementation. Consequently, the possibility of increasing funding for CoM structures should be considered. Given their assigned roles in the validation process of SEAPs and Implementation Reports, strengthening the CoM Office and the Joint Research Centre appears to be the most obvious option. However, several other options for providing adequate monitoring and verification should also be considered, including auditor training at the national level or assigning a monitoring role to supporting structures. Moreover, the CoM could consider organising a peer review between signatory cities, where they could comment on each other's SEAP drafts. All of these solutions will only be viable, however, if at least part of the funding is covered by EU sources.

<u>Outlook</u>

The analysis shows that the interest of local authorities in SEAPs is high. As SEAPs are a voluntary instrument, it can be assumed that local authorities perceive SEAPs as a helpful planning tool for climate and energy policies. If further experience with the instrument confirms its value for municipalities, one option in the medium-term would be to make climate mitigation strategy (or SEAPs) mandatory for municipalities of a certain size – provided that adequate support can be provided by regional, national and EU levels.

Furthermore, our research has shown that SEAPs and other local climate and energy action plans mainly focus on climate change mitigation. However, the other aspect of climate change, adaptation, is in most cases not considered in these plans. As mitigation and adaptation are two sides of the same coin, adaptation measures should already be included in SEAPs; at least the areas in which adaptation is expected to be or become relevant should be pointed out. We therefore recommend including adaptation strategies within SEAPs or other local climate and energy action plans.

1. Introduction and background

2000 Lisbon Strategy

In 2000, the European Council in Lisbon agreed that by 2010 the EU should be *"the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion"*.[1] To achieve this goal the Council launched the Lisbon Strategy, focusing primarily on social and economic aspects. One year later, the strategy was complemented with an EU Sustainable Development Strategy, which added an environmental dimension that requires growth to be created on an ecological basis. The Lisbon Strategy was implemented through the "open method of coordination" and the adoption of national action plans, since most of the policies concerned fall within Member States' competences. The strategy's progress was assessed annually by the Spring European Council on the basis of a European Commission report.

The 2005 midterm review of the Lisbon Strategy revealed shortcomings and delays in the strategy's implementation.[2] The limited progress was traced back to *"an overloaded agenda, poor coordination and conflicting priorities"* as well as to Member States' failure *"to act on much of the Lisbon strategy with sufficient urgency."* Thus, a renewed strategy was launched in 2005, prioritising growth and employment.[3] It introduced new instruments to improve governance at both the EU and the Member State level. In a three year cycle, the European Commission was required to complete a "strategic report," which formed the basis for the adoption of "integrated guidelines" by the European Council. Member States were asked to develop "National Reform Programmes."

The 2006 Spring European Council agreed on priority areas for the revised strategy. One of them was sustainable EU energy policy, the main focus of this report. Member States were asked to encourage the sustainable use of resources and to strengthen synergies between environmental protection and economic growth by giving priority to energy efficiency and co-generation, the development of sustainable energy systems and the rapid spread of environmentally friendly and eco-efficient technologies. The priority of the climate and energy policy field was also confirmed by the renewed EU Sustainable Development Strategy which identified climate change and clean energy as key challenges.[4]

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[1] Presidency Conclusions, Lisbon European Council, 23 and 24 March 2000, para. 5.

[2] Facing the challenge: The Lisbon Strategy for Growth and employment. Report from the High Level Group chaired by Wim Kok, November 2004.

[3] European Commission: Working together for Growth and Jobs – A new Start for the Lisbon Strategy; Presidency Conclusions, Brussels European Council, 23 and 24 March 2005.

[4] Council of the European Union: Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy, 9 June 2006; Presidency Conclusions, Brussels European Council, 15/16 June 2006.

Even though it has had a positive impact on general integration of EU policies, the Lisbon Strategy has not to date met its main targets regarding growth and employment. This is mainly due to the ambiguous implementation process of the Lisbon Strategy that resulted in some Member States failing to meet their commitments. Some progress was made with respect to the employment rate, which rose from 62% in 2000 to 66% in 2008, and GDP growth, which averaged 2-2.5% between 2000 and 2007.[5] Yet a large part of this progress, particularly with respect to GDP growth, was wiped out by the economic crisis of 2008 and 2009. Unrelated to the crisis, R&D expenditures have not increased towards the target and remain at an average rate of under 2% of GDP in 2008.[6]

A new strategy for growth and jobs: Europe 2020
The Lisbon Strategy will expire in 2010. It will be replaced by the "Europe 2020" strategy, which will lay particular emphasis on meeting the challenges of the recent economic crisis.[7] The new strategy, proposed by the European Commission on March 3rd, 2010, aims to enhance the coordination of economic policies and to focus on smart, sustainable and inclusive growth. The Commission's approach is twofold: a thematic approach on the one hand and a focus on country reporting on the other. On March 26th, 2010, the European Council endorsed the overall aim and headline targets of the Commission's proposal.[8] The strategy will focus on key areas where action is needed, e.g. knowledge and innovation, a more sustainable economy, high employment and social inclusion. Moreover, there are five headline targets supposed to guide both Member States and EU institutions (see table 1).

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[5] European Commission, Lisbon Strategy evaluation document. Commission Staff Working Document, SEC(2010) 114 final, published 2.2.2010, p. 3.
[6] European Commission, Lisbon Strategy evaluation document. Commission Staff Working Document, SEC(2010) 114 final, published 2.2.2010, p. 3.
[7] European Commission, Europe 2020. A strategy for smart, sustainable and inclusive growth. COM(2010)2020, published 3.3.2010.
[8] Presidency Conclusions, Brussels European Council, 25/26 March 2010.

Table 1: Comparison of the objectives of the EU 2020 Strategy and the Lisbon Strategy

Aims	EU 2020 Strategy: Headline targets[9]	Lisbon Strategy
Employment rate	Increasing employment rate to 75% for women and men aged 20-64	employment rate of 70%
Investment in R&D	Improving conditions for R&D and innovation, including by increasing public and private R&D investment to 3% of GDP	3% of EU's GDP
Climate change	Reducing greenhouse gas emissions by 20% compared to 1990, increasing the share of renewable energies in final energy consumption to 20% and moving towards a 20% increase in energy efficiency	---
Education	Reducing school drop-out rates to less than 10% and increasing the share of 30-34 year-olds having completed tertiary or equivalent education to at least 40%	---
Poverty	Reducing poverty (numerical indicator to be defined)	---
Social inclusion	Promoting social inclusion, in particular through the reduction of poverty. Further work is needed on appropriate indicators. The European Council will address this issue at its June 2010 meeting.	
Growth	---	3% GDP growth annually

In light of the headline targets, Member States are required to set national targets and draw up national reform programmes, stating in detail the actions they will undertake to implement the new strategy. At the EU level, the Commission is required to develop and propose to the Council adequate EU-level measures. To meet the targets, there will be flagship initiatives with specific themes, including: "Innovation Union," "Youth on the Move," "A digital Agenda for Europe," "An industrial policy for the globalisation era," "An agenda for new skills and jobs," "Resource efficient Europe," and "European Agenda against poverty." Their implementation is a shared responsibility between the EU and Member States. Moreover, integrated guidelines and country specific recommendations will be adopted to support Member States.

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[9] As agreed on 25/26 May and 17 June 2010 by the Brussels European Council.

Table 2: Timeline of the decision-making process for the Europe 2020 Strategy

Date	Responsible	Objective
March 2010	European Council	Agreement on overall approach and selection of headline targets
	European Commission	Proposal for Europe 2020 integrated guidelines
	European Parliament	Debate on strategy and integrated guidelines
	Council of Ministers	Refinement of key parameters, including targets and flagship initiatives
June 2010	European Council	Decision on the detailed parameters of the strategy, including the integrated guidelines
Autumn 2010	European Council	Discussion on selected thematic issues
Until December 2010	European Commission	Proposals for flagship initiatives
Spring 2011	European Council	Issuing of general policy guidelines for Member States
January 2011	European Council	Growth survey published for the first time (to be repeated each year of the Europe 2020 strategy)
April 2011	Member States	Submission of National Reform Programmes
June/ July 2011	European Council	Publishing policy guidance including possible country recommendations

Source: Ecologic Institute based on European Commission, Europe 2020, COM(2010)2020, Annex 3.

Regarding climate and energy, the strategy does reaffirm the 20-20-20 targets that were introduced at the 2007 Spring European Council. Moreover, the Commission proposed a corresponding flagship initiative on a "Resource efficient Europe", aiming "*to support the shift towards a resource efficient and low-carbon economy that is efficient in the way it uses all resources. The aim is to decouple our economic growth from resource and energy use, reduce CO_2 emissions, enhance competitiveness and promote greater energy security*".[10] The initiative also concerns the local and regional level: The Commission is asked, among other things, to "*mobilise EU financial instruments (e.g. rural development, structural funds, R&D framework programme, TENs [Trans-European Networks], EIB [European Investment Bank]) as part of a consistent funding strategy, that pulls together EU and national public and private funding*".[11] Member States will need "*to focus on the urban dimension of transport where much of the congestion and emissions are generated*".[12]

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[10] European Commission, Europe 2020. A strategy for smart, sustainable and inclusive growth. COM(2010)2020, published 3.3.2010, p. 14.
[11] European Commission, Europe 2020. A strategy for smart, sustainable and inclusive growth. COM(2010)2020, published 3.3.2010, p. 14.
[12] European Commission, Europe 2020. A strategy for smart, sustainable and inclusive growth. COM(2010)2020, published 3.3.2010, p. 14.

<u>Cities and regions in the Lisbon Strategy</u>

Regional programmes and policies do generally contribute significantly to EU objectives.[13] This has been recognized and highlighted in a number of EU policies and documents. The EU Cohesion Policy is meant to support growth and job creation particularly in less developed Member States and regions. Less prosperous regions are supported financially through the European Regional Development Fund (ERDF) and the Cohesion Fund. The beginning of the funding period from 2007 to 2013 changed the EU structural policy, one of the most important areas of EU policy by linking, starting in 2007, the earmarking of the funds to the Lisbon objectives of growth and development. Moreover, the EU Thematic Strategy on the Urban Environment[14] highlights the need to enhance urban sustainability through integrated environmental management. The Leipzig Charter on Sustainable European Cities declares that an "*integrated urban development policy is a key prerequisite for implementing the European Sustainable Development Strategy*".[15] The charter equally recommends that "*greater use be made of integrated urban development policy as an instrument and, in order to be able to do so, the appropriate framework for this (should) be established on a national and European level.*" The European Environment Agency, the EU agency responsible for monitoring its environmental policies, created "*a vision for progress towards a more sustainable, well-designed urban future*" in its report on "Ensuring quality of life in Europe's cities and towns".[16]

Cities and regions are an integral component of the Lisbon Strategy and its objectives. Their importance in the strategy's implementation has been explicitly acknowledged by many sources. In the 2005 Lisbon strategy re-launch, the European Council stated that "*the Union must mobilise all appropriate national and Community resources – including the cohesion policy – in the Strategy's three dimensions (economic, social and environmental) so as better to tap into their synergies in a general context of sustainable development. Alongside the governments, all the other players concerned – parliaments, regional and local bodies, social partners and civil society – should be stakeholders in the Strategy and take an active part in attaining its objectives*".[17]

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[13] See Nordregio, The Potential for regional Policy Instruments, 2007-2013, to contribute to the Lisbon and Göteborg objectives for growth, jobs and sustainable development, Final Report to the European Commission, Directorate-General for Regional Policy, Evaluation Unit, 2007, http://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/lisbon-gothenburg-study-20-february.pdf.

[14] See Communication from the Commission to the Council and the European Parliament on Thematic Strategy on the Urban Environment, COM(2005) 718 final.

[15] Leipzig Charter on Sustainable European Cities, 24 May 2007, p. 2. s

[16] EEA, Ensuring quality of life in Europe's cities and towns - Tackling the environmental challenges driven by European and global change, EEA Report 5/2009, Copenhagen, 2009, online at http://www.eea.europa.eu/publications/quality-of-life-in-Europes-cities-and-towns.

[17] Presidency Conclusions, Brussels European Council, 23 and 24 March 2005

However, cities and regions are not integrated sufficiently in the official implementation process. The CoR regularly assesses the involvement of local and regional authorities in the fulfilment of the Lisbon agenda, especially by means of the Lisbon Monitoring Platform. This Platform was set up as a monitoring tool based on the voluntary participation of local and regional authorities in 2006. In a report on the local and regional effects of the revised Lisbon Strategy, the CoR identified the so-called "Lisbon paradox": regions and cities are engaging in virtually all Lisbon-related policy areas, but they do not perceive the Lisbon Strategy as such to be contributing to their regional or local development to the same degree. One other key finding was that regions and cities are nonetheless highly committed and ready to contribute to the Lisbon objectives. In fact, 96% of the regions and cities have identified opportunities to strengthen their role in the implementation process. The CoR therefore asked Member States to specifically take cities and regions into consideration in their national progress reports, which are required under the renewed strategy. A recent CoR study shows that only a small number of Member States do so.[18]

These deficits were also acknowledged at the EU level. In the latest official review of the Lisbon strategy, the Commission concluded that in the Lisbon Strategy's implementation *"the involvement of regional, local and social partners was less developed and stakeholders were involved on an ad hoc basis if at all, despite the fact that regional and local actors often have both important policy competences and significant resources in Lisbon areas"*.[19]

Thus, in its proposal for Europe 2020, the Commission stressed the importance of the partnership approach of the Lisbon agenda and called for it to be implemented at all levels of government, including at regional and local level.[20] Furthermore, it calls for the CoR to play a greater role. It recommends that the European Council decides to "*call on all parties and stakeholders (e.g. national/regional parliaments, regional and/or local authorities, social partners and civil society, and last but not least the citizens of Europe) to help implement the strategy, working in partnership, by taking action in areas within their responsibility*".[21]

To date, it remains unclear how the partnership between the European and local levels will work in practice. The CoR published an opinion on the Commis-

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[18] Committee of the Regions: The role of cities and regions as mentioned in Lisbon Strategy's National Progress Reports.

[19] European Commission, Lisbon Strategy evaluation document. Commission Staff Working Document, SEC(2010) 114 final, published 2.2.2010.

[20] European Commission, Europe 2020. A strategy for smart, sustainable and inclusive growth. COM(2010)2020, published 3.3.2010.

[21] European Commission, Europe 2020. A strategy for smart, sustainable and inclusive growth. COM(2010)2020, published 3.3.2010, p. 28.

sion's proposal on the new strategy ("The Future of Lisbon Strategy Post 2010") highlighting that the current Lisbon Strategy has failed to give sufficient recognition to the essential role played by local and regional authorities across the EU in implementing and communicating the strategy on the ground.[22] Particularly, the strategy does not acknowledge the fact that communities need to be appropriately equipped financially in order to implement the strategy effectively.

In order to encourage change, the CoR has actively participated in the process of completing a new strategy. In June 2010, the CoR adopted a resolution for stronger involvement from local and regional authorities in the Europe 2020 strategy. In March 2010, the CoR launched a follow-up consultation "Your voice on Europe 2020". The CoR will continue to contribute to the process, especially to the development of the flagship initiatives, as these will directly guide the EU and Member States' policies.

<u>The Covenant of Mayors and Sustainable Energy Action Plans (SEAPs)</u>
In 2008, the Covenant of Mayors launched a climate policy initiative aimed at EU cities and regions. It stresses their leading role in tackling climate change, acknowledging that they represent the level of administration closest to citizens. As of August 2010, 1 900 cities had signed up to the initiative. By becoming signatories to the Covenant, cities have committed themselves to meeting a number of obligations, such as completing Sustainable Energy Action Plans (SEAPs) within one year of joining, and going beyond the GHG reduction target set by the EU climate and energy package and likely to be reaffirmed as a headline target in the new Europe 2020 strategy ('the 20-20-20 target').

The idea that cities and regions commit to GHG emission reduction and other relevant environmental and sustainability targets is not a new one. For instance, a great number of cities and regions committed themselves to sustainable development under the Local Agenda 21, the Aalborg Charter and Aalborg Commitments, or thematic campaigns like ICLEI's Cities for Climate Protection Campaign and the Climate Alliance. Moreover, local and regional climate and energy strategies had already been drafted before the Covenant of Mayors initiative was launched. The European Commission under the Intelligent Energy Europe programme has also supported demonstration projects that focused particularly on the development of local SEAPs, e.g. the ASPIRE project (Achieving Energy Sustainability in Peripheral Regions of Europe) or the BELIEF project (Building in Europe Local Intelligent Energy Forums). However, the CoM offers added value by providing guidance on the drafting of such strategies to all interested EU cities and regions through guidebooks, templates and supporting structures.

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[22] Committee of the Regions, Opinion on the Future of Lisbon Strategy Post 2010. Rapporteur Christine Chapman, published in 3 December 2009, para 2.

Climate and energy strategies – such as SEAPs – are particularly relevant for environmental efforts at the local and regional level because they identify the potential for concrete measures and encompass planning procedures for implementation as well as monitoring of progress. Through the adoption and implementation of SEAPs, cities and regions can contribute significantly to important EU policy objectives, such as increasing the share of renewable energies, increasing energy efficiency and reducing greenhouse gas emissions.

Multilevel governance
Multilevel governance in this study is understood as "coordinated action by the European Union, the Member States and local and regional authorities, based on partnership and aimed at drawing up and implementing EU policies".[23] This definition was presented by the CoR in its White Paper on Multilevel Governance. It is stressed therein that local and regional authorities are to be perceived as "genuine partners" rather than mere "intermediaries".[24] This is true for all policy sectors but especially for the field of climate policy. Cities and regions are directly responsible for the major part of emissions, yet climate policies are often decided and/or coordinated only at the European level. Furthermore, cities' and regions' SEAPs depend partly on whether appropriate climate policy frameworks are implemented at the regional and national levels.[25] Consequently, multilevel governance understood as coordinated action requires concerted action aligned at all levels.

Against this backdrop, this study will analyse local and regional authorities' experiences and best practices in order to integrate these into the Committee's contribution to the Europe 2020 strategy and its subsequent implementation.

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[23] Committee of the Regions (2009): White Paper on Multilevel Governance, CONST-IV-020, Brussels: Committee of the Regions, p. 6.
[24] Committee of the Regions (2009): White Paper on Multilevel Governance, CONST-IV-020, Brussels: Committee of the Regions, p. 5.
[25] Committee of the Regions (2009): White Paper on Multilevel Governance, CONST-IV-020, Brussels: Committee of the Regions, p. 12.

1.1. Objectives of the study

This report investigates how regional and local authorities contribute to the EU's 20/20/20 target. Using efforts to promote sustainable energy and climate mitigation as an example, it analyses the experiences and best practices of local and regional authorities. Cities and regions are very active in this policy domain, notably in developing and implementing local and regional climate and energy strategies such as SEAPs. For this reason, this study will further assess the adoption and implementation of SEAPs.

The wider objective of the report is to demonstrate how municipalities contribute to the goals of the Lisbon agenda and its future successor, the EU 2020 strategy. Thereby, the report aims to show that the Europe 2020 headline targets could be more easily achieved by actively involving cities and regions. As a consequence, it supports the CoR's call for the importance of cities' and regions' efforts in the future strategy to be acknowledged adequately.

The study emphasizes particularly the future strategy's compatibility with principles of environmental sustainability and social cohesion. It also sheds light on the crucial—yet often underestimated—role of cities and regions in achieving this objective. To that end, it builds on prior activities of the CoR itself, including the results of the consultation "Your voice on Europe 2020" and the comparative analysis of 27 national progress reports, published in May, 2010.[26]

This report analyses the potential for cities and regions to cooperate in the development and implementation of SEAPs. It covers aspects that make cooperation between cities and regions likely and desirable, such as the possibility of using economies of scale or increasing negotiating power with other levels of government and the private sector, as well as aspects that may make cooperation difficult, such as the existence of different conditions (regulatory, political, cultural), systems and processes applied by cities.

In particular, this study analyses:
1. The kind of actions (to be) undertaken in the SEAPs;

2. The constraints cities and regions are facing on the institutional, technical, financial and awareness levels;

3. The degree to which EU and national support is available;

4. The possible role of the regional level.

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[26]Available online at http://portal.cor.europa.eu/europe2020/Pages/welcome.aspx.

1.2. Methodology

The project is implemented in five steps:

1. Step 1: Grid development,

2. Step 2: Identification of case studies,

3. Step 3: Development of case studies,

4. Step 4: Analysis and interpretation of case study results, and

5. Step 5: Report writing.

1.2.1. Grid development

A grid was developed to analyse the efforts of regions and cities to set up SEAPs, taking into account cooperation with other municipalities. A pattern of the grid can be found below in Annex I: Grid guiding the case studies (p. 59).

Two sets of aspects are included in the grid: on the one hand, the grid focuses on aspects regarding the procedure for developing and implementing SEAPs (methods, difficulties, management of the process, etc.). This allows for a preliminary overview of the similarities and differences that may exist in different regions and cities. A second set of aspects provides insight into the possibilities for cooperating and corresponding instruments between cities and regions.

1.2.2. Case studies

Most of the case study work consisted of desk research, though a number of interviews served to complement this research. The consortium team benefited from direct lines of communication – via phone or email - with the persons involved in the SEAP development and implementation in each of the municipalities surveyed. Through these channels, relevant documentation and data were made available. In total, ten people were contacted.

Concerning the selection of case studies, the consortium generally applied the knowledge-cluster-innovation approach[27], which we found to be best suited to this study. Additionally, geographical aspects were taken into account; therefore, case studies from different EU regions were included. Various other crite-

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[27] The European Institute of Innovation and Technology (EIT) introduced the concept of Knowledge and Innovation Communities (KICs). Three foci are identified by the institute: (1) climate change mitigation and adaptation, (2) sustainable energy and (3) future information and communication society, see http://eit.europa.eu/kics1/kics-call.html, 23 April 2010. Concerning the case study selection, for instance, Woking has a clear focus on climate change mitigation and adaptation while Rožnovsko has focused on sustainable energy. The third focus can be perceived as a cross-cutting issue which is tackled by most of the case studies to a certain extent.

ria were considered as well (e.g. including countries from different European regions, covering small and larger communities, state structure, whether a city is a signatory to the Covenant of Mayors, status of energy action plan development, etc.). The most important criteria are listed in the following table (see Table 3 below).

Table 3: Selection criteria for case studies

City	Country	Region	Type	Inhabitants	State Structure	Covenant Signatory	SEAP
Alba Iulia	Romania	Eastern Europe	Municipality	66 842	Unitary State	Yes, 26/01/09	Preparing SEAP
Almada	Portugal	Southern Europe	Municipality	164 844	Unitary State	Yes, 04/02/09	Preparing SEAP
Burgas	Bulgaria	Southern Europe	Municipality	231 070	Unitary State	Yes, 18/12/08	Preparing SEAP
Munich	Germany	Central Europe	City	1 360 867	Federal State	Yes, 10/02/09	SEAP, 04/2010
Rož-novsko	Czech Republic	Central Europe	Region	35 625	Decentralised Unitary State	No	SEAP
Siena province	Italy	Southern Europe	Province	54 066	Regionalised Unitary State	No	LEAP, 2003/2009
Stockholm	Sweden	Northern Europe	City	832 641	Decentralised Unitary State	Yes, 10/12/08	SEAP, 04/2010
Woking Borough	United Kingdom	Western Europe	Borough Council	91 400	Regionalised Unitary State	No	LEAP

The following figure shows that the EU is geographically well represented with this selection of case studies.

Figure 1: Geographical distribution of case studies

Figure 1: Geographical distribution of case studies
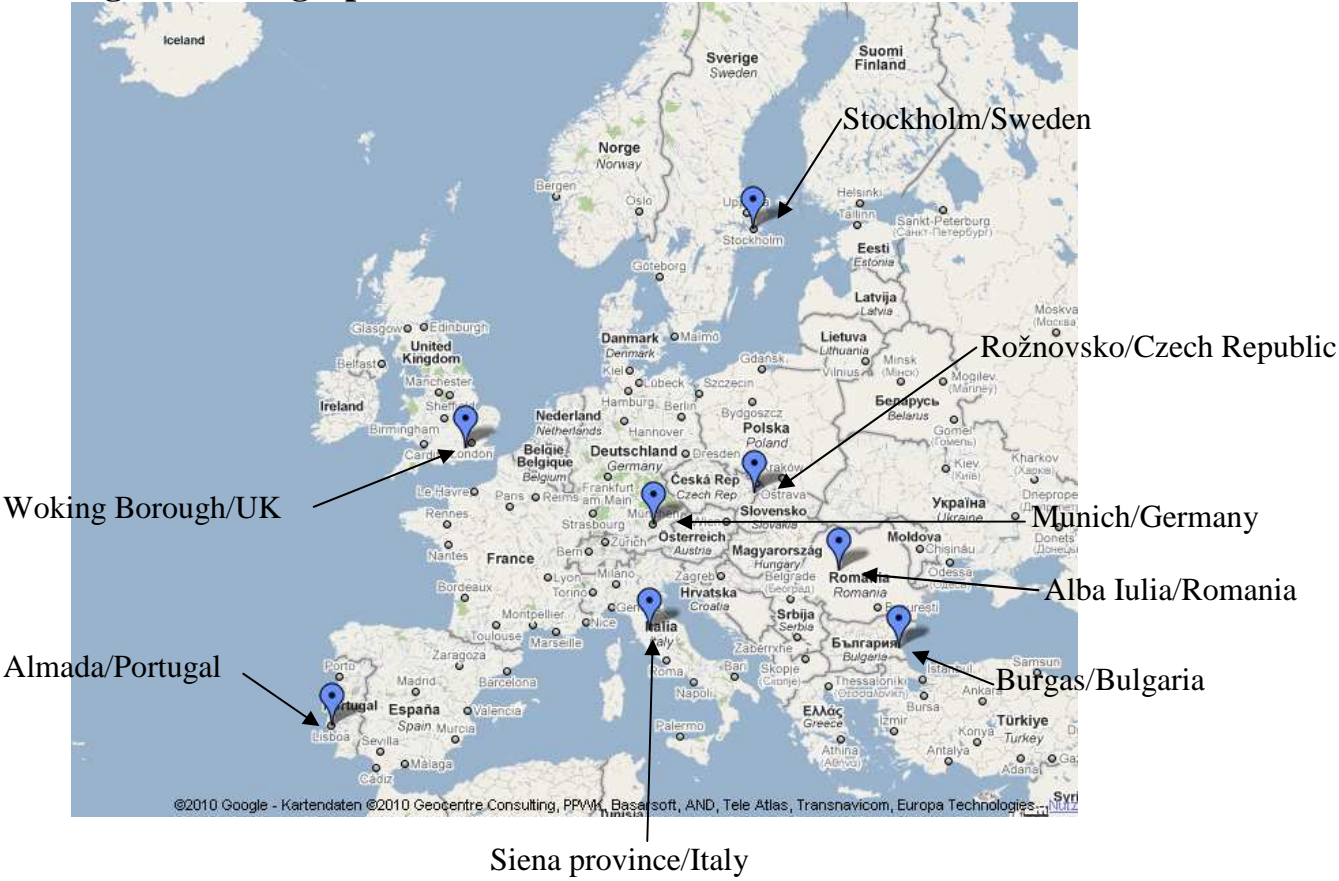
2. SEAPs: the current process

The Covenant of Mayors (CoM) is a relatively new ambitious initiative of the European Commission that brings together "the mayors of Europe's most pioneering cities in a permanent network to exchange and apply good practices across these cities and beyond to improve energy efficiency significantly in the urban environment".[28] It was founded on 29 January 2008 as part of the Manag-Energy Annual Conference at the second EU Sustainable Energy Week. By joining the Covenant of Mayors, cities formally committed themselves to reducing their CO_2 emissions beyond the EU 20% objective.

The main commitments in the Draft Covenant are to:
- Go beyond the objectives set up by the EU for 2020, reducing the CO_2 emissions in their respective territories by more than 20% through the implementation of a Sustainable Energy Action Plan;

- Adapt the city structures, including the allocation of sufficient human resources in order to undertake the following actions:

    o Mobilise civil society in each territory to participate in the development of the Action Plan and outline the policies and measures needed to implement and achieve the objectives of the Plan. An Action Plan will be produced in each territory and shall be submitted to the Secretariat within the year following the ratification of the Covenant;

    o Produce a yearly evaluation report for monitoring and verification purposes;

    o Organise Energy Days or City Covenant Days in the Covenant territories in cooperation with the EC and with other stakeholders, allowing the citizens to benefit directly from the opportunities and advantages offered through a more intelligent use of energy and to regularly inform the local media on developments of the action plan;

    o Attend the annual EU Conference of Mayors for a Sustainable Energy Europe; and

    o Spread the message of the Covenant in the appropriate forums and, in particular, invite other mayors to join the Covenant.[29]

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[28] http://www.managenergy.net/com.html, 20 April 2010.
[29] See the Convention of the CoM, online available at
http://www.eumayors.eu/mm/staging/library/CoM_text_layouted/Texte_Convention_EN.pdf, 20 April 2010.

By June 2010, more than 100 SEAPs had been submitted[30] and, by August 2010, more than 1 900 local authorities had signed the CoM.[31] Considering that there were only 630 signatories to the CoM as of September 2009[32], the rate of participation has drastically increased.

Key contributors to the CoM are[33]:

- The **cities and regions**: cities and regions are the major players responsible for implementing policies and measures to reach the emission reduction targets agreed to under the CoM. As mentioned earlier, around 1 900 local authorities were part of this initiative as of August 2010.

- **The Covenant of Mayors' Office (CoMO)** provides for daily management of the initiative. The Brussels-based Office serves as the main interface between cities, supporting structures and EU bodies involved in the initiative. The CoMO aims to promote the initiative throughout the EU, provides signatory cities with administrative and technical support as well as visibility for their achievements.

- The **Joint Research Centre (JRC)**: working closely with CoMO, the JRC provides the scientific expertise for the initiative. In joint operation with the CoMO, the JRC runs the Covenant Helpdesk. Assistance includes supplying guidelines and tools for SEAP development, implementation and monitoring. In addition, the JRC evaluates signatory cities' SEAPs and provides feedback (e.g. advice on setting up the baseline, policy options, specific measures, etc.).

- The **European Commission (EC)**: the EC's Directorate-General for Energy and Transport initiated the CoM and provides ongoing financial support for the Covenant of Mayors' Office (CoMO) and the local and regional energy actors through the Intelligent Energy – Europe (IEE) programme as well as through ManagEnergy. Furthermore, awareness-raising is supported through the Sustainable Energy – Europe Campaign and the EU Sustainable Energy Week.

- **Supporting Structures:** supporting Structures are a governance instrument introduced by the CoM, which coined the term. They can be national and regional public bodies, counties, provinces, agglomerations, NUTS III areas, mentor cities, networks of cities and regions, etc. Supporting structures "provide strategic guidance, financial and technical support to municipalities that have the political will to sign up to the

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[30] Personal communication with the CoM, 22 April 2010.
[31] See http://www.eumayors.eu/, 12 August 2010.
[32] See the Covenant of Mayors' standard presentation (September 2009), online available at http://www.eumayors.eu/mm/staging/library/CovenantStandardPresentation.ppt, p. 1.
[33] In the following see http://www.managenergy.net/com.html#actors, 22 April 2010.

Covenant of Mayors, but which lack the skills and/or resources to fulfil its requirements, namely the preparation and implementation of the Sustainable Energy Action Plan."

- The **Committee of the Regions (CoR)**: the CoR is a partner in the Covenant of Mayors initiative and "insists that regional and local authorities are the key players in the fight against climate change." Consequently, the CoR politically supports the CoM.

SEAP guidebook

The Covenant of Mayors has published an extensive guidebook on how to develop a SEAP.[34] The process can be summarised in the following figure (see Figure 2 below).

Figure 2: SEAPs: the current process
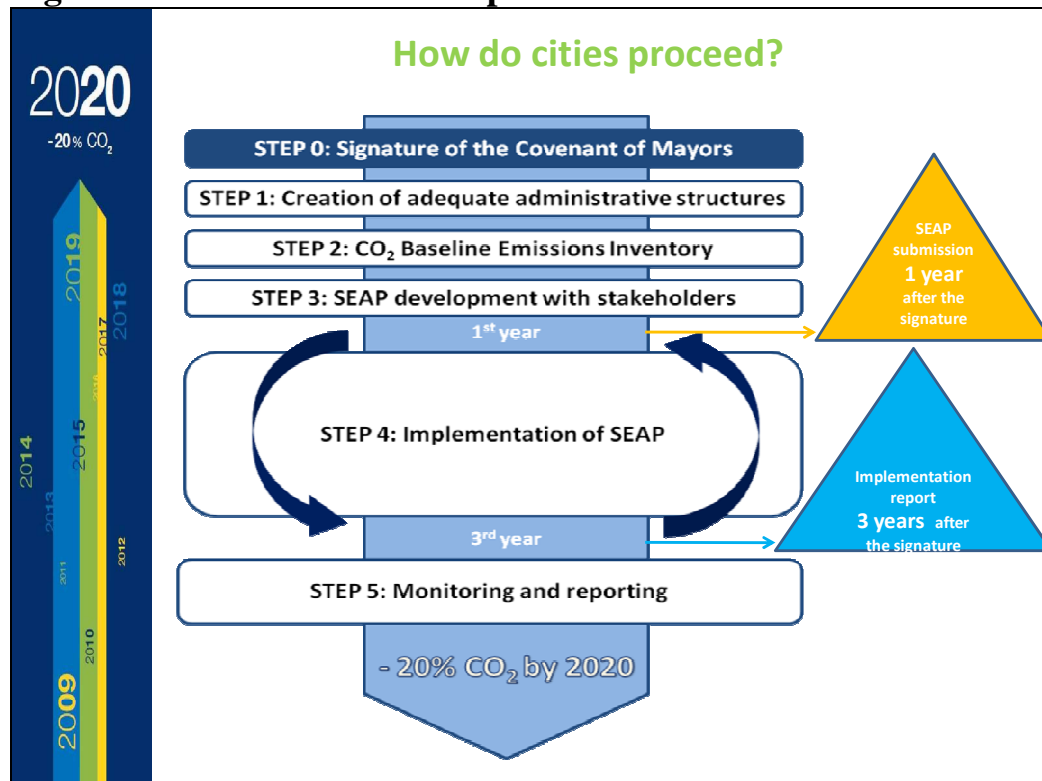
Source: CoM 2009: Covenant of Mayors' standard presentation, p. 6.

Support from European regions and networks of local authorities

As of 28 June 2010, 74 Supporting Structures signed an agreement with the European Commission to provide support for Covenant signatories lacking the resources, knowledge or skills to deliver on their commitments; in August 2010,

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[34] Covenant of Mayors 2010. How to develop a Sustainable Energy Action Plan. Guidebook developed with support of the Joint Research Council, available online at:
http://www.eumayors.eu/mm/staging/library/SEAP.pdf.

there were 79 Supporting Structures.[35] In 2009, 37 Supporting Structures included 19 sub-national public administrations, including provinces, regions with a public mandate and 18 networks of local authorities.[36]

Financial support from the EIB

Part of the IEE programme has been commissioned by the EC to set up European Local Energy Assistance (ELENA), which is a "technical assistance facility dedicated to support committing cities to make their sustainable energy investment projects bankable and eligible for funding by the European Investment Bank (EIB)". [37] ELENA has formally started its operations and, in May 2010, signed its first contract (with CoM's signatory Province of Barcelona).[38]

[35] http://eumayors.eu, 12 August 2010.
[36] Covenant of Mayors 2009. Progress Report. Brussels, 20th October 2009, available online at: http://www.eumayors.eu/library/documents_en.htm, p. 2.
[37] Covenant of Mayors 2009. Progress Report. Brussels, 20th October 2009, available online at: http://www.eumayors.eu/library/documents_en.htm, p. 2.
[38] Covenant of Mayors website "Signature of the first ELENA contract", accessed on 23 June 2010 at: http://www.eumayors.eu/articles/show_en.htm?id=132.

2.1. Designing SEAPs

When local communities, regions or cities embark on the process of setting up a Sustainable Energy Action Plan (SEAP) or a similar strategy document, they usually go through the following steps:

- Creating a governance mechanism to consult and deciding on the SEAP's direction, including stakeholder participation, interdepartmental cooperation and cooperation across city borders;
- Taking an inventory of status-quo emissions in the area, broken down by sector and according to energy sources;
- Proposing and deciding on a long-term reduction target for either CO_2 or several greenhouse gas emissions and, potentially, additional interim targets;
- Developing and prioritising reduction measures and developing a timeline for implementation;
- Securing funding for implementation of the SEAP; and
- Setting up a monitoring mechanism to evaluate progress towards the SEAP target.

While going through this process, local authorities face a number of challenges, especially with respect to personnel and funding capacities. Other general obstacles include having a limited awareness of stakeholders and policy-makers and a lack of technical expertise and tools. In the following section, we will examine the aforementioned steps individually. Drawing on the case studies as well as additional evidence, we will describe the obstacles in more detail and suggest potential approaches for improving the capacity of local authorities to bring environmentally-friendly measures to fruition.

2.1.1. Governance structure

2.1.1.1. Organisation process

The process for designing a SEAP typically begins with one government agency or department being commissioned to initiate and oversee the SEAP process. In most of the case studies, responsibility was assigned to the department responsible for the environment, e.g. the City Council's Department of Health and Environment in Munich. In the city of Stockholm, the development process is also undertaken by the Environment and Health Departments, but the overall responsibility is assigned to the Executive Office, demonstrating the high-level commitment to climate change mitigation in the Swedish capital. In Burgas, three

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departments related to energy policy form the project team: the Directorates for EU Integration, Environmental Protection, and Buildings. Interestingly, the Directorate for EU Integration is directly related to energy policy in this case.

2.1.1.2. Interdepartmental coordination

A central issue when setting up the governance structure for the development of a SEAP is interdepartmental engagement. How can the responsible department create incentives for other departments to join in and support the process when the performances of these departments might be measured by indicators irrelevant to the sustainable management of energy? For an economics department, economic growth tends to be a much more relevant indicator for success than progress on energy efficiency, just as educational departments focus on school results rather than the energy performance of school buildings and so on. According to the case study research, the successful implementation of the SEAP requires the key elements of: (1) mediating potential trade-offs early on in the process and (2) involving relevant departments in the decision-making process from the very beginning. The leading departments may, however, have to balance certain trade-offs between effectiveness and efficiency in the process. For instance, in the case of Munich, the sheer size of the administrations involved has been cited as a major obstacle to efficient decision-making.

2.1.1.3. Stakeholder engagement

It is equally important to engage with stakeholders outside of the administration, such as business actors, utilities, elected officials (when they are not part of the administration), NGOs and other civil society organisations that can bring extremely valuable knowledge to the process. In seven of the eight case studies, stakeholders participated in the process of designing the SEAP. In most cases, they were formally integrated into the decision-making process together with the other departments via a stakeholder or steering board (Stockholm, Rožnovsko), a working group (Woking) or an advisory council (Burgas). In Alba Iulia, Almada and Siena, the city councils founded local energy agencies as part of the climate policy process. The Almada agency AGENEAL has a double function: Through its 16-member stakeholder board with representatives from many important sectors in Almada (energy, water and solid waste utilities, public transport, education, service providers, building and public works companies and the municipality of Almada), it serves as a platform for stakeholder participation in the decision-making process. At the same time, the agency also contributes to the implementation of the SEAP by promoting energy efficiency at the local level.

Early stakeholder participation and communication can help to increase stakeholder acceptance of the SEAP and thereby enhance the chances of successful implementation. By engaging stakeholders from the beginning, **ownership** of the SEAP can be created, a step that is essential for its implementation at a later stage. Furthermore, the process of creating a SEAP becomes more transparent and overarching if stakeholders are engaged. Ownership, transparency and the resulting acceptance may also lead to additional resources for the SEAP that are mobilised through stakeholders (be it personnel or funding resources).

Moreover, stakeholders can bring **additional knowledge** to the planning team (e.g. from utilities or energy service organisations) and, in many cases, increase access to sorely needed data on energy consumption (see the next section).[39] Principally, there is a danger that certain stakeholders, particularly businesses and energy utilities acting in their own and not the public's interest, use the planning body to influence the outcome according to their business interests. It then becomes the responsibility of the local authorities to ensure that a fair and democratic process is conducted. In our own research, however, none of the case studies have yielded any evidence of this.

In the case of Rožnovsko, a lack of stakeholder awareness and expertise as well as limited personnel capacity within the administration made it challenging to engage stakeholders meaningfully. Eventually, the Stakeholder Steering Board (SSB) of the Rožnovsko Sustainable Energy Community (SEC) was established in August 2007 with the support of the EU ASPIRE project. The SSB consists of politicians (mayors of the municipalities) and public authorities, entrepreneurs and representatives from the non-profit sector (officials and external experts). Furthermore, the SSB included representatives from the community, a housing cooperative, local authority members, local energy utility, consultants and representatives of a local action group. This example underlines how important it is that the EU gives targeted incentives and facilitates best practice exchange between municipalities with different areas of knowledge and levels of experience.

A further aspect related to stakeholder engagement is legitimisation. The engagement of stakeholders can enhance legitimisation by bringing their views into the decision-making process, an element of direct democracy. At the same time, stakeholders are not elected officials, creating a potential risk, as mentioned earlier, that resourceful stakeholders have a stronger influence on the outcomes of the consultation process than 'weaker' ones. However, as mentioned above, we have no evidence of this from the case studies.

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[39] For more details see Woking case study in the Annex.

2.1.1.4. Cooperation across city borders

Policies and regulations on the regional or national levels can significantly limit local authorities' energy policy options. This is especially true in the area of transport, where regional land management plans often take precedence in influencing transport levels. The Almada case study is a good example of this: national and regional strategies for the transport sector were cited as a substantial hurdle in the implementation of local sustainability strategies. For instance, the regional land management plan does not mention the importance of river transport, which is part of the overall public transport network of the region and of high importance to the municipality. Likewise, the regional land management plan promotes the construction of new roads and does not encompass significant measures for enhancing public transport infrastructure. This is inconsistent with the municipality focus on improving the public transport infrastructure and reducing motorised vehicle use.

The need for coordination across city borders does not only concern higher government levels, such as the regional and the national levels, but also neighbouring municipalities that are not governed by the city council. The need for cooperation can arise particularly with respect to public transport connections between the city and its outskirts and regarding planning policies. The aim of creating dense and attractive cities with short distances can only be achieved if neighbouring municipalities join efforts to prevent urban sprawl and ensure that existing suburban communities are connected to the city centre by public transport. In practice, coordination can be difficult owing to split incentives (e.g. an interest in new developments or shopping malls because of potential tax incomes) or different political orientations of the respective local governments.

One option to circumvent dissonances between governmental levels regarding SEAP implementation has been shown to work in Rožnovsko. Nine municipalities have formed a voluntary association called the micro-region of Rožnovkso to make joint decisions on environmental protection, thereby significantly increasing the scope of potential actions. In Alba Iulia, the city council founded the Alba Local Energy Agency (ALEA) together with nine other public and private institutions, including local authorities.

2.1.2. Availability of data and target setting

2.1.2.1. Data collection

If no previous energy policy strategies exist, the SEAP process has to start with an assessment of the status quo – a baseline review. In many cases, however, accurate answers to important questions such as "how much energy is consumed

within the territory and in what form and by which sectors?" have proved hard to produce. The main problem is that data on energy consumption, greenhouse gas emissions, RE production and many other relevant parameters are collected at the regional and national levels, but cannot be easily traced back to a specific municipality at the local level.

In four of the eight case studies, data availability was determined to be one of the crucial challenges for designing the SEAP. In Rožnovsko, gas and energy companies have been reluctant to give out data on local consumption. In Munich, relatively good data exist for household electricity consumption because more than 90% of all households are served by the city-owned utility. In contrast, records of data on heating fuel consumption are much patchier and will be from now on calculated based on regional statistics. In Stockholm and Woking Borough, where efforts to make the energy system more sustainable date back to the 1990s, data collection systems are already up and running, making it much easier to establish and regularly evaluate the status quo. According to the case study research, Siena overcame data difficulties by establishing a data collection system and a software tool in 2006 and by collaborating with stakeholders. Other authorities, e.g. in Burgas, are aspiring to establish a similar database. However, this would require continual political commitment and technical support from the outside.

The data collection and information requirements generated by the EU legislation were not explicitly mentioned as representing an administrative burden.

2.1.2.2. Definition of baselines and reference scenarios

Once data on the status quo is available, municipalities can use it as a baseline emissions inventory for formulating specific reduction targets.[40] In some cases, it can also prove useful to determine a reference scenario that describes how important socio-economic variables are expected to develop in the future. In general, the reference scenario contains information on the development of fossil fuel costs, demographic changes, economic growth and structure, change of building stock and many other parameters of this kind.[41] The reference scenario can be an important tool that allows for the formulation of a realistic target. Stockholm, for example, has chosen to express its reduction target in per capita terms, as the city's population is expected to grow over the next decade. A per

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[40] Bertoldi, P., Bornás Cayuela, D., Monni, S., Piers de Raveschoot, R. 2009. Existing Methodologies and Tools for the Development and Implementation of Sustainable Energy Action Plans (SEAP). Summary report II: Methodologies and Tools for CO_2 inventories in cities. JRC report commissioned by the Covenant of Mayors, available online at: http://www.eumayors.eu/library/documents_en.htm.

[41] For more details see Covenant of Mayors. 2010. How to develop a Sustainable Energy Action Plan. Guidebook, p. 54.

capita target increases flexibility and limits the reduction burden. The SEAP template explicitly allows absolute and per capita reduction targets.

In some cases such as Burgas, defining the baseline is one of the main future challenges. Burgas is facing a lack of basic data about energy production and energy consumption on the local and regional levels, especially concerning energy production from RES. Yet, in order to outline the SEAP's objectives for the long, medium and short terms as well as its main priorities and activities, it is necessary to identify the baseline situation and generate scenarios for the future.

2.1.2.3. Target setting

The targets set by the case study municipalities surveyed in this study all comply with the basic demand of the Covenant of Mayors, namely that signatory cities should go beyond the objective set by the EU to reduce CO_2 emissions by 20% by 2020 (though not all of the case study municipalities are CoM signatories).[42] As Table 4 shows, however, the emission reduction targets have been framed in a wide variety of ways across the eight municipalities. In addition to the distinction between per capita and absolute reduction targets explained above, targets vary in terms of the target year and with respect to the base year, although most follow the international convention of choosing 1990 as the base year.

Table 4: Overview of CO_2 emissions reduction targets in the case study municipalities

	Target	Type of target	Base year	Target year
Alba Iulia	n/a	n/a	n/a	n/a
Almada*	-5%	Absolute	1997	2012
Burgas	Beyond -20%	Absolute	1990	2020
Munich	-50%	Per capita	1990	2030
Rožnovsko	Emission reductions, no target specified	n/a	n/a	2020
Siena Province	Carbon neutrality[43]	Absolute	n/a	2015
Stockholm	3 t per capita equals appr. -44%	Per capita	1990	2015
Woking	-34% -80%	Absolute	1990 1990	2020 2050

* Almada is a signatory to the CoM and is therefore aspiring to go beyond the 20 % emissions reduction by 2020. However, since Almada's SEAP is still under development, the table lists the target of its 2003 Mitigation Action Plan.

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[42] European Commission. 2010. Report Covenant of Mayors. ManagEnergy Website, available online at: http://www.managenergy.net/products/R2008.htm.

[43] The province of Siena plans to become carbon neutral by using forests as carbon sinks: in 2015, emissions will amount to 966.670 t CO_2-eq. while forests will sequester an amount of 1.142.738 t CO_2 eq. This leads to a negative balance of -176,068 tCO_2-eq. emissions (see Casprini, Paolo (2009): Presentation held in Burgas on 24 September 2009, during a Sustainable NOW project meeting). It should be noted that including forest sinks into GHG balances is highly controversial within the international climate policy community. The background is that forestry measures are often cheaper than other climate mitigation measures, but yield less secure mitigation gains as forests can be lost through fire or felling. Consequently, there is a danger that a focus on forestry measures leads to less ambitious measures in the field of energy policy.

Owing to the diversity of data in the SEAPs, the ambition of these targets cannot be compared. This is not only a challenge for the evaluation and monitoring of the SEAPs, but also a challenge for learning from best practice cases, stemming from the difficulty to identify and compare good or bad performers. The monitoring process would be facilitated greatly if national and local climate and energy targets were easily comparable. Consequently, targets should at least be comparable within the same country, i.e. municipalities should refer to the same base and target years.

Last but not least, long-term targets such as those stated by the CoM should always be combined with interim targets to ensure near-term progress and to facilitate implementation by allowing for continued monitoring. Interim targets can identify areas of low performance and allow for corrections to be made in time to achieve long-term targets.

2.1.2.4. Internal barriers against ambitious targets and lobbying of key actors

The case study research does not suggest that powerful stakeholders would use their participation to prevent ambitious emission reduction targets. On the contrary, in Stockholm, for instance, city and business stakeholders managed to find common ground between objectives set by large companies operating in the region such as the public transport company and the energy company, and targets set in the SEAP. Another positive example is the Stockholm Climate Pact. Burgas and Rožnovsko try to address this potential problem by bringing companies onboard in the SEAP development process through stakeholders or advisory boards.

Establishing relationships and interactions based on mutual trust between the public and private sectors (with its many stakeholders) will likely play a crucial role in SEAP development and implementation, as well as in a city's path toward sustainability.

2.2.   Implementing SEAPs

Since the Covenant of Mayors has only existed for a very short time, experience with the implementation of SEAPs remains limited to date. Most of the case study municipalities are still in the process of preparing and adopting a SEAP. However, Stockholm, Woking and Siena can already look back on past efforts to implement former climate mitigation strategies. The other municipalities under review have already anticipated some of the challenges facing them in the implementation phase of the SEAP, including:

- Securing continuous political commitment for SEAP implementation;
- Establishing an effective management and monitoring process;
- Securing funding for implementation;
- Prioritising implementation measures; and
- Building capacity within the local authority.

2.2.1. Continuous political commitment

Most of the local experts interviewed for the case study research emphasised that continuous political support for the implementation of climate mitigation measures is of paramount importance for the success of a SEAP (e.g. Woking, Almada and Rožnovsko). Thereby, support needs to come from both elected representatives and senior officers in the administration as well as from major local businesses and city residents. Support is most critical with respect to budget decisions and when regulatory changes are discussed, some of which might be unpopular with certain societal groups. In this process, governance and management need to be transformed from singular projects like buildings and other types of visible infrastructure to conceptual sustainable development projects based on citizens' needs.

Forging a consensus and mobilising all government officials for a common goal can prove to be challenging in an atmosphere of mutual mistrust. In Burgas, for example, interviewees have stated that finding efficient ways for institutions to work together towards a common goal, especially when there is no direct financial objective, can sometimes be problematic. In contrast, Stockholm provides a positive model. One of the success factors for Stockholm's climate mitigation efforts is the systematic discussion process with stakeholders before making political decisions. The process has proven beneficial in terms of anchoring objectives among several stakeholders working towards similar targets. There is a political consensus in Stockholm on the importance of reducing carbon emissions and saving energy. Furthermore, clear targets for the reduction of emissions are decided at the political level.

2.2.2. Management and monitoring process

If political support can be obtained, a well-functioning management system needs to be designed which includes efficient and effective monitoring and auditing. Its objective should be to routinely integrate climate mitigation concerns into all decision-making processes within particular authorities. For example, the Woking climate change action plan is centrally managed by the Senior Policy Officer of Climate Change, while specific actions of the strategy are divided into key themes and service areas, which are then assigned to the relevant officer or business area manager. Progress on these actions is reported to the Senior Policy Officer to be included in a decision-making software tool.[44] This instrument was developed by the Council and is applied across all Council decisions and business areas. In addition, all reports or projects proposed within Woking Borough Council must demonstrate how they contribute to the sustainability and climate change aims of the organisation. This requirement ensures the application of sustainability criteria at all levels.

In a similar approach, Stockholm City Council systematically examines the impact of every investment decision on the greenhouse gas reduction goals of the city before proceeding. Each activity's particular relevance to the city is also assessed.

In addition to the mainstreaming of climate mitigation indicators into decision-making, a realistic breakdown of the reduction target is another key element for the successful implementation of a SEAP. The overall reduction target must be broken down into individual sector targets. In a second step, the responsibility for meeting these targets in a given time frame and for monitoring progress can be assigned to the leaders of distinct departments and units within the city administration.[45] This procedure is similar to the system implemented by the UK Climate Change Act at the national level. The law implemented in 2008 stipulates that the short-term climate mitigation target must be divided into five-year carbon budgets for each government ministry. The carbon budget is passed in

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[44] Shikari is a bespoke software package designed by Woking Borough Council. The primary objective of the system is to provide the Council with a corporate business management tool to track all the subjects raised and their outcomes in the decision-making process. The system provides the following benefits:
- To aid and monitor the decision making process;
- To improve the transparency of the decision-making process for both members and officers;
- To provide a corporate tool to track the outcomes of decisions;
- To increase accountability across the organisation;
- To provide a tool to monitor performance;
- To further the objectives of the Woking Community Strategy;
- To standardise the Council's processes for awarding support to local community organisations;
- To manage the actions arising from the Council's Improvement Plans and Service Plans.

[45] For more details see also Covenant of Mayors. 2010. How to develop a Sustainable Energy Action Plan. Guidebook, p. 51.

Parliament together with the financial budget to evaluate the relevance of the reduction requirements.[46]

The establishment of targets by companies, especially publicly owned ones, is a possible method for stakeholder contribution. These targets should be compatible with the city's overall reduction target. If the commitments are formalised in the form of a memorandum of understanding between the City Council and the company, they, along with the proposed implementation measures, can carry more weight. This approach has been chosen, for example, by the city of Berlin in its sustainable energy strategy.[47]

Finally, evidence from the Woking case study suggests that coordination of the SEAP implementation can be improved by providing a central point for sourcing information on good practices and funding mechanisms. A central point of information allows smaller-sized municipalities and municipalities with limited capacity to keep track of opportunities at EU level (e.g. the CoM, ELENA, etc.), increasing their chances to become familiarised with and participate in sustainable energy action planning[48]. In both Almada and Siena, newly founded energy agencies fulfil this role at least in part. The unique configuration of energy agencies as independent units with a public service mission as well as specific expertise allows them to serve as impartial service providers.

2.2.3. Securing funding

Most climate mitigation measures carry high up-front capital costs, even though these costs might be more than offset by reduced energy costs over the lifetime of the capital good. Energy efficiency measures in buildings are a classic example. Securing funding for the implementation of mitigation measures is therefore one of the crucial challenges facing local authorities.

In all of the case study cities, funding has been cited as a challenge, given that many different interests compete for the same scarce resources. None of the cities can shoulder the burden on its own. Stockholm and Woking use a combination of municipal and national funds while all other cities reviewed receive funding from various levels of government, including local, national and EU levels. EU funds include support from the European Investment Bank (Munich),

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[46] UK Government, Climate Change Act of 26 November 2008, available online at: www.opsi.gov.uk/acts/acts2008/pdf/ukpga_20080027_en.pdf.

[47] Berlin City Council, Department for Health, Environment and Consumer Protection, Website: http://www.berlin.de/sen/umwelt/klimaschutz/landesenergieprogramm/.

[48] For example, the project Sustainable NOW aims to create a Local Energy Action Plan Wizard (LEAP Wizard); an online database where cities across the EU will record sustainable energy measures that they implemented. This will give experienced and inexperienced municipalities an insight into the degrees of difficulty, financial aspects, implementation schedule, and general reference cases, and should aid municipal decision-making.

the Intelligent Energy Europe Programme (Burgas, Munich, Rožnovsko, Alba Iulia, Siena and Woking) and – of high importance for the new Member States – structural funds (Rožnovsko). In Burgas, Siena and Woking, private sources of funding also play a role, e.g. through the establishment of private-public partnerships or by using energy service companies (ESCOs).

2.2.4. Municipal funding

Two of the reviewed authorities have created separate budgets reserved for climate mitigation (Woking and Almada) to allow the responsible departments to plan investments in climate mitigation measures. However, the funds are restricted in size and, at least in Almada, remain dependent on annual budget negotiations. This emphasises the need for sizable and reliable contributions from government authorities on other levels as well as private sources.

2.2.5. National-level funding

All municipalities reviewed in this study rely on national funding sources to implement SEAP measures. Scarce national funding (Almada) and uncertainty about future allocations (Munich) are considered to be major obstacles to effectively implementing the SEAP. If, on the other hand, national funds of an appropriate size are available on a regular basis, they lead to considerable success. In Stockholm, for example, the national support scheme Climate Investment Programme financed many of the actions in the city's environmental programme. The funds were allocated by the Swedish Parliament (Riksdagen) to encourage municipalities, companies and other stakeholders to reduce their emission of greenhouse gases via long-term investments. The investment scheme has now been modified to support sustainable urban building, and the city is currently investing 10 billion SEK for the refurbishment of buildings in areas where reduction of energy consumption is a priority. Overall, the Swedish parliament granted 1.8 billion SEK in climate investments to municipalities and other stakeholders throughout Sweden between 2003 and 2008.

In addition to direct funding for local authorities, as is the case in Stockholm, sector-specific subsidy schemes at the national level such as feed-in tariffs or soft loans for energy efficiency measures also play an important role. The micro-region Rožnovsko, for example, used subsidies that are available for public buildings and entrepreneurs from the Czech Republic Green Investment Scheme (GIS).

2.2.6. EU funding

Concerning EU funding, evidence from the case studies emphasises the crucial role of IEE projects such as ASPIRE[49] and Sustainable NOW[50] for the SEAP design and implementation phases (Rožnovsko, Burgas and Alba Iulia). In the case of Alba Iulia, involvement in the ASPIRE project, which sought to develop a replicable model for creating 'Sustainable Energy Communities' in peripheral areas of the EU, has been a decisive factor in kick-starting the city's activities in the field of sustainable energy planning. The municipality had no previous experience in renewable energy projects. Through the project, the administration started to engage with stakeholders and identified financing structures and schemes to support the creation of local energy services.

In addition, the European Investment Bank and the EU Structural Funds are highly relevant as far as implementation is concerned. The structural funds for the period 2007-2013 provide a number of financing opportunities including funding for energy efficiency and renewable energy in the Czech Republic, e.g. in the Operational Programmes for Environment as well as Entrepreneurship and Innovation (Rožnovsko, Alba Iulia). Structural funds are also expected to support the implementation of the SEAP of Burgas. The Operational Programme 'Regional Development' has already played an important role in improving public buildings in the municipalities.

2.2.7. Private investment

Owing to the sheer amount of low-carbon investment that will be required to shift EU economies to a low-carbon pathway, public funding alone will not suffice. Evidence from the case studies suggests that municipalities are already using a number of instruments to incentivise private investment. These include:

-    Private-public-partnership (PPPs) models (Burgas);
-    Development and promotion of Energy Service Companies (ESCOs) (Woking, Burgas);
-    Advice and networking activities to incite citizens and businesses to use market-based instruments such as feed-in tariffs for renewable energy where those exist (Almada);
-    MoUs with companies that establish company climate mitigation targets (Stockholm).

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[49] The ASPIRE project, supported by the Intelligent Energy Europe, was launched in October 2006, bringing together a partnership of 11 organisations representing 9 communities across the EU. The project ended on 31 March 2009. Source: http://www.aspire-project.eu/.

[50] The Sustainable Now project, supported by the Intelligent Energy Europe, was launched in September 2008. 15 organisations from 6 countries are partnered in the project. The project includes 9 local governments, amongst them Munich, Burgas, Siena and Woking which are developing and implementing SEAPs. Source: http://www.sustainable-now.eu.

Except for the last instrument, all of these options are only viable if the national level government puts the appropriate regulatory framework in place.

2.2.8. Impact of the economic crisis on availability of funding

The recent financial crisis puts extra pressure on municipal budgets and potentially reduces funds for environmental and sustainable sectors. In terms of project budgets, it is not easily determined how the financial crisis is affecting different European countries. Many of the stimulus programmes for economic recovery encompassed funds for building refurbishment projects and renewable energy installations on the local level (e.g. UK, Germany, France, and Austria).[51] At the same time, there is a clear trend of municipal budget reductions across the EU. Interviewees in Stockholm and Munich agreed that the possibility of budget cuts is real and that the situation is at best uncertain. Munich estimates budget cuts in the short run to be "already conceivable" and hopes they will not be "too severe"[52]. Almada, on the other hand, has thus far seen a trend in 'green investments' in the face of financial downturns. The administration of Woking highlighted the constant difficulty for environment and sustainability departments to secure funds in the face of traditional as well as unforeseen local government needs. Competition for funds with other municipal departments is intense and 'green investments', in general, are often assigned lower priorities, especially in difficult financial times.

2.2.9. Prioritisation of measures

When moving from the design to the implementation of a SEAP, local authorities must decide which of the reduction measures identified in the SEAP should be implemented first. Most cities surveyed in this study favour a pragmatic approach based on an assessment of the cost effectiveness of the solution and its impact in terms of carbon reduction, cost savings and resource use intensity.

The list of "significant actions" collected in the case studies shows a high number of awareness-raising and demonstration projects, which are often cheaper and pose less danger of being unpopular than regulatory changes. Examples include the establishment of energy agencies (Almada, Siena, Alba Iulia) and demonstration buildings such as the Woking Oak House or renovated multifamily buildings in Burgas.

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[51] Meyer-Ohlendorf, Nils; Görlach, Benjamin; Umpfenbach, Katharina; Mehling, Michael (2009). Economic Stimulus in Europe – Accelerating Progress towards Sustainable Development?. Background Paper. ESDN Meeting, Prague June 2009.

[52] Correspondence with Dr. Gerhard Urbainczyk, City of Munich, Dept. of Health and Environment. 9 June 2010.

Best practice examples by the municipality such as financing public transport projects or renovating city-owned buildings are considered to be another crucial measure (Almada).

However, to secure substantial and lasting emissions reductions, measures will have to either include widespread financial incentives or ambitious regulatory measures. An appropriate regulatory framework at the national level is an indispensable prerequisite for this to happen.

2.3.   Progress evaluation

Monitoring is a crucial element of the SEAP process. It serves at least two main objectives: first, progress evaluation adds leverage to the SEAP, which in itself is a mere strategy document, by making progress towards the targets, or lack thereof, visible to the local authorities and the public. Second, monitoring is the basis for continuous improvement of the SEAP implementation; ideally it will initiate a continuous learning process.[53] Third-party verification (or auditing) is an additional necessary step because it increases the accountability of decision-makers and of the implementing departments to stakeholders.

2.3.1. Frequency and depth of evaluation and reporting

Once a SEAP is put in place, signatories to the Covenant of Mayors are committed to submit a report on its implementation every two years. Where possible, local authorities should include recent data on greenhouse gas emissions in the report to measure progress made compared to the baseline inventory. This biannual 'monitoring emissions inventory' is, however, not compulsory: if authorities consider the costs of data collection to be too high, they may choose to only report emissions every four years. In addition to the emissions inventory, the Implementation Report contains information on measures implemented and their effect on energy consumption and level of emissions. Finally, the report should outline corrective measures to the original SEAP. Currently, the Covenant has published only general guidelines for the content of these reports, but it plans to publish more specific guidelines before the end of 2010, including a report template.[54]

The level of experience concerning progress evaluation varies across the case studies. While Stockholm, Woking and Almada have monitoring systems in place which can be adapted to the specific needs of the SEAP process, Burgas, Rožnovsko, Alba Iulia and Munich are still working out how to organise data collection for monitoring purposes.

In Woking, monitoring of energy use had already begun in the 1990s and has been continuously adapted ever since. The reporting frequency is higher there than in any of the other case study municipalities; the strategy's deadlines and targets are monitored every three months by the city's Climate Change Working Group. The Borough produces annual reports on progress in energy efficiency and renewable energy production, and every three years the strategy document is reviewed in its entirety. In Stockholm's current environmental programme,

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[53] Covenant of Mayors. 2010. How to develop a Sustainable Energy Action Plan. Guidebook, p. 52.
[54] Covenant of Mayors. 2010. How to develop a Sustainable Energy Action Plan. Guidebook, p. 52.

reporting takes place on an annual basis and includes an update of quantitative indicators. The monitoring system for the new Climate and Energy Action Plan will use a similar procedure.

2.3.2. Database management

Regular and consistent reporting of data on energy use, production and emissions requires established data collection routines, which also take quality control into account. For some data input, local authorities require information from public and private enterprises such as utilities, transport operators, housing associations, waste operators and others. The case study evidence shows mixed results: while in some cities, cooperation works without major problems (Stockholm, Munich), in other cases private companies' reluctance to share data, e.g. on renewable energy installations or energy consumption, can be an obstacle and make meaningful progress evaluation more difficult (Rožnovsko).

2.3.3. Greenhouse gas inventory tools

Both Almada and Woking Borough use a greenhouse gas monitoring tool. These tools allow for updates of the greenhouse gas inventory which was put in place during the SEAP design phase. In addition, the tool can be used to estimate the GHG reduction that can be obtained through any given measure.

To date, information on experiences with these tools is limited. Future research and best practice exchange will have to show what the benefits and draw backs of the respective software tools are. One question that remains open is whether monitoring tools can also support the monitoring of implementing measures to reduce GHG emissions, e.g. by allowing various departments and/or stakeholders to feed data into the system on their own.

2.3.4. Data quality control

Since not all data can be collected at the local level, the measurement of some indicators depends on estimations or interpolations from data collected at the national or regional level. To ensure comparability over time, the methods applied to calculate the data must remain constant.[55] This in turn places great responsibility on those who designed the monitoring system. Even though more indicators can be added over time, they will only generate valuable information after data has been collected for a long period of time. Therefore, those measurements that go furthest back in time are most valuable.

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[55] For more details see Stockholm case study.

Two of the surveyed cities have enlisted the support of academic institutions to provide them with advice on the establishment and implementation of the monitoring system (Stockholm, Munich).

2.3.5. Choice of indicators

The CoM Guidebook defines a large number of sector-specific indicators for monitoring a GHG emissions reduction measure. In addition, the guidebook also clarifies how to collect data for each of the indicators.[56] The evidence from the case studies of those cities already implementing SEAPs or other climate mitigation strategies suggests that none of the cities surveyed uses the full range of indicators. On the contrary, evidence from Almada and Woking suggests that cities limit monitoring to a small number of key indicators, including:

- Total energy consumption;
- Total electrical energy consumption;
- CO_2 reduction from local authority operations;
- Per capita reduction in CO_2 emissions in the local authority area;
- Energy consumption for municipal transports;
- Renewable energy consumption;
- Percent of people receiving income-based benefits living in homes with low and high energy efficiency ratings.

This list is far from representative. It does, however, illustrate that even experienced cities limit themselves to reporting on the most relevant indicators. One reason is that data collection is costly. None of the case study cities have reported setting aside specific funds for data collection.

Owing to the high costs involved, data collection for a set of relevant indicators is one area where cooperation across governance levels can bring increased added value to local communities.

2.3.6. Completing the policy learning cycle

To serve their purpose in the policy learning cycle, monitoring results must be clearly communicated to stakeholders and the wider public; regular reporting duties can ensure this reasonably well. Furthermore, monitoring results have to be fed back into the decision-making cycle so that corrective measures proposed in the report will be put into practice. Thus a cyclical integrated management approach consisting of five steps is completed: baseline review, target setting, political commitment, implementation & monitoring, and evaluation & reporting. The example of Woking, where a fixed date is set every three years for a

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[56] Covenant of Mayors. 2010. How to develop a Sustainable Energy Action Plan. Guidebook, p. 52-54.

comprehensive review of the sustainable energy strategy shows how this type of learning can be built into the institutional set-up.

2.3.7. Role of the Covenant of Mayors' review process

CoM signatories are required to submit their SEAP within one year after joining. According to the CoM website, the submitted SEAPs will be checked for consistency and completeness by the JRC, feedback will be provided to the signatory cities and, after validation has been completed, highlights of the collected information will be published on the CoM website.[57] Initial experiences show that many cities do not manage to deliver their SEAP on time. The case studies included in this report are proof of that.[58]

Following SEAP submission, cities are required to submit an Implementation Report "for evaluation, monitoring and verification purposes"[59] to the CoM every second year. The report allows the CoM to monitor implementation of the commitments by participating cities. The CoM pledges to support signatories in technical matters throughout the whole process from SEAP inception to monitoring. This support can be delivered by the CoMO itself, by the JRC and by Supporting Structures.

In order to better understand the role these institutions play in practice, additional interviews were conducted with representatives from three of the eight case study cities: Almada, Munich and Stockholm. The three cities were chosen because of all case study cities they are the most advanced in the process. The interviewees were asked about their reliance on the supporting structures and the extent to which monitoring by the CoM had affected implementation of their SEAP.

The results showed that none of the three cities interviewed has requested the assistance of a supporting structure. Almada and Stockholm did not perceive any need for additional assistance, as they consider themselves advanced in the areas of energy and climate change issues. In the case of Almada, the local energy agency offers direct expert advice to the municipality on the development and implementation of the SEAP. Stockholm feels it has enough in-house exper-

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[57] Covenant of Mayors Website, Frequently Asked Questions, available online at: http://www.eumayors.eu/faq/index_en.htm#q0035.

[58] Stockholm approved their SEAP on 14 April 2010 – 16 months after becoming a signatory. Munich expects formal approval of their SEAP as early as June 2010 – 16 months after becoming a signatory. Almada is currently preparing its SEAP and will request a deadline extension from the CoM. At the time this report was written, 16 months had passed since it became a signatory. As a reference point, the other two cities showcased in this study which are signatories to the CoM have also missed the 12-month deadline to submit their SEAP: it has been 17 months since Alba Iulia became a CoM signatory, and 18 months in the case of Burgas.

[59] Covenant of Mayors „How to develop a Sustainable Energy Action Plan (SEAP) – Guidebook, available online at: http://www.eumayors.eu/mm/staging/library/SEAP.pdf.

tise to complete the task by itself. Munich hired two research institutions to support the preparation of their SEAP, and in addition developed a carbon monitoring tool in-house.

Similarly, the reflections on the subject of SEAP validation suggest that monitoring by the CoM is not required to implement the SEAPs. The three surveyed administrations claim that political commitment and broad consensus already secure long-term efforts and results. However, one interviewee mentioned that monitoring organised by a central body like the CoM could, however, bring benefits to cities by offering a better opportunity to compare performances as well as to achieve SEAP standardisation. Monitoring conducted by the CoM can add value by offering third-party verification, as requested in quality management systems like EMAS, ISO 9000 or ISO 14000.

Regarding the unanimous sense of self-sufficiency expressed by the cities examined in terms of monitoring, it is important to note that all surveyed cities have either in-house expertise or regularly obtain support from third parties (local energy agencies or research institutions). For smaller-sized signatory cities, however, having access to monitoring and technical support through the CoM is likely to be much more critical and beneficial. In addition, third party verification through the structures of the CoM is a desirable and indeed necessary exercise for both advanced municipalities and less knowledgeable cities to ensure good practice and to maintain high standards within SEAP implementation.

Since its creation in 2008, the CoM has managed to attract considerable attention from local authorities in Europe and beyond, playing a high-profile, high-visibility card, benefitting its members and the sustainable energy movement in general through good promotional benefits. The CoM maintains high expectations for its pledged outcome (the 20/20/20 goals by 2020) and continuously seeks to increase the number of signatories. Regarding membership numbers, the CoM has been extremely successful so far. Yet, this success brings with it a potential risk that the initiative may not be able to deliver on the promised support services to signatory cities – which, as a consequence, could also diminish the initiative's effectiveness in achieving the targeted emission reductions.

The concern is based on:

- the fact that to date, no summary of a completed SEAP has been visibly displayed on the CoM webpage. This is certainly due to the relatively short time frame of 12 months for SEAP delivery. Many members appear to need significantly more time to finalize their plans. It

may, however, also hint at capacity problems within the CoM structure to support and verify fulfilment of CoM commitments by signatories;

- the large number of SEAPs and Implementation Reports to be expected in the future (the latter starting 2011). In order to sufficiently monitor and verify the rising number of reports, the CoM structures will likely have to be expanded;
- what the lack of clarity concerning the results of validation and verification by the CoM could mean for signatories. For example, could signatories be expelled from the Covenant if they fail to satisfactorily implement the SEAP? Would high performing signatories, on the other hand, receive credit when applying for EU funding or the like?

These factors pose a risk that the expectations raised by the CoM with respect to verification and monitoring may not be met. In this case, achieving the 20% reduction target in all signatory cities would largely depend on the capacity of the cities themselves to prepare, implement, monitor and self-evaluate their actions. This does not necessarily preclude that targets will not be met, but experiences from similar initiatives shows that third-party verification is an important step to ensure that *all* members reach a minimum quality level. Another benefit of monitoring and verification from a central source like the CoM is greater standardisation in approach, therefore allowing for the comparison of performances. Lack of sound guidance may also harm the reputation of the CoM among signatories. Furthermore, some cities might start to see CoM membership as an easy opportunity to obtain green credentials without having to invest heavily in the implementation of concrete measures.

Consequently, the possibility of increasing funding for CoM structures should be considered. Given their assigned roles in the validation process of SEAPs and Implementation Reports, strengthening the CoMO and JRC appears to be the most obvious option. However, several other options for ensuring adequate monitoring and verification should also be considered. Training auditors at the national level could be one option; assigning this monitoring role to supporting structures could be another. This approach has been applied in the EU LIFE+ project CHAMP – Local Response to Climate Change.[60] Moreover, the CoM could also consider organising a peer review system between signatory cities, commenting on each others' SEAP drafts. The procedure has been successfully applied in EU research projects such as Managing Urban Europe-25, BUSTRIP or the IEE-project Sustainable NOW. All of these solutions would only be viable if at least part of the funding were covered by EU sources.

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[60] http://www.localmanagement.eu.

In summary, the important role of the CoM initiative to provide the services of a monitoring and verifying body should be emphasised. Effective monitoring would increase the chances of effective long-term SEAP implementation. Signatory cities should be able to rely on the structures put in place by the CoM as solution providers and expert advisers.

2.4. Policies included in the SEAPs

Ambitious local and regional objectives can only be reached if local governments formulate and implement adequate and effective policies and measures. There are a variety of instruments available to cities and regions to do this. These instruments can be soft such as information and communication; local governments can provide financial incentives or introduce regulation, depending on the competences granted to them by the respective Members States' law.

As the level of government closest to citizens, cities and regions can influence citizens in various manners: they can serve as role models by establishing green procurement rules, including refurbishment of public buildings. By doing so, local authorities will also create demand for sustainable products and services. Moreover, cities and regions are responsible for urban development through planning and regulation, with ample opportunities for changing structures to encourage sustainable behaviour. Finally, cities and regions can strive to inform citizens, raise awareness for climate change mitigation and provide specific advice on options to act.

2.4.1. Policies and measures as suggested in the SEAP Guidebook

The SEAP Guidebook provided by the CoM supports cities and regions in the development of SEAPs, especially in the implementation phase. It describes a number of possible policies and measures, taking into account the competences of the local authorities as well as relevant EU legislation. The recommended policies and measures are particularly suitable to reach CoM objectives.

The SEAP Guidelines distinguish between policies and measures, though it emphasises that there are no official or commonly used definitions. Policies and measures can be categorised in different ways, for instance by the sectors addressed, by the addressee (local administration or citizens), by the type of instrument (financial support, regulation, information, demonstration) or the type of impact on the energy consumption and production patterns.[61]

Policies

Policies - as understood in the SEAP Guidebook - will generally deliver CO_2 reductions over the long term, especially via subsidies, regulations and information campaigns. The Guidebook recommends that they should cover key sectors of the CoM such as buildings and transport, deployment of renewable energies

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[61] Covenant of Mayors 2010. How to develop a Sustainable Energy Action Plan. Guidebook developed with support of the Joint Research Council, available online at: http://www.eumayors.eu/mm/staging/library/SEAP.pdf, p. 26.

and combined heat and power as well as the key fields of action, i.e. land-use planning, waste management, public procurement, working with citizens, and information and communication technologies.

Regarding buildings, the SEAP Guidebook proposes a number of policies, including:
- regulations for new and renovated buildings;
- enforcement of regulations;
- financial incentives and loans;
- information and training;
- promotion of best practice cases;
- demonstration buildings;
- promoting energy audits; and
- change of urban planning rules.

In the field of transport, the Guidebook focuses on policies that can help to reduce the need for transport, to increase the attractiveness of other transport modes (such as public transport, cycling, walking), to make travel by car less attractive by pricing, and to reduce municipal and private vehicle fleet emissions.

Regarding renewable energy resources and distributed energy generation, the Guidebook suggests that cities and regions should:
- set a good example and support the development of local energy generation;
- provide information and support stakeholders;
- ensure the availability of space for renewable energy projects; and
- invest in public, green and joint procurement.

Measures
In addition, the SEAP Guidebook provides a collection of technical measures for energy efficiency and renewable energies in the fields of buildings, lightning, heating/ cooling and electricity production, district heating and cooling, office appliances, demand side management measures, energy audits and specific measures for industry. According to the Guidebook, all measures listed have been tested and successfully implemented by several cities in the EU. Moreover, the SEAP Guidebook lists average costs and emissions of some technologies.[62]

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[62] Covenant of Mayors 2010. How to develop a Sustainable Energy Action Plan. Guidebook developed with support of the Joint Research Council, available online at: http://www.eumayors.eu/mm/staging/library/SEAP.pdf, Chapter III.

2.4.2. Examples of policies and measures in SEAPs

Within the case study governments surveyed in this report, only four cities have completed the preparation of their respective SEAPs: Almada, Munich, Stockholm and Rožnovsko. However, the SEAP of Munich is not yet available to the public. The SEAPs of Almada, Rožnovsko and Stockholm are not available in English. In addition, to date no completed SEAP has been made available on the CoM webpage. There is only a list of signatory cities, providing links to the signatories' homepages. Yet, SEAPs are only provided in MS languages, not in English, making their assessment more difficult. The lack of English translations will also hamper the exchange of best practices between cities and regions all over Europe and the benchmark effect that successful SEAPs could have. As a consequence of the limited number of SEAPs available, assessment of measures and policies will necessarily remain incomplete at this point in time.

To increase the sample size, the SEAPs of Bristol (UK), Hamburg (D) and the Brussels Region (BE) have been included in the analysis in addition to the case studies. All three cities are signatories to the Covenant and have completed SEAPs.

Bristol, UK
Bristol signed the CoM in 2009. Subsequently, the city council adopted the "Bristol Climate Change and Energy Security Framework"[63] in February 2010, which focused on energy saving potential and GHG emission reduction. The strategy includes overall GHG reduction targets, as well as specific energy policy and social policy targets for Bristol's business and public sector, as well as for households and transport. It builds on two predecessor strategies, dating from 2004 and 2008.

The city aims to reduce its GHG emissions by 40% by 2020 and by 80% by 2050 compared to 2005. The SEAP lays out 20 strategic activities for the next five years to help progress towards those targets and 40 specific actions for the short term. These actions are supposed to be set in motion as early as 2010/11 with the help of additional funding.

The SEAP does provide for funding and monitoring of the measures. The city promises to consult on the activities and review them annually, refining the plans and planning new specific activities. The funding of the measures will be generated from public and private sources, notably from the City Council and the Central Government, European initiatives and other external partners.

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[63] http://www.bristol.gov.uk/ccm/content/Environment-Planning/sustainability/climate-change.en?page=2.

The City Council highlights the following key aspects of the SEAP:

- The investment in new infrastructure and upgrading buildings – for example a £6 million investment in homes, particularly focused on the most vulnerable households, and a £300 million investment in sustainable transport;
- Using city services to contribute to the targets – for example by using libraries and cultural facilities to help inform citizens about climate change;
- Working in partnership with and supporting the actions of other organisations and communities – for example, through advice and support for businesses, advisory services for citizens and community project funding.

The strategic activities and specific actions are further presented in a table in the annex of the SEAP. The table shows that the 20 strategic activities and actions always correspond to each other, i.e. the long-term strategic activities are always supported by short-term actions. Most of the strategic actions are linked to local social, economic and cultural goals of another relevant local strategy, the Bristol Partnership 20:20 Plan. The partnership plan commits to eight priorities, including climate change, and aims to foster partnership between neighbourhoods the city as well as the regional and national levels in order to achieve them. By connecting both plans, the 20:20 Plan and the SEAP, the city is integrating implementation of sustainable energy policies.

Hamburg, Germany

Hamburg signed the Covenant in 2009, but launched several climate and energy strategies before becoming a signatory, one of which was recently renewed.[64] The new SEAP is a comprehensive strategy of more than 250 pages. It concentrates on ten different fields of actions, namely research, energy, "city as a role model", buildings, mobility, commerce system engineering, climate impact management, awareness-raising and legislation. Fields of action and measures are presented in a table, which makes the assessment of the SEAP very convenient for both authorities and citizens. Every field of action comes with a target and concrete measures (more than 300 in total) for its implementation. Moreover, for each measure a short description is provided and – in most cases – with a funding concept. Implementation of the SEAP will mainly be financed through public funds, up to an amount of EUR 25 m in 2009 and 2010.

Brussels Region, Belgium

Brussels signed the Covenant of Mayors in December 2008 and presented its SEAP in March 2010. In the SEAP, the Brussels Region sets out concrete measures for achieving its obligation under the Covenant to reduce its GHG emissions by at least 20% by 2020 (compared to 1990 levels).

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[64] Download available on http://klima.hamburg.de/klimaschutzkonzept/1109282/hamburger-klimaschutzkonzept.html.

The SEAP focused on four areas: buildings (12 measures), transport (7 measures), sustainable consumption (4 measures) and waste (6 measures). Actions will be further specified in three thematic strategies planned for 2010: the climate and energy Strategy 2020, the 4th waste strategy and an action plan on sustainable consumption. For the 24 most important measures, the specific GHG reduction potentials have been calculated using a regional energy and emissions model. By contrast costs of implementation are not discussed in the SEAP.

2.4.3. Analysis

Table 5 shows a list of model policy measures included in the SEAPS surveyed.

Each of the SEAPs encompassed at least one hundred measures, most of them more. Thus, the table presents neither a complete nor a representative list of policies and measures of the SEAPs under review. It does, however, show that the cities reviewed employ a huge variety of policies and measures both in terms of sectors addressed and in terms of the instrument used to achieve the desired outcome. Thus, ideas for innovative measures covering all relevant fields appear to abound.

In contrast, the sample analysis suggests that there is room for improving the quality of the description of each single measure or policy. As a basis for sound decision-making, a SEAP should supply information on the estimated GHG reduction potential and the estimated costs of each measure, or at least for the most important items. However, none of the surveyed SEAPs supply this information with the necessary level of detail. The SEAPs of Stockholm and Brussels include information on GHG reduction potential, but do not provide estimates of implementation costs. By contrast, Hamburg's SEAP provides detailed cost estimates but lacks estimates on the amount of GHG emissions that can be mitigated through each of the proposed measures.

Another area of improvement with respect to detailed planning of implementation is the level of detail when describing the action item. Ideally, each action item should come with a measurable target and a timescale for implementation. The Woking SEAP is exemplary in this respect. For example, it contains a measure aiming to generate 20% of the Council's electrical energy requirements from renewable sources by 2011. If measures are formulated in this specific fashion, it increases the chances of successful implementation since responsibilities are clearly stated and the relevant units can be held responsible if progress lags behind planning. This significantly eases monitoring and increases accountability.

Table 5: Examples of policies and measures in SEAPs surveyed

Policies and measures	Regula-tory ap-proach	Financial incen-tives/ Invest-ments	Informa-tion & education
Bristol			
Support action by individuals, communities, Neighbourhood Partnerships and community, voluntary and social enterprises on climate change and peak oil response			X
Feasibility studies and pilot loan fund to deliver advanced energy efficiency and integrated renewable energy programmes for the city's buildings		X	X
Implement the existing local transport plan, e.g. walking action plan, cycling city, travel plans	X		
Plan land use and an integrated transport system which reduces transport energy use and carbon emissions	X		
Use of cultural facilities and work with cultural partners to help communities understand and respond to the challenges and opportunities presented by climate change and energy security			X
Integrate carbon and energy targets into all council projects, programmes and strategies (this includes partnership plans)	X		
Plan and implement sustainable energy measures for Bristol, such as district heating, wind, solar and biomass installations	X		
Improvement of efficient use of resources by helping residents reduce, recycle and compost their waste			X
Reduce emissions from the council's building and operations by 40% by 2020 including schools	X		
Woking			
Building Code revision to stipulate that all newly built homes will be carbon-neutral from 2016; production of a Climate Neutral Development Planning Document	X		X
Reduce heating costs of households through grants for urgent works (e.g. replacement of windows) and free installation of low-energy light bulbs		X	
Adoption of low carbon homes programme	X		
Analysis of options to expand decentralized energy system, including CHP			X
"Winter Warmer" programme to insulate private house-		X	

holds at no cost to residents

Policies and measures	Regula-tory ap-proach	Finan-cial in-centives/ Invest-ments	Informa-tion & educa-tion
Siena			
Modification of building code to reduce energy demand and consumption in private and public buildings	X		
Promote use of co-generation to satisfy industrial energy demands (eliminating use of gasoil)			X
Facilitate introduction of biodiesel		X	
Reduction of energy consumption in public buildings across the Province		X	
Hamburg			
Heat supply concept to assess costs and consequences of public energy grid			X
Improvement of green urban planning	X		
Establishment of an energy agency			X
Establishment of a roof space exchange for photovoltaic installations		X	X
Identification and designation of wind power plant loca-tions	X		
Public procurement law: improvement of green pro-curement requirements	X		
Tree plant concept	X		
Green rent index	X		
Implementation of voluntary commitment of industry enterprisers			X
Webpage on climate protection			X
Hamburg City Climate Conference			X
Support for smart metering systems		X	
Increase share of renewable energy in electricity in pub-lic buildings to 100%	X		
Improved Park & Ride system and cycling infrastructure		X	
Stockholm			
The city of Stockholm to use 100% green cars (2010-2015)	X		
Taxi and freight transport to only buy green cars in new purchases (2010-2015)			

Policies and measures	Regulatory approach	Financial incentives/ Investments	Information & education
Car pools and reduced residential parking areas (2010-2015)	X		
Refurbishment and energy efficiency measured in municipal buildings (2010-2015 and 2016-2020)		X	
Expansion of the district heating system (2010-2015)		X	
Replacing coal with renewable energy sources in energy production (2010-2015)		X	
Development and expansion of the public transport railway network (2016-2020)		X	
Rožnovsko			
Thermal insulation of selected external facades of the city administration		X	
Complex thermal insulation to reduce energy consumption in three kindergartens		X	
Promotion of PV, biogas and solar thermal capacity		X	
Almada			
Use of solar energy in buildings and equipment		X	
Energy efficient measures & passive measures for new buildings	X		
Energy refurbishment of existing buildings		X	
Mobility management measures, such as: parking regulations, construction of pedestrian areas and cycling paths, renovation of municipal government vehicle fleet	X	X	
Energy-efficient street lighting		X	
Awareness-raising campaigns			X
Brussels			
Introduction of binding efficiency standards as precondition for building subsidies	X		
Compulsory energy management schemes in businesses with high energy consumption	X		
Introduction of a new label for energy-efficient cars			X

Source: Ecologic Institute.

2.5.   Multilevel governance aspects

As mentioned earlier, multilevel governance is understood as "coordinated action by the European Union, the Member States and local and regional authorities, based on partnership and aimed at drawing up and implementing EU policies".[65] Multilevel governance – coordinated action on both the horizontal and vertical axis throughout Europe – has proven to be both beneficial and obstructive for the development and implementation of SEAPs. Below we will highlight important multilevel governance aspects with respect to the different steps in the SEAP process: designing SEAPs, implementing SEAPs and progress evaluation.

2.5.1. Designing SEAPs

As already explained, the SEAP initiative stems from the European level. Consequently, guidance and templates for designing SEAPs are provided at this level. There is therefore a risk of omitting the national level. The fact that municipalities involved in sustainability measures are often working without cooperating directly with the national government poses the risk of non-compatibility with national policies in some cases.

In Almada, the SEAP was developed on the local level before the national climate change programme was set up. On the one hand, the national programme now resembles the local SEAP since the national level could draw lessons from the Almada case. On the other hand, the SEAP in Almada needs to be revised in order to be more in line with the national policies now in existence. Consequently, there is basically a risk of non-compatibility if local policies are developed before the national ones are or if they only consider guidance from the European level. (However, this also implies that there is indeed guidance available at the national level that can be considered at the local level.)

At the same time, a bottom-up approach is possible, where the national level can adopt local policies. However, there is always a risk that the bottom-up approach could complicate local level policy development: different local authorities may develop different approaches and if the national level bases its policy on one particular local policy scheme, the others would then automatically need to adapt their policies. Since multilevel governance is understood as coordinated action involving all levels as partners, and national governments are in a better position to reach out to the many local governments in each country, the national level also needs to play a more central role in designing SEAPs.

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[65] Committee of the Regions (2009): White Paper on Multilevel Governance, CONST-IV-020, Brussels: Committee of the Regions, p. 6.

2.5.2. Implementing SEAPs

In most of the case studies, multilevel governance was seen as positive. This is particularly true for the implementation phase of the SEAP. For instance, in Almada, European networks of local governments have created a valuable framework for disseminating the opportunities available at the European level at the municipal level. Concerning dissemination of best practice among local authorities, it seems that most of the case studies benefited from European networks. Conversely, this may mean that the European level fills a gap (i.e. providing network possibilities) which the national level is not serving. As a result, the national level could help in defining and coordinating the role of local governments in supporting GHG emission reduction goals. The case of Munich highlighted that political support for the development and implementation of the SEAP has so far been more intense and pronounced at the European than at the national level, possibly due to the fact that the SEAP can be directly traced back to a European Commission initiative. Political and/or financial support from the national level may also be dependent on the political constellations at the different levels.

Regulation at the national level determines to a large extent the scope of what can be regulated at the local level. Multilevel governance can have quite a positive role in strengthening the renewable electricity markets, e.g. through feed-in tariffs. This is a price-based market instrument for the support of renewable energies; the idea behind the instrument is to guarantee operators a fixed price per unit of electricity they feed into the grid. Moreover, these tariffs are usually guaranteed for a period of 10-20 years which lowers the risk for investors. There is evidence "that feed-in tariffs achieve greater renewable energy penetration, and do so at lower costs for consumers".[66] These feed-in tariffs need to be regulated at the national level and help to introduce and use renewable energies at all levels.

In Almada, for example, the municipality was able to introduce the new Urban Regulation of Almada, including the obligation to use solar panels for hot water production in all new buildings in the municipality, anticipating new national building regulations. The regulation was made economically feasible through Portugal-wide feed-in tariffs. As this example demonstrates, there is still a clear need for more support from the national level regarding funding, overarching regulation and also the scope of action of local governments.

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[66] Commission of the European Communities (2008): The support of electricity from renewable energy sources, Commission Staff Working Document, Accompanying document to the proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable source, SEC(2008)57, Brussels 23.1.2008, p. 8.

2.5.3. Progress evaluation

Two problematic aspects of multilevel governance come to light with respect to monitoring. Firstly, some municipalities clearly need technical and, in some cases, also financial support to set up functioning data collection mechanisms. Here the EU or the CoM could provide guidance, and the planned guidebook will be an important step in this direction. But national-level governments may also be well placed to provide advice on how municipalities can use national level statistical services for their own purposes.

Moreover, evidence from Stockholm and Woking also suggests that national governments can provide support to municipalities by defining core indicators linked to national-level environmental policies. Sweden's environment policy, for example, is based on sixteen environmental quality objectives for different areas, adopted by the Swedish Parliament in 1999 and in 2005. The municipal data collected in Stockholm is also reported on the national level and feeds into reports on the status of the national environmental objectives.

2.5.4. Finding: risk of omitting the national level

The analysis with regard to multilevel governance aspects shows that there is a risk of omitting the national level. This is particularly true for the phase of designing SEAPs and for their progress evaluations. The case studies suggest that the cooperation concerning SEAPs functions extremely well on the local and regional level and between the local/regional and the EU level, while the national level is not always directly involved.

In Germany, for instance, the cooperation with the national level may also depend on political constellations. Woking is the only case where the national level is emphasised; the multilevel governance principle has been beneficial and useful for Woking and the region, as it has allowed for a dialogue on national policies across the four different levels of government: in this case between Woking Borough Council, Surrey County Council, the Government Office of the South East, and the national government. Multilevel governance and the existence of European, national and regional support structures have permitted regional levels of government to advocate change to national government and jointly work on policies. The Surrey Climate Change Partnership is a good example of this, where district, borough and county councils meet every quarter to facilitate discussion and to set a region-wide position on climate change issues. Consequently, the national level should be strengthened since multilevel governance is understood as coordinated action involving all levels.

3. Conclusions and recommendations

Cities and regions play an important role within Europe when it comes to climate and energy policy. They translate the abstract EU goals into concrete policies and measures and implement them on the ground. Therefore, cities and regions are ultimately responsible for implementing the EU, national and local climate mitigation targets.

SEAPs and their related tools are new instruments to aid local governments create and implement climate and energy policies at the local or regional level. Consequently, they are a good example to look at when studying the role cities and regions can play in implementing the EU 2020 Strategy.

Against this background, this study analysed:
1. the kind of actions (to be) undertaken in the Sustainable Energy Plans;
2. the constraints cities and regions are facing on the institutional, technical, financial and cognitive (awareness) levels;
3. the degree to which EU and national support is available;
4. the possible role of the regional level.

3.1.   Type of action undertaken in SEAPs

There is a great variety of policies and measures available to cities and regions to achieve their GHG reduction targets as committed to under the CoM and the analysis shows that local government do indeed employ a wide variety of innovative instruments. There is, however, room for improving the description of measures in the SEAPs. To ensure effective implementation, policies and measures integrated in a SEAP should provide:

- goal-orientation;
- management procedures and appropriate organisational set-up;
- estimations of each measure's GHG reduction potential and implementation costs;
- indications of sources of funding;
- a sufficient degree of detail, including a measurable target for each activity;
- a time frame for implementation and measures corresponding to this time frame;
- entities responsible for implementation;
- monitoring rules;
- realistic potential for legal and political implementation.

We would therefore recommend that the CoM develop templates for descriptions of policies, measures or other item actions which should cover the elements mentioned above. Such a document would provide additional guidance to local governments and could, at the same time, serve as a benchmark for quality control of SEAPs.

In addition, the exchange of adequate policies and measures can also be improved. The CoM should consider introducing an interactive tool on their website for cities and regions to collect best practice examples of policies and measures.[67]

3.2. Constraints cities and regions are facing in SEAP implementation

The eight case studies were selected according to various criteria. Among these were the regional distribution throughout Europe and state structure. These criteria may have implications for the constraints cities and regions are facing when implementing SEAPs. For instance, many of the old EU Member States have usually a longer tradition and thus more experience with sustainable energy policy than many of the new EU Member States, some of which have just started to pay attention to these issues. Consequently, the latter often have to struggle with weak institutional capacity with respect to energy policy and lack of funds in addition to lack of data and systems for appropriate monitoring. These issues depend on the particular case and eight case studies are of course not enough for a representative study.

The principal constraints cities and regions are facing during the SEAP process, independent of geographical or systemic characteristics are:
- Securing funding to implement climate mitigation measures;
- Securing continuous political support from policy-makers, high-level personnel in the administration and stakeholders;
- Establishing and maintaining effective management and governance processes;
- Collecting and managing basic data on energy consumption and production data on pattern and greenhouse gas emissions within the territory.

Cities not only need the funding capacities to set up and implement a SEAP, but the actors to actually implement the measure, which also require financial support. Therefore, funding is not (only) about grants for measures, but also about other financing sources and budget structures. For instance, homeowners need to have the financial capacity to refurbish existing buildings to improve energy efficiency. Access to borrowed capital is crucial in this regard, particularly against

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[67] Such as the LEAP Wizard developed by the project Sustainable NOW, described in sections above.

the background of the financial crisis. Furthermore, the local governments themselves follow a certain accounting procedure which is not always favourable for investments. In Germany, for example, there often are separate budgets for investments and operating costs. However, investments in energy-saving measures lead to savings on the side of the operating costs. These investments are usually amortized after a couple of years which is, however, not reflected in the budgets since their calculation follows a different logic. Owing to the complexity of this issue, we recommend conducting a study on the budgetary structures of local governments and their implications for investments.

Political support is also crucial in every regard. The commitment of the highest level officials in local government and the administration is crucial for the success of a SEAP. This is particularly relevant, since the different departments usually function independently of each other. The interdepartmental responsibility and ownership is therefore particularly important. For the process of developing the SEAPs, we recommend to either build working groups made up of different departments (not only the environment department) and/or to hand over the responsibility to a cross-cutting department like the finance department. A different possibility is demonstrated by the case of Munich, where the responsibility is linked to the mayoral level, i.e. the third mayor, who assists the first mayor, is responsible for environmental issues.[68]

Closely linked to political support is the establishment and maintenance of an effective management and governance process. The cross-cutting character of a SEAP is complex and so is its development, implementation and monitoring. Various actors are involved: different departments and stakeholders when developing the SEAP and even more departments and stakeholders when implementing it. It is therefore crucial to organise communication between them at every step as a structured and transparent management process following the EC guidance for integrated environmental management. This is being managed excellently, for example, in Siena Province. An OECD study reveals "a main obstacle for policy formulation [... is] that policies have often been developed without an integrated urban planning framework".[69] Consequently, we recommend checking whether the SEAP development process could be linked to overarching urban planning frameworks.

The basis for every SEAP is data on energy consumption and production pattern and greenhouse gas emissions within the territory. Lack of data has often been mentioned as a challenge for the development and implementation of SEAPs. In

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[68] For more details see the Munich case study in the Annex.
[69] Corfee-Morlot, Jan, Lamia Kamal-Chaoui, Michael G. Donovan, Ian Cochran, Alexis Robert and Pierre-Jonathan Teasdale (2009): "Cities, Climate Change and Multilevel Governance", OECD Environmental Working Papers N° 14, 2009, OECD publishing, OECD, p. 35.

order to cope with this challenge, we propose that the cities form peer groups where old and new Member States as well as Member States with similar problems convene in order to exchange their approaches and solutions. The relevant actors themselves know best where problems arise and which solutions they have found that could also be valuable for other cities. However, since local governments and their administrations are usually busy and not used to such communication processes, it may be helpful to engage external experts to facilitate these exchange processes which could be conducted under the umbrella of the CoM or through EU projects. The latter would at the same time allow for secured funding.

The findings of this study are in line with the conclusions of the OECD study mentioned earlier. It identifies the following obstacles to implementing local climate change plans:
- Institutional blockage within local administrations;
- Insufficient capacity and expertise;
- Lack of appropriate funding;
- Lack of a responsible authority or appropriate responsibility; and
- Lack of support from central governments.[70]

3.3. National and EU support to cities and regions embarking on the SEAP process

Two questions are crucial in this context:
- How can cities and regions cooperate in the design and implementation of SEAPs?
- What can the national and EU-level organisations provide to local communities to spark interest in climate mitigation policy and continually support their ongoing climate policy initiatives?

3.3.1. Funding

Since multilevel governance requires coordinated action between levels of government, the financial burdens of policies should be shared even though the policies are implemented only at the local level. For instance, if local governments reduce their GHG emissions, those of the national state as well as of the EU will also be reduced. Consequently, both the EU and national levels should provide direct financial support for climate mitigation measures. We recommend focussing this direct support on financially weak communities.

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[70] Corfee-Morlot, Jan, Lamia Kamal-Chaoui, Michael G. Donovan, Ian Cochran, Alexis Robert and Pierre-Jonathan Teasdale (2009): "Cities, Climate Change and Multilevel Governance", OECD Environmental Working Papers N° 14, 2009, OECD publishing, OECD, p. 39f.

What is even more important is to ensure the financial sustainability of local communities through appropriate tax and regulatory regimes. The systems need to fit together and ensure planning reliability for local governments. Following examples like that of Woking, support should be given to local governments to establish and maintain an Energy Service Company (ESCO) helping to generate financial resources for SEAP investments. Woking, for instance, relies on its ESCO as an experienced delivery vehicle for management, consultation and implementation of projects. It is nevertheless advisable to base funding assistance on the needs of each particular city and to understand the significance of creating a solid base on which to build the city's energy strategy.

Finally, EU structural and regional development funds play a very important role in supporting SEAP objectives, as the cases of Burgas and Rožnovsko show. These can have enormous leverage through national co-funding. EU structural and regional development funds are therefore important particularly for new Member States and we suggest that Member States focus on these and ensure funds are accessible and used to enhance the Sustainable Development Strategy aims. However, easier access needs to be ensured e.g. through reducing related paper work for application and reporting processes, which may prevent inexperienced local authorities, as well as those with insufficient internal funds, from benefitting from these opportunities. Alternatively, this inexperience needs to be compensated through capacity-building measures or direct assistance with paper work.

3.3.2. Appropriate regulatory framework

As the case studies have shown, an appropriate regulatory framework facilitates the implementation of a SEAP (e.g. feed-in tariffs which make RES investments profitable or appropriate regional transport planning rules as in the case of Almada). Consequently, we recommend strengthening the appropriate regulatory framework at the national level – including targets both for a short-term and long-term time frame. Furthermore, we recommend introducing European-wide standards for GHG inventories and monitoring at the local level. These standards would build the foundation for effective management.

Communication channels should be institutionalised in order to ensure that feedback of local communities is integrated in the design of European programmes, particularly the research framework and the Intelligent Energy Europe (IEE) programme. However, the communication channels should also systematically include the national level.

Last but not least, support through EU-wide initiatives such as the Covenant of Mayors is helpful for coordinated and targeted action at all levels since it strengthens the link between the EU and local levels. In addition, partnerships between local governments can be facilitated through their relationships via the EU level. But again, the national level should also be included in these processes.

3.3.3. Expertise and capacity-building

It was mentioned earlier that experiences differ between countries and regions. Various cases suggest that capacity-building, as well as opportunities for exchange of best practices and peer review exercises, such as mandatory multiplier meetings in neighbouring or partner regions, are valuable and helpful for the local governments involved.

Dissemination and constant improvement of the existing SEAP guidelines forms the basis for expertise and capacity-building. We recommend translating the existing guidelines into the EU languages and providing a platform for discussion in an internet forum, maybe in the form of a wiki. However, the CoM seems to be quite overwhelmed by the positive response of many more cities than they had anticipated. As a consequence, resources within the CoM seem relatively stretched. We therefore propose to strengthen the CoM secretariat so that they can indeed function as a service point and meet the demands of their "customers".

Furthermore, we propose building standard training packages for the development and implementation of SEAPs. These could be complemented by in-country training sessions following the standard training packages. This procedure would allow for the inclusion of all levels of government. In this respect, national focus points could serve as focal points for information in their respective countries or regions, and funding for training workshops on guidelines or specific subjects therein could be provided or politically supported.

The opportunities and funding for cooperation were perceived as extremely helpful in most of the case studies. Peer review systems and forums for SEAPs between cities and regions would be especially desirable if less experienced cities and regions were matched with more experienced ones. The IEE projects ASPIRE and Sustainable NOW are positive examples of cooperation between European regions, strengthening their capacity to develop and implement SEAPs.

Finally, support to develop appropriate management, monitoring, controlling and verification processes, such as through the EU network of practitioners, li-

censed training to cities, environmental consultants and auditors, as well as standard and auditable procedures, is highly recommended in order to strengthen the SEAP process. An interface to the European Environmental Management and Audit Scheme might be considered.

3.3.4. Strengthening the CoM review process

Feedback and motivation are important factors for cities in achieving their commitment to the CoM and implementing the resulting climate mitigation measures such as included in the SEAP. As mentioned earlier, the number of cities and regions interested in joining the CoM and developing and implementing a SEAP has been quite substantial. The initiative clearly is a great success so far. The high number of signatory cities does, however, also bring new challenges, mainly the risk that the institutional structure put in place by the initiative may not be able to deliver on the promised support services, including adequate validation of SEAPs, verification of implementation and public promotion for signatories' efforts.

Consequently, we recommend considering how funding for CoM structures could be increased. Given their assigned roles in the validation process of SEAPs and Implementation Reports, strengthening the CoM and JRC appears to be the most obvious option. However, several other options for delivering adequate monitoring and verification should also be considered, including auditor training at the national level or assigning a monitoring role to supporting structures. Moreover, the CoM could consider organising a peer review between signatory cities, where each could comment on the others' SEAP drafts. All of these solutions will only be viable, however, if at least part of the funding is covered by EU sources.

3.4. Multilevel governance

Various case studies indicate that both the regional and local levels play a prominent role in implementing SEAPs, whereas the national level involvement in the SEAP process so far appears to be of less importance. In the case studies surveyed, most cooperation took place between the EU level and different cities or regions throughout Europe. This suggests that the SEAP process is characterised by strong cooperation between the EU and cities and regions while the national level is involved to a limited extent. However, EU-local cooperation can only support the actions undertaken in those municipalities willing to move forward. It cannot replace national engagement which in many policy fields sets the framework for local action. In some of the case study cities, the lack of political support at the national level was perceived as a barrier to the process. This aspect will be increasingly important as the CoM grows in terms of numbers of

signatories. So far, it has been mainly front runner cities that have signed up and started to develop their SEAPs. Mainstreaming the SEAP will require involvement of the approximately 90 000 local governments that have not yet signed up. The mainstreaming process would be greatly facilitated if appropriate national-level structures existed to engage and support local authorities in sustainable energy policy.

Cities and regions are well placed to move forward on climate mitigation. This is, first, because "cities have the ability to design solutions that are adapted to the needs of local constituents and that are consistent with local policy priorities".[71] Furthermore, local authorities have mandates and jurisdictions which are not only different from national governments but crucial to the development and implementation of climate policies, for instance, land use planning, water and waste management.

The national level could be responsible for setting up or supporting national training programmes and provides a framework for reporting in conjunction with their national energy programmes, which uses reports by local governments in their national energy statistics and reporting. The regional level can more appropriately offer process coaching and technical advice, organise peer reviews and regional training courses to groups of local governments (joint trainings) on SEAP issues, as well as assist particularly weak local governments with data collection and reporting.

In addition, national policies may function as "a central enabler of local action on climate change adaptation and mitigation" and in order "to avoid a patchwork of uncoordinated targets, goals, and programmes, national governments can and should take the lead with design and implementation of broad cross-cutting instruments, such as those designed to put a price on carbon".[72]

The regional level can play an important role as mediator between the national and local levels, which, in fact, will help to better anchor and speed-up political processes at the local level. However, there is a risk of omitting the national level. We therefore strongly recommend understanding and treating multilevel governance as a coordinated action involving all governance levels.

Finally, better integration of ongoing processes and strategy implementation is suggested to make use of potential synergies and reduce barriers to implementa-

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[71] Corfee-Morlot, Jan, Lamia Kamal-Chaoui, Michael G. Donovan, Ian Cochran, Alexis Robert and Pierre-Jonathan Teasdale (2009): "Cities, Climate Change and Multilevel Governance", OECD Environmental Working Papers N° 14, 2009, OECD publishing, OECD, p. 84.
[72] Corfee-Morlot, Jan, Lamia Kamal-Chaoui, Michael G. Donovan, Ian Cochran, Alexis Robert and Pierre-Jonathan Teasdale (2009): "Cities, Climate Change and Multilevel Governance", OECD Environmental Working Papers N° 14, 2009, OECD publishing, OECD, p. 84.

tion. For instance, the Aalborg Commitments (more than 700 signatories) and the CoM (more than 1 800 signatories) can be seen as complementary processes with the CoM being more specifically related to energy but also supporting the overall objectives of the Aalborg Commitments. Step by step, this could be extended to similar commitments which are, for example, related to adaptation, biodiversity, etc. Duplication would be replaced by integration and gradual extension managed through a coherent integrated management and governance system.

3.5.   Outlook

The analysis shows that the interest of local authorities in SEAPs is high. As SEAPs are a voluntary instrument, it can be assumed that local authorities perceive SEAPs as a helpful planning tool for climate and energy policies. SEAPs have not existed long enough to judge their effectiveness. However, if the measures outlined in the SEAPs are indeed implemented, it can be assumed that they will significantly help in mitigating climate change. Therefore, introducing a mandatory medium-term climate mitigation strategy or SEAP for municipalities should be considered. Such a mandate should, however, be conditional on adequate support being delivered from the regional, national and EU levels.

Our research has furthermore shown that SEAPs and other local climate and energy action plans mainly focus on climate change mitigation. However, the other aspect of climate change, adaptation, is often not considered in these plans. As mitigation and adaptation are two sides of the same coin, adaptation measures should already be included in SEAPs; the areas in which adaptation is expected to be relevant should be pointed out.

This link between mitigation and adaptation is important to make because they can have either synergistic or contradictory effects. For instance, an increased use of conventional air conditioning to adapt to rising temperatures in cities is likely to increase the use of energy and GHG emissions. In contrast, "better insulated buildings will both lower the need for air conditioning, energy demand and emissions while helping people to live with the higher temperatures that climate change will bring".[73]

As an outlook we therefore recommend including adaptation strategies within SEAPs or other local climate and energy action plans.

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[73] Corfee-Morlot, Jan, Lamia Kamal-Chaoui, Michael G. Donovan, Ian Cochran, Alexis Robert and Pierre-Jonathan Teasdale (2009): "Cities, Climate Change and Multilevel Governance", OECD Environmental Working Papers N° 14, 2009, OECD publishing, OECD, p. 33.

Annex I: Grid guiding the case studies

Table 6: Grid guiding the case studies

Activities	Potential Perceived Constraints	Room for Cooperation (first ideas, examples)
Preparation of SEAP		
Organisational details	Lack of technical expertise, lack of time/resources, lack of awareness: of existing support structures and of potential measurable benefits, resistance to changing the business-as-usual scenario	Commissioning tasks to third parties (e.g. energy agencies, energy service companies (ESCOs)), common training centre, courses, exchange of information, networking and learning opportunities among 'forward looking' actors
	Concrete Questions for Case Study Topic Guide (examples) - Who within the local authority is responsible for developing the SEAP? —e.g. Is there a 'champion' for the cause? What is the structure of the team? Is the team cross-departmental? Is the team properly staffed? - Are responsibilities shared between different institutions, and if so, how are they shared? Which parties coordinate and how well does it work? - Are tasks/responsibilities commissioned to third parties? If so, why, and how does the council retain ownership of the strategy while still benefiting from contracting to third parties? Does the council have a sense of ownership of the action plan? - Do people within local authorities possess the technical know-how to prepare the SEAP? Are technical gaps easy to fill, or do they require technical support from (outside) technical experts?	
Overall strategy	Difficulty of integrating disparate and heterogeneous visions to include new groups of stakeholders and to introduce an integrated approach to management practices	Use of mediation practices
	Concrete Questions for Case Study Topic Guide (examples) - How do communities choose priority areas of action? Are these decisions included in the overall political	

	process (i.e. in the city council)? - How is the local strategy inserted into regional/national policy? - How can one measure the effectiveness of the actions to be implemented?	
Target setting	Internal barriers to ambitious targets, lack of knowledge on baseline emissions and on the scope of potential (feasible) improvements, lobbying of key actors (local utility, major entrepreneurs, politicians)	Best practice exchange on methods to realistically calculate reduction potential and costs. Supranational initiatives to give guidance to an achievable yet challenging vision.
	Concrete Questions for Case Study Topic Guide (examples) - Who makes binding decisions on targets? Are these decisions included in the overall political process (i.e. in the city council)? - Which data (sources) are the basis for defining the target? - Are decisions primarily based on political or technical arguments?	
Stakeholder Involvement	Forms of stakeholder involvement, funding sources, incentives for participation, level of shared decision making. Unwillingness of policy makers to open up decision-making processes because of fears of potential loss of power and chaos in the process. Politicians may feel no need to re-legitimize their democratically earned status.	Systematically designed participation processes, best practice exchange on methods, training, coordinating stakeholder engagement on the regional level (if appropriate). Make city council (or equivalent) responsible for and moderator of the process. Empirical evidence of local knowledge delivering positive results. Inclusion of new groups and visions into decision-making processes.
	Concrete Questions for Case Study Topic Guide (examples) - What form of stakeholder participation have you practiced in the past/ planned for the future? What were your experiences during implementation? How do you keep the process interesting for participants? - To what extent is the stakeholder input considered in the SEAPs? - How do you plan to attract new segments of your community to the process? - Are outside stakeholder groups entitled to manage some initiatives within the action plan (with the council's	

	support)?	
Data collection	Integration of disparate and heterogeneous data, software, data gaps, lack of cooperation between various government institutions, lack of awareness, use of external expertise	Staff training, best practice exchange, employment of staff with appropriate technical expertise for the whole region, creation of tools to allow data collection/measurement at local level
	Concrete Questions for Case Study Topic Guide (examples) - Which data sources are used to collect data? - Do you cooperate with different parts of the local authority/third institutions? How does this cooperation function in practice? - How are data collected? Do you use certain methods or tools? If so, which ones? - Can data be collected to a satisfactory extent? - What are the main obstacles in the process of data collection? - What are the main gaps in data collection?	
Database management	Establishing data collection routines, quality control, cooperation on data collection and sharing of data with public enterprises (such as transport operators, housing associations, waste operators etc.)	Peer review of statistics, common mechanism of third party oversight, standard cooperation agreements
	Concrete Questions for Case Study Topic Guide (examples) - How are the collected data managed (e.g. through a database or different tools)? - Are there any quality control mechanisms for the collected data? If so, which ones? If not, did you consider any instruments of quality control?	
Implementation of SEAP		
Management of implementation process	Lack of staff capacity with required technical expertise, staff discontinuity, existence of incompatible energy management systems, split incentives, administrative barriers, political dis-	Regional incentives for front runners, such as competitions for highest capacity of renewable energy installed or highest rate of greenhouse gas reduction, regular dissemination of information on status and progress of SEAP

	continuity, only short- to mid-term political goals reflected (no long-term view)	
	Concrete Questions for Case Study Topic Guide (examples) - Who within the local authority is responsible for implementing the SEAP? If responsibilities are shared, in what way are they shared? How is the cooperation organized and how well does it work? - Are tasks/responsibilities commissioned to third parties? If yes, why? - Is the SEAP included as a separate item in meeting agendas?	
Progress evaluation	Lack of data in the past to allow progress evaluation, vague formulation of action items, lowering targets in pursuit of perceived political 'success'	Developing common indicator sets and benchmarks to ensure comparability across the region/ state
	Concrete Questions for Case Study Topic Guide (examples) - Is the progress of implementation evaluated? Is the evaluation process systematic? Are lessons integrated back into the target setting and implementation stages of future rounds? - Are there any reporting requirements foreseen in the SEAP? - Are there any quality control mechanisms for the implementation process? If so, which ones? If not, have you considered including quality control mechanisms?	
Investment planning	Administrative barriers, difficulty in judging the quality of offers made by engineering/ planning companies, uncertainty about measurability/visibility of success	Common guidance documents on necessary steps in investment planning, cost and quality control, list of high quality service providers, best practice exchange
	Concrete Questions for Case Study Topic Guide (examples) - Is the overall strategy of the SEAP or are the targets of the SEAP reflected in the investment planning? If not, why not? - Is there cooperation between the local authority and the private sector? If not, why not? If so, how does it work in practice?	
Investment	Lack of funding, limited knowledge of funding	Initiating public-private partnerships to ensure minimum vi-

funding	sources, unwillingness to try new schemes (risk factor)	able scale of projects, dissemination of information on various schemes available and used by local authorities
	Concrete Questions for Case Study Topic Guide (examples) - Are there any financial instruments to support investments in energy efficiency/renewable energies? - If so, which is/are the target group(s) (e.g. local authority, individuals, industry, etc.)?	
Outside Support		
Regional Support	Lack of information on available support structures or project funding, lack of cooperation (e.g. in federal states)	Feeding needs for funding and capacity increase into regional energy plans
	Concrete Questions for Case Study Topic Guide (examples) - Are you aware of any regional support for the development/implementation of SEAPs? If so, please specify. Do you make use of them? If not, why not? - Are there any other support structures at the regional level that you are aware of? - How does this support work in practice? - Are there any structures at the regional level that pose barriers to the development/ implementation of SEAPs?	
National Support	Lack of information on available support structures or project funding, lack of cooperation (e.g. in federal states)	Feeding restructuring needs into national energy plans
	Concrete Questions for Case Study Topic Guide (examples) - Are you aware of any national support for the development/implementation of SEAPs? If so, please specify. Do you make use of them? If not, why not? - Are there any other support structures at the national level you are aware of? - How does this support work in practice? - Are there any structures at the national level that pose barriers to the development/ implementation of SEAPs?	
EU Support	Lack of information on available support struc-	Options for common project proposal for EU funds (re-

	tures or project funding	search, structural funds)
	Concrete Questions for Case Study Topic Guide (examples) - Are you aware of any EU support for the development/ implementation of SEAPs? If so, please specify. Do you make use of them? If not, why not? - Are there any other support structures at the EU level you are aware of? - How does this support work in practice? - Are there any structures at the EU level that pose barriers to the development/ implementation of SEAPs?	
Context		
Policies	Conflicts/synergies between different policies and/or different levels of policies	Make conflicts/synergies transparent in SEAP
	Concrete Questions for Case Study Topic Guide (examples) - Which national or EU policies affect the development and implementation of a SEAP? In which way do they affect its activities? - Are there any sector-specific policies affecting the development and implementation of a SEAP? - Is multilevel governance relevant in this context, i.e. are there synergies and/or conflicts between policies originating from different policy levels?	
General issues		
Open questions	**Concrete Questions for Case Study Topic Guide (examples)** - Are there any other constraints in the process of designing and implementing SEAPs? If so, which ones? - Do you have any further ideas on how these constraints (institutional, technical, financial or cognitive barriers) can be overcome? - Are there any other helpful structures you would like to recommend to other local authorities that help develop/implement a SEAP?	

Annex II: Description of case studies

The following summaries of case studies are presented in alphabetical order.

Alba Iulia Municipality (Romania)

Introduction

Brief summary of case study

Alba Iulia will develop and approve its first Sustainable Energy Action Plan in 2010. However, the municipality is already engaged in sustainable energy planning activities, following its involvement in the ASPIRE project (Achieving Energy Sustainability in Peripheral Regions of Europe). Together with other partners and under the supervision of the Alba County Council, the municipality has participated in the establishment of the **Alba Local Energy Agency (ALEA)**, thereby creating an institutional framework for the implementation of future sustainable energy communities in the area. Initial results from these actions are already visible, such as the ambitious photovoltaic installation project, worth over EUR 2.1 million, launched in December 2009. At present (May 2010), in accordance with a council decision, the municipality of Alba Iulia is setting up a working group for the development of the SEAP.

Quick facts:
- **Population**: 66 406
- **Energy action plan established**: To be approved in 2010
- **Biggest achievement**: Establishment of Alba Local Energy Agency
- **Biggest challenge**: Lack of expertise for implementing SEAP in medium-sized communities

Analysis

General state of play

Alba Iulia city is the administrative capital of Alba County, located in central Romania. The city is located on the Mures River and stretches over an area of 103.6 km², with a population of 66 406. The city is a railroad junction and distribution centre for a substantial regional wine-making industry. Other major industries include: non-metallic mineral products (porcelain and ceramics), leather goods and footwear, textile products, clothing, food and beverages and metallurgy products. The city is part of a Larger Urban Zone (LUZ) which has a population of 96 768[74].

The strategic goal of Alba Iulia is to become a community which generates jobs and quality of life as well as one which supports innovation-based economic capacities for (eco)-production. This goal is in accordance with the strategic policy of the European Union as foreseen by the revised Lisbon strategy and by the community development policies in the region. The effort to build sustainable infrastructure, compliant with European environmental protection regulations, is seen as a means to attract domestic and foreign investors and increase the quality of life for the community. This commitment is recognized by the municipal leaders, as reflected by the formal approval of the ASPIRE project activities by the City Council.

The city has made considerable achievements in developing **public-private partnerships for social assistance**, including services and care facilities for elderly people, abandoned children and children with disabilities. This system has been established with funds from the EU and other development donors, from national and local budgets, as well as from NGOs and private donors.

In terms of environmental management, Alba Iulia, a signatory of the Covenant of Mayors, aims to use the knowledge and experience gained through the ASPIRE project to become **the first Sustainable Energy Community in Romania** with a view to attaining the targets outlined by the Covenant . Indeed, the main results of Alba Iulia's participation in the project are already visible and include the establishment of ALEA and the launch of its first renewable energy project, as well as a number of promotion and awareness-raising activities for local stakeholders. Other recent projects include the rehabilitation and extension

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[74] http://www.urbanaudit.org/CityProfiles.aspx.

of potable and sewerage water systems, improvement of the public transport system and the extension of green areas.

Multilevel governance aspects

The activities of Alba Iulia in the field of sustainable energy are inspired mostly by its involvement at the European level, and, in particular, by its productive horizontal cooperation with other European municipalities.

In terms of vertical structures, the municipality of Alba Iulia has excellent working relations with its regional partners and follows the process of elaborating the Energy Master Plan for Alba County closely. At the national level, Alba Iulia considers the directions outlined in the national energy strategy, which in turn is based on EU objectives. It is worth noting that even though 16 Romanian municipalities have signed the Covenant of Mayors so far, there has been no cooperation or exchange between them.

Sustainable energy state of play

The decisive factor for Alba Iulia's activities in the field of sustainable energy planning has been the municipality's involvement in the **ASPIRE project**, which strived to develop a replicable model for creating 'Sustainable Energy Communities' in peripheral areas of the EU. Alba Iulia concentrated on increasing sustainable energy integration at the local level, as well as identifying financing structures and schemes to support the creation of local energy services.

Alba Iulia joined the ASPIRE project after being invited by the lead partner, Cornwall County Council (UK), and received a budget of EUR 24 000. The municipality had no previous experience in renewable energy projects but had been active in international cooperation and willing to build their energy capacities. The project, co-funded by the Intelligent Energy Europe programme, lasted from October 2006 to March 2009 and involved 10 communities across the EU. The guidelines developed by the project, as well as examples of their SEAPs, are available at http://www.aspire-project.eu.

Alba Iulia has benefited greatly from the interaction with other communities across Europe with more experience in local energy planning. The municipality has conducted **promotion and education initiatives related to sustainable energy**, addressed mainly to local and regional stakeholders, e.g.
- An annual fair presenting technology for producing green energy or improving energy efficiency, targeted at national and regional dealers and producers;

- Meetings with relevant stakeholders in energy, environment and education fields, including the County Council, Alba Prefecture, the Regional Development Agency, regional private operators and energy suppliers, the Regional Agency for Energy Conservation, businesses, NGOs and schools;
- Promotion and education campaigns on renewable energy and energy savings addressed to the citizens of Alba Iulia with a particular focus on younger generations.

Following the stakeholder dialogue process, Alba Iulia City Council, together with other local actors and under the supervision of the Alba County Council, established the **ALEA**, an institutional framework for implementation of future sustainable energy actions in the area. The Agency was created in April 2008 by the Alba County Council, the Alba Iulia City Council, and nine other public and private institutions, including local authorities, energy operators and NGOs. Working as a non-governmental organization, the Agency contributes to the sustainable development of Alba County by improving the current state of energy efficiency, energy management and by promoting energy generation from renewable sources. The Agency has 4 full time employees and its annual budget comes from EU project funding and member contributions. Starting in March 2010, the Agency has coordinated the development of the Alba County Master Plan for Energy, a service contract executed by a consultancy firm.

The participation in the ASPIRE project has brought tangible results, such as the establishment of communication channels between relevant stakeholders and the development and implementation of the first steps toward a more efficient use of energy resources.

Significant actions

- Technical: **PV installations for public institutions**

The installation of 1714 photovoltaic panels to ensure the energy sustainability from alternative energy sources (85% of energy used) have served the following public institutions in Alba Iulia: Technical College "Dorin Pavel" (over 1 300 students), Senior Centre (100 residents), Daily centre for the elderly (over 3 000 beneficiaries per year), sub-department for programmes of the Local Council of Alba Iulia (entity responsible for developing and implementing community projects from grants). The project is funded by the European Union and the Romanian Government through the Sectoral Operational Programme, dedicated to increasing economic competitiveness and producing energy from green sources. The EUR 2.1 million project will reduce CO_2 emissions in the atmosphere by more than 165 tons / year. Alba Iulia municipality will save more than EUR 70

000 per year thanks to the 80% reduction in electricity costs. These savings will be transferred to other public investments.

The municipality sees this PV action as a pilot project, combining the strategic aim of creating a resilient, attractive and competitive Alba Iulia city with EU and national legislation and energy targets. The project could be an example for other public or private institutions that are eligible for funding under ERDF in Romania of how to use these funds for green energy production on the local level. Accessing the funds has been easier thanks to the support in developing the required technical and financial documentation provided through the ASPIRE project.

- Social: **Improvement of living conditions in housing**

Using additional financial and technical support as an incentive, the municipality has encouraged 9 housing associations, representing more than 350 apartments, to make use of national programmes dedicated to the improvement of living conditions in blocks of flats, with a focus on **energy efficiency**. The Romanian government offers 50 % of the total money necessary, 30% of which is co-financed by the Alba Iulia City Council (local budget coming from direct revenues) and the remaining 20 % supported by housing associations.

Housing associations receive support from the City Council in terms of feasibility and technical studies, energetic audits and consultancy but also in terms of financial support for those that cannot afford the real costs of insulating their homes.

- Environmental: **Green technology fair**

ALEA, with the help of the Alba County Council, together with the Alba Iulia City Council, organized a green technology fair two years in a row (2008, 2009), which showcased equipment and installations for green energy production and increasing energy efficiency. The fair was aimed at national and regional businesses, with more than 500 visitors and 20 exhibitors present. ALEA intends to continue to organise the fair annually.

Cooperation opportunities

Regarding cooperation at **local and regional levels**, Alba Iulia has established communication channels between relevant stakeholders and both the administration and other key institutions. The municipality has also been successful in engaging citizens and local partners in the debate on sustainability, climate change and energy issues.

From an **international perspective**, Alba Iulia's activities in the field of sustainable energy benefited greatly from contacts with other municipalities facing similar challenges. The experiences of other communities helped convince key figures from local and regional administrations, civil society and business to commit to undertaking new public policies, capacity-building and communication in the field of energy, and translating European priorities into local goals.

Challenges ahead

Successful development and implementation of the SEAP requires **financial resources** and access to **expertise**, particularly with respect to sustainable energy planning in medium-sized, peripheral communities. In order to overcome these barriers, the following conditions must be met:

- Real political and administrative commitment to developing and implementing a SEAP, matched with financial commitment from the local authority;
- Cooperation with relevant EU actors who have experience in the field through projects, trainings and seminars;
- Clear understanding of legal constraints and solutions (e.g. the national law on the production of green energy does not provide clear methodologies and instructions directly applicable to local authorities/public institutions);
- An organized institutional framework for collecting relevant and updated energy data.

Lessons learned

The example of Alba Iulia clearly shows that involvement in European projects can successfully trigger local interest in sustainable energy planning and bring about tangible results, both in terms of institutional frameworks and infrastructure projects.

Direct access to relevant expertise from other communities is instrumental in forming a strong political and administrative commitment and thus translating European strategic goals into concrete local actions.

Sources

Alba Local Energy Agency
http://en.alea.ro/index.asp

Alba Iulia Municipality
http://www.apulum.ro/index-en.htm

ASPIRE project
http://www.aspire-project.eu/

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Almada (Portugal)

Introduction

- **Brief summary of case study**

Almada is located on the south bank of the Tagus River opposite Lisbon. In the past, the municipality of Almada was regarded solely as a fast-growing suburb of Lisbon and an area of heavy industrial activity, predominantly shipyard industries. During the past decades, however, it has managed to revitalize itself into an attractive, dynamic and environmentally-friendly city. This has been due to innovative social, economic and environmental policies, political commitment, and active citizenship.

Population: 165 363 (2004)
Energy action plan established: 2003
Biggest achievement: Development of the Local Energy Agency of Almada
Biggest challenge: Lack of local level data to develop a SEAP; limited support at the national level; limited scope of action for local governments.

Analysis

- **State of play in city**

Almada is one of the 18 municipalities within the Lisbon metropolitan region. It is located on the south bank of the Tagus river, with around 160 000 inhabitants in 72 km^2 (density more than 2,000 people/km^2)[75]. Owing to its 13 km of Atlantic beachfront, it attracts around 8 000 000 visitors per year. The high population density, lack of a good public transport system and high percentage of car use exposed the municipality to air and noise pollution, a high level of traffic and degradation of its vulnerable coastal ecosystems.

To overcome these issues, the municipality committed itself to leading the city towards a more environmentally sustainable path. Thus, Almada began to implement its Local Agenda 21 and signed the Aalborg commitments.

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[75] Source: http://www.renae.com.pt/_fich/22/1SemRen_AGENEAL-IEPMA.pdf

In less than a decade, Almada has managed to reduce the unemployment rate from 9% (2001) to 4.1% (2009)[76]. The municipality has attracted businesses and given an impetus to continual job creation. Several initiatives have been launched to attract innovative technology companies. An example is the implementation of the "Madan Science & Technology Park" which promotes close cooperation between businesses and universities.

To promote social development, Almada has strongly invested in building up a strong network of civic associations in several areas that support the elderly, sports and the arts. Almada has also attached a great deal of importance to public participation using the most up-to-date techniques and has invested in publicizing ways in which citizens can participate. One of the most important examples were the 30 forums organised to discuss the new light tram built in Almada, several of which were attended by hundreds of citizens. Public participation mechanisms are in place and have been broadened, in order to garner responsible and productive participation from the community and increase awareness of environmental issues.

Finally, regarding environmental development, a successful long-term local development strategy (now designated Local Strategy for Sustainable and Solidarity Development) has been in place since the first democratic elections in 1977, which first dealt with the lack of basic environmental infrastructure such as wastewater treatment and solid waste management and gradually focused on a wider scope of environmental themes such as energy-efficient behaviour and careful land use planning. The municipality is currently developing the Eco-Management and Audit Schemes (EMAS) process.

In order to reverse the car based transport dynamics of the last decade, the municipality of Almada designed the Local Strategy for Sustainable Mobility that provided tools for the promotion of soft modes and public transport. Almada's Mobility Plan and Almada's Cycling Plan are excellent examples of sustainable transport policy.

The municipality of Almada became the first Portuguese city to conduct a local GHG inventory and to develop the 'Mitigation Action Plan and Monitoring' ahead of the National Climate Change Programme. The action plan contains a broad range of activities that focus on diverse sectors such as: transport, domestic, services and industry. The short-term target (2012) foresees a 5% reduction in the CO_2 emissions of Almada. This corresponds to 26 000 tonnes of CO_2 equivalent compared to the base year of 1997.

Almada is now preparing its Climate Change Adaptation Action Plan which is in line with the overall municipal strategy entitled "The decade of sustainability, solidarity and eco-efficiency".

By focusing on the three spheres of sustainability, together with citizen involvement, Almada has managed to renew its image and put itself in the fore-

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[76] Based on calculations of the total number of unemployed people in Almada (www.iefp.pt) and the size of Almada's population (www.ine.pt)

front of environmental sustainability, serving as a good example for other Portuguese cities.

- **State of play of Local Strategy for Climate Change**

In the late 1990s, the municipality of Almada realized the need to diagnose problems and set a vision for the future of the city regarding energy efficiency and climate change. In a pioneering decision in Portugal, 2001 marked the inception of the first municipal inventory, "Almada's Municipal Inventory of Greenhouse Gas Emissions", which identified energy consumption by sector of economic activity and respective greenhouse gas emissions in the Council of Almada. Following this study[77], the Mitigation Action Plan and Monitoring (equivalent to a SEAP) was established in 2003, which proposed a set of measures, by sector, for reducing energy intensity in the various domains of economic activity. As part of this process, the Local Energy Management Agency of Almada (AGENEAL) was created in 1999. With 16 stakeholders (both public and private) representing important sectors of activity in Almada – energy distributors, water and solid waste utilities, public transport operators, education institutions, service providers, building and public works companies and the municipality of Almada - AGENEAL is a private, non-profit association whose objective is to promote energy efficiency and rational use of energy at the local level.

In 2005, the municipality of Almada began to develop a GHG monitoring tool (the GHG Observatory) to keep track of and evaluate global trends.

Currently, Almada's Local Adaptation Action Plan is under development, and its SEAP is being revised and updated. All of these different tools – GHG Emission Inventory, SEAP, GHG Observatory and the Local Adaptation Action Plan – are part of the overall "Local Strategy for Climate Change of the Municipality of Almada".

Process

The Sustainable Environmental Management and Planning Department is responsible for the development of Almada's SEAP, under the mayor's direct supervision. Taking into account that the SEAP approach is cross-sectoral, coordination and responsibility is shared throughout all the departments. This means that different departments are involved depending on the particular SEAP action, but the Sustainable Environmental Management and Planning Department is always involved. The SEAP is adjusted to the Local Strategy for Sustainable and Solidarity Development and Local Agenda 21 with a strong emphasis on sustainable development and is part of the City Council Annual Corporate Plan. This guarantees the necessary political commitment and integrated approach needed to accomplish the pre-defined goals of the SEAP.

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[77] **Inventário** Municipal das **Emissões** de Gases com Efeito de Estufa de **Almada**, FCT 2001.

AGENEAL also plays an important role in the strategy, both in collaboration with the municipality and as a local energy forum that brings the most important stakeholders together, at the local and national level. The activities taken by AGENEAL are directly linked to the SEAP and have to be approved by stakeholders.

SEAP development
Although the local authority has the technical capacity to prepare the SEAP, owing to time constraints, the preparation of the SEAP was carried out with support from outside technical experts from universities in order to ensure that the most up-to-date knowledge serves as the basis for the strategy. Still, the tools for implementation and monitoring are operated by the municipality.

The "Local Strategy for Climate Change of the Municipality of Almada" was produced before the national climate change programme and therefore was not directly influenced by other strategies. Nevertheless, the national programme was somewhat influenced by the lessons learned in Almada and, thus, the two strategies actually resemble one another in terms of methodology and general structure. The SEAP is currently under review in order to bring it more into line with existing national policies and backed up by the latest data and knowledge.

Funding

The annual budget for the implementation of the energy efficiency measures is established each year and included in the Annual City Council Corporate Plan. The Annual Plans provide for a set of projects, with a budget approved for their implementation.

The municipality has also created an internal mechanism that creates funds specifically for activities related to adaptation to or mitigation of climate change. The "Almada's Less Carbon Municipal Fund" is used to invest in energy efficiency and renewable energy projects. The explanation of how the fund is created and allocated can be found in Figure 3. Annual funding is calculated based on the total cost of the yearly CO_2 emissions produced by the municipality (in the last year). Although "Almada's Less Carbon Municipal Fund" is not a direct compensation mechanism for the emissions produced by the municipality, it does aim to compensate for part of these emissions. This fund represents a small part of the overall budget used to implement the SEAP.

Figure 3: Almada's "Less Carbon Municipal Fund" mechanism
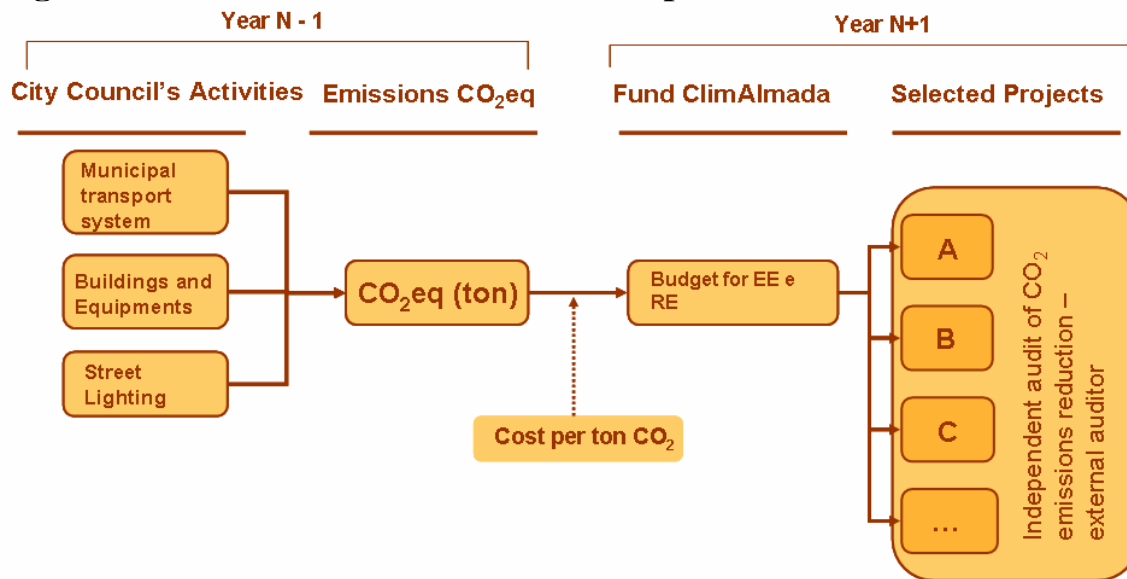
Implementation

The development of the SEAP was based on standard international methodologies (IPCC). However, since these methodologies were intended for the national level, they have been adapted to accommodate local specifications.

The decisions about targets are made by the city council with the technical support of the Sustainable Environmental Management and Planning Department. Depending on the issue, the final decision must be ratified by the local parliament, where all political forces are represented.

Measures are organized in order of importance and relevance to the achievement of the goals as defined in the SEAP.

Almada's SEAP defines a set of measures to reduce energy consumption and CO_2 emissions for each sector of activity (e.g. transport, domestic, services and industry) in Almada, such as:

- Use of solar energy in buildings and equipments;
- Energy efficient, passive measures for new buildings;
- Energy refurbishment of existing buildings;
- Energy efficient indoor lighting;
- Mobility management measures, such as:
  - Parking regulations;
  - Transport demand management measures such as the creation of pedestrian areas and traffic calming measures (e.g.: city centre, Atlantic beach front);
  - Building of a cycling network – Almada Cycling Plan with 223 km of cycling routes;
  - Renovation of municipal government vehicle fleet – included the replacement of the ten year old fleet for the city councillors with hybrid vehicles.

These measures comprise the implementation of specific actions such as: use of renewable energies to produce hot water and electricity in buildings, use of alternative fuels (biofuels - biogas, biodiesel, electric vehicles), use of public transport, use of bicycles, use of more efficient equipment (both household and service equipment), awareness-raising campaigns and energy-efficient street lighting.

Priority actions are chosen on the basis of two main criteria: **effectiveness** of the action (in terms of CO_2 emissions reductions, visibility/awareness potential and costs) and whether the actions are **under the direct influence of the municipality**. The strategy is also incorporated within the overall municipal strategy, which means that there is concrete funding to implement the defined activities.

Monitoring

Monitoring will be carried out via the GHG Observatory. This tool allows for updates of inventory values and also for the evaluation of particular measures. The evaluation of measures, such as the new tram service and restrictions on private car use, will be conducted through a mobility survey which will allow comparisons before and after the interventions. The development of EMAS will also support the collection of data. Examples of defined energy indicators specifically for the municipality are: total energy consumption; total electrical energy consumption; annual GHG emissions; energy consumption for municipal transports; renewable energy consumption[78].

- **Significant Actions**

Technical: Improving the Transport System

One of Almada's biggest challenges was to develop a good public transport system. Responding to this issue, the municipality has developed its Local Strategy on Sustainable Mobility, which followed the GHG Inventory and the SEAP's conclusion that the transport sector produced the largest share of GHG emissions and therefore should be a priority area of intervention.

As an example, in 2007 the South Tagus Light Rail was brought into service, leading to a predicted reduction of approximately 30 000 cars used per day (still to be evaluated with a new mobility survey).[79] Along with the introduction of the Light Rail, an area which had a traffic flow of approximately 23 000 cars/day in the city centre was pedestrianized. Another initiative is the development of Almada's cycle network, with a total of 223 km of cycling routes planned.[80] Both actions are expected to bring an annual reduction of 17 000 tonnes of CO_2 per year. Almada was also the first Portuguese municipality to buy a

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[78] Source: http://ec.europa.eu/environment/life/project/Projects/files/brochure/EMASLAB_Indicators.pdf

[79] Presentation by Catarina Freitas at the international conference "Local Climate Change Roadmap": http://www.roteirolocalclimaticas.org

[80] idem

fleet of hybrid vehicles for the use of its councillors. The city has been partici-
pating in the European Car Free Day since 2001. In 2008, Almada was awarded
2nd place among 2 100 cities in the European Mobility Week Award.

With these different measures, the city is setting an example and reducing the
emissions associated with transportation, favouring more energy-efficient tech-
nology and increasing the quality of life of its citizens.

Social: Citizens as the first priority…
The municipality of Almada is aware of the importance of citizen involvement
in the decision-making process regarding the development of strategic projects
for the city. Therefore, Almada has a strong tradition of public participation,
particularly in the fields of transport and mobility as well as energy and envi-
ronment. These projects are presented and discussed in public forums, where
citizens, associations and any stakeholders interested in the process can express
their opinions and contribute to improving the various city projects and initia-
tives. Examples of public participation forums that have taken place with high
participation rates were the forums on the Light Rail, the Almada Cycling Plan
and the Urban Mobility Plan.

In order to promote social cohesion and promote the well-being of its citizens,
the municipality has also heavily invested in building a large network of civic
associations in different areas such as: elderly support, youth activities, poverty
and exclusion, sports, and the arts.

Figure 4: Planetasium: the climate gym

…especially the little ones!
The municipality knows that one of the keys to sustainability is investing in future generations. Consequently, there have been several educational and awareness-raising measures to encourage more environmentally-friendly behaviour among children. Examples include: green festivals in cooperation with local schools, the exhibition "Energy in our Homes", the "Earth Friendly Christmas Market";

Source: AGENEAL, 2009.

"Planetasium: the climate gym" and the development of the Children's Local
Agenda 21. The activities within this programme culminate with a yearly "Chil-
dren's Parliament" where, for one day, children are the city's deputies and ex-
press their views directly to the mayor and town councillors.

Almada was one of the first Portuguese municipalities to achieve full coverage of water supply and wastewater treatment. The wastewater treatment plants of Porting da Costa and Mutela use the biogas produced in the treatment process to produce heat and electricity which amounts to 30% of their energy consumption.

Environmental: From wastewater to energy & solar energy for hot water production

Based on an energy audit of the Municipal Sports Complex which recommended the installation of a solar system for the heating of all its hot water (showers and swimming-pools), the municipality of Almada made it mandatory to include solar hot water in all new sports facilities and schools. In addition, it is retrofitting the existing sports complexes with solar panels for hot water production and photovoltaic systems for electricity production, when technically and economically feasible, taking advantage of feed-in tariffs. This measure reduced the CO_2 emissions of the Municipal Sports Complex by 25%.[81]

Given the high potential for solar energy in Almada and in line with the national building regulations, the new Urban Regulation of Almada stipulated the use of solar panels for hot water production in all new buildings in the municipality and created several mandatory requirements for energy efficiency.

- **Achievements in the next 5 years**

Since the SEAP is currently being reviewed, its measures, actions and achievements are still under discussion. The short term target (2012) for the former SEAP foresaw a 5% reduction in the CO_2 emissions of Almada. Since Almada is a signatory of the Covenant of Mayors, it is also striving to achieve the 20/20/20 goal.

The current revision of baseline emissions, projections, targets and measures make it difficult to clearly identify the expected achievements of the next 5 years. When this updated assessment is complete (in 2010), new measures and a timeline for implementation will be clearly defined.

- **Cooperation opportunities**

At the national level, the municipality is setting an example to other cities and leading the way in improving and tackling climate change. As one of the first Portuguese cities to set up a local energy agency, the experience and knowledge gained through the Almada agency has been used to support the development of the National Network of Energy Agencies.

Almada is actively involved in developing new partnerships at the international level that can support the accomplishment of its environmental goals. It is a

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[81] BELIEF, 2008 http://www.belief-europe.org/

member of international networks such as ICLEI – Local Governments for Sustainability, Energie-Cités and the European Covenant of Mayors initiative.

The municipality, directly or through AGENEAL, has been involved in different European projects related to its SEAP, such as:

- STREAM - Sustainable Tourism and Recreation as an Opportunity to Promote Alternative Mobility;
- ADDED VALUE - Information and Awareness Campaigns to Enhance the Effectiveness of Investments and Infrastructure Measures for Energy-Efficient Urban Transport;
- BELIEF- Building in Europe Local Intelligent Energy Forums;
- Eco n'Home - Helping reduce energy costs;
- EMAS LAB – EMAS Environmental Benchmarking for Local Authorities
- Display – Communicate building performance.

The municipality has also been promoting seminars and conferences in the field of climate change at both the national and international level. An example of a recent international conference that Almada held was the Local Climate Change Roadmap, a clear contribution towards the COP15 Summit in Copenhagen.

One of the most important lessons is the need to incorporate the SEAP in a strategic local strategy for sustainable development and ensure coherence with other local strategies, creating strong incentives for communities to develop sustainable energy action plans.

Almada is now currently developing its Adaptation Strategy to Climate Change. This is being drawn up in accordance with the Local Strategy for Sustainable and Solidarity Development and Local Agenda 21, with a strong emphasis on sustainable development. It will be part of the City Council Annual Corporate Plan. There is interaction between the national adaptation strategy and the Almada adaptation strategy, but the national strategy does not contain a political mandate or financial support to develop and carry out a local adaptation strategy. There is also interest in exchanging information with national researcher networks working on climate and adaptation in the future. There is also a desire to contact and exchange information with international networks and municipalities that have more experience in developing and implementing adaptation measures.

- **Challenges ahead**

Difficulties in data collection: one of the biggest constraints for the development of the SEAP is the lack of data at the local level, which is needed to produce inventories and projections. Most data is available only at national level. In order to address this challenge, the municipality conducts mobility surveys and records its own energy consumption. It is now collecting data through EMAS.

Lack of support at the national level: Local governments play an important role in tackling climate change at the local level. However, there is clearly still a need for more support from the national level, especially in terms of funding and definition of the scope of action of local governments.

Harmonization between national/regional and local strategies: National and regional strategies for the transport sector are a big hurdle for the implementation of goals concerning local sustainability. For instance, the regional land management plan omits the importance of river transport which is part of the overall public transport network of the region. In addition, the regional land management plan promotes the construction of new and wider road structures for private car use and is rather inconsistent in creating a complementary strategy for public and soft modes of transport.

- **Lessons learned for the development of local energy action plans**

Political Commitment: commitment from the municipal administration is critical in order to obtain positive results; the municipality is the driving force behind the changes and must set an example.

Public Participation: for the development of a sound SEAP, it is crucial to include the views of Almada's citizens and stakeholders. Public participation is a key element in promoting active citizenship in Almada. In order to have the views of all the relevant stakeholders, Local Intelligent Energy Forums were held every 6 months. The participation process involved providing information to the stakeholders and noting their ideas, issues, and concerns. It was a mutual, two-way communication process, with mutual benefits, which allowed the projects to develop more effectively and in a more consensual manner. The development of the BELIEF project, already implemented by the municipality in the framework of the Children's Local Agenda 21, allowed for increased participation among the younger citizens of Almada.

The need for an integrated approach: there is also a clear need for the integration of the SEAP with other local strategies in order to ensure coherence and to truly promote sustainable development. Therefore, Almada's SEAP is part of the annual corporate plan.

Promoting the well-being of citizens: The municipality has concluded that the implementation of SEAP not only brought environmental benefits, but also economic and social benefits, which, together, ultimately promote the well-being of its citizens.

- **Replication potential**

The methodology for the strategy is based on standard international proceedings but has been adapted to local conditions. This is a process that other municipalities can also follow. Tools such as the GHG Observatory and Almada's Less Carbon Municipal Fund can also be developed by other municipalities. Specific measures, on the other hand, are context-specific and are not necessarily replicable by other cities.

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Burgas (Bulgaria)

Introduction

<u>Brief summary of case study</u>

In accordance with the Covenant of Mayors, the municipality of Burgas in Bulgaria has directed its efforts towards developing a local, long-term sustainable energy policy and a corresponding short-term action plan. The new policy and strategy will both be in line with the national energy policy and legislation; there is also widespread public awareness of the initiative and several information campaigns.

An Advisory Council has been established to initiate the SEAP and support the development process. This method of developing a SEAP reflects the participatory and bottom-up approach used by the municipality in fostering a long-term sustainable energy strategy.

Quick facts:
- **Population**: 231 070 (municipality of Burgas)
- **GDP per capita**: 8 772 BGN (approx. EUR 4 850)
- **Biggest achievement**: Raised awareness of the economic and ecological benefits of investments in energy efficiency and the use of RES among public authorities.
- **Biggest challenge**: increasing the share of RES and achieving the national indicative objectives and the EU target scheme 20-20-20; achieving energy independence on local and regional level.

Analysis

<u>State of play in city</u>

The municipality of Burgas has a tradition of developing environmental programmes and strategies dating back to the beginning of the nineties. The first Environmental Action Plan (EAP) of the Municipality of Burgas was developed in 1991 and sought to address the main environmental problems of the city. The current EAP covers the period 2007-2015.

In particular, Burgas has a well-developed framework for addressing air quality issues since the city is considered an "environmental hotspot" with regards to air quality; thus, reducing air pollution is always a priority. The Council for Air Quality Management and Assessment, established in 2002, annually develops a

"Comprehensive Programme for Air Quality Management" that includes measures for air quality management.

As stipulated in the national energy efficiency (EE) and renewable energy (RE) programmes and in the requirements of the national energy legislation, responsibility for developing and managing sustainable energy is decentralized. Thus, Bulgarian municipalities, as producers, suppliers and consumers, play a key role in encouraging and implementing EE measures and the use of RES. Each year Burgas municipality draws up an Energy Efficiency Programme that supports the implementation of the Energy Efficiency Law. The programme establishes a framework, which aims to decrease energy intensity in municipal buildings, transport and street lighting. Moreover, the Regional Strategy for development of the Burgas Region 2005-2015 and the Regional Development Plan for the Southeast Planning Region 2007-2013 include measures and priorities concerning EE and the use of RES.

By signing the Covenant of Mayors in 2009, the municipality committed itself to developing a Sustainable Energy Action Plan, which is currently one of Burgas's main priorities.

The Yugoiztochen region (Southeast) in which Burgas is located is one of the most developed regions in Bulgaria and has a GDP of about 30% of the EU-27 average[82]. The GDP growth has seen a steady increase during the past decade and has been accompanied by a lower unemployment rate.

Table 7: Economic and social indicators for Yugoiztochen Region (NUTS 2)

	2003	**2004**	**2005**	**2006**	**2007**	**2008**
Regional GDP per capita (in PPS)	6200	6800	7300	7400	*7600*	n/a
Unemployment rate	14.6	11.8	8.3	8.1	6.5	5.8
Employment rate in high-tech sectors (high-tech manufacturing and high-tech knowledge-intensive services)	2.49	2.28	2.50	1.79	1.29	n/a

Source: Eurostat.

The production and processing industries are important economic sectors in Bulgaria. In terms of energy statistics, Bulgaria has a high energy intensity (almost double the EU average), but has seen a slight decrease in the past few

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[82] Eurostat.

years (-3.6% in the period 1995-2006[83]). Among RES, wind energy is the most developed type in the Burgas region with approx. 4 300 kW of installed capacity. Wind energy is also considered to have the highest capacity for the future. There are also a few examples of solar power installations that have the potential to be expanded.[84]

Regions	Number of installations			Total installed capacity (kW)			Sold energy (kWh), (2008)		
	wind	solar	small hydro	wind	solar	small hydro	wind	solar	small hydro
Burgas Municipality	1	0	0	150	0	0	160 940	0	0
Burgas District	13	6	1	4 265	55.3	640	4 563 156	53 289	151 820

Table 8: Renewable Energy in the Burgas region

Table 9*:* Expected Renewable Energy Capacity in the Burgas region

Regions	**Expected additional installed capacity (kW)**		
	wind	solar	small hydro
Burgas Municipality	26 050	170	0
Burgas District	135 485	101 199	0

SEAP state of play

The Municipal Strategy for Sustainable Energy Development 2010-2020 and the Local Sustainable Action Plan 2010-2013 (SEAP) will be based on national legislation and policy in the areas of EE and RE and will follow the guidelines/requirements outlined by the long-term government programmes and strategies. Moreover, the SEAP must comply with the Municipal Regional Plan for Sustainable Development 2007-2013 since it will be included as part of it. Other relevant regional policy documents include the Regional Strategy for development of the Region of Burgas 2005-2015 and the Regional Development Plan of the Southeast Planning Region 2007-2013, which encourage the use of RES and the application of EE measures. In addition, the IEE Sustainable NOW project supports the implementation of the SEAP in Burgas through capacity-building and by providing guidance to the local government.

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[83] European Environmental Agency,
[84] Velicha Velikova, 2010-04-12.

Process: bottom-up approach; establishment of an Advisory Council

In line with the national energy policy and legislation, the municipality took the initiative to develop a sustainable energy policy, a long-term sustainable energy strategy and a short-term action plan in 2009. A draft of the strategy should be ready for approval in August 2010.

Figure 5: Approximate time schedule of the process of SEAP development, 2010

| June-July	Selection of consultants	
July-September	Data collection	**Ongoing: Public consultation**
October-November	Final working meeting	
December-January (2011)	Approval of SEAP	

The municipal administration is responsible for the development process. Three departments related to energy policy form the project team: the Directorates for EU Integration, Environmental Protection and Buildings. An Advisory Council has been established to support the municipal administration in developing the SEAP and outlining its targets, as well as to help obtain commitments from the business community. The Advisory Council met for the first time on 16th of September 2009 and is made up of key actors working in the field of renewable energy and energy efficiency, representing many different levels of government. Participants includes local and regional stakeholders such as the energy agency, the Regional Environmental Inspectorate utilities, local businesses and big industrial companies in the region such as LukOil, the regional heat distribution company, the regional electricity distribution company, the municipal transport company, the gas distribution company and the Asen Zlatarov University as well as citizen groups and several NGOs. The state level participants are involved via state energy authorities. The Advisory Council will be involved throughout the whole process, including both preparing and implementing the SEAP. It will provide information and business support and will be in constant consultation with the experts responsible for the development of the SEAP.

The initiative is accompanied by campaigns attempting to increase public awareness and knowledge. The SEAP will be made public on the official website of the municipality of Burgas and will be subject to a public consultation in June 2010. Then, having taken the opinions expressed by all stakeholders in the public discussion into consideration, the final steps toward synchronizing the SEAP will be taken in July 2010, before submitting it to the Advisory Council for approval. The municipality is currently in the process of procuring a contractor to develop the SEAP. As part of the SEAP process, a survey will be under-

taken that will identify successful practices that can be replicated in the local SEAP.

Figure 6: Organisation chart of SEAP development team
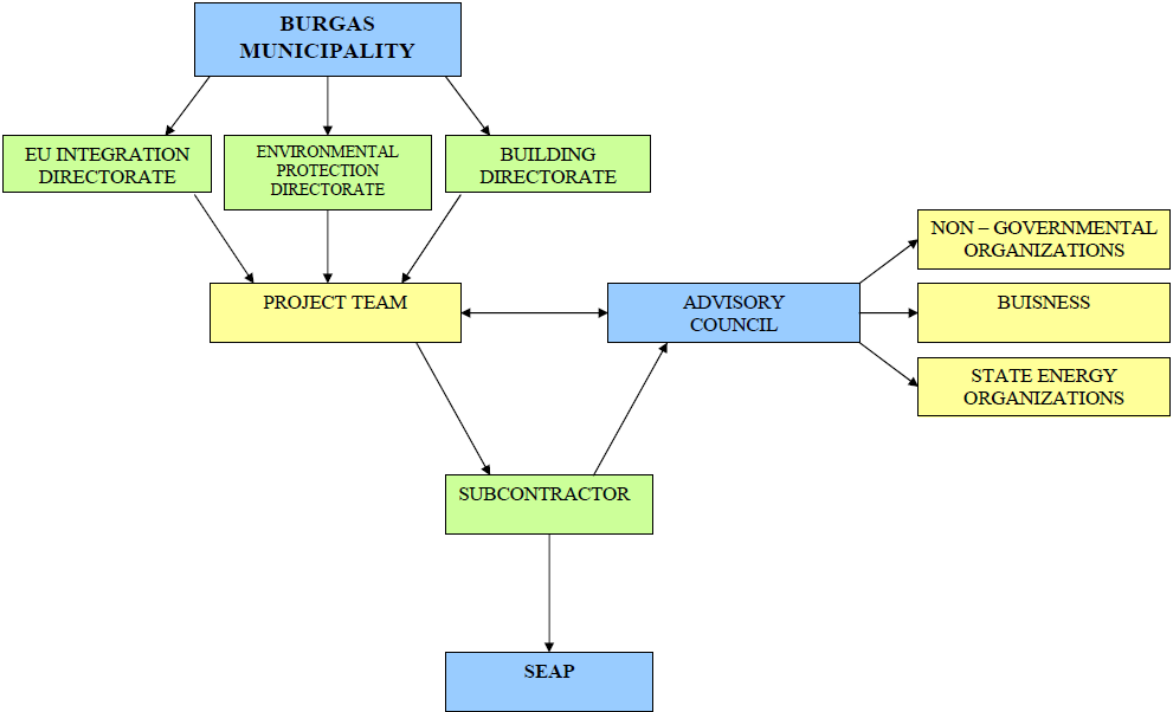
Source: Municipality of Burgas.

Funding

Funding for the SEAP measures come from many levels, including state and municipal budgets. As an example, Burgas municipality has already secured financial sources for energy efficiency measures for municipal buildings and street lighting. The municipal budget planning includes target sectors such as "Households", "Services", "Industry" and "Transport", in which implemented measures will introduce new environmentally-friendly technologies and/or practices that will lead to reduction in energy consumption and CO_2 emissions. Furthermore, the realisation of the SEAP measures will be supported partly by EU funds as well as through the application of public-private partnership (PPP). The municipality of Burgas has previous experience in applying PPP in order to effectively manage public municipal ownership and to encourage public participation in the decision-making process. Such partnership would help to create even stronger links to the local community by also ensuring commitments from the private sector. Another funding mechanism that will be of importance is ESCO contracts.

What the SEAP is expected to achieve

The drafting process is still in the early stages, and no concrete objectives or targets have been agreed upon yet. The local strategy will follow the guidelines outlined by the long-term government programmes and strategies in the areas of EE and RES. The New Energy Policy for Europe is affecting the development and implementation of the SEAP and the indicative targets of Bulgaria will be the basis for the SEAP targets. In order to outline the long-term, medium-term and short-term objectives and main priorities and recommended activities in the SEAP, a database system needs to be established that will enable the initial scenario to be mapped.

Implementation

The municipality of Burgas will be responsible for the implementation of the SEAP. The departments playing the key roles in this process are the EU Integration, Environmental Protection and Building Departments. There is also the possibility of commissioning various tasks/responsibilities to members of the Advisory Council on a voluntary basis, but this is still to be determined.

The Council for Air Quality Management and Assessment consists of stakeholders from many different levels of government, such as local and state supervisory authorities, big industrial businesses from the municipality of Burgas as well as NGOs. The council oversees both the implementation and monitoring of the Programme for Air Quality Management. A similar role and responsibility is foreseen for the SEAP Advisory Council.

Monitoring

Data collection is the first step of the SEAP development process on which the strategy will be built. Most of the data required will be provided by the private sector, such as from heat, electricity and gas distribution companies, regional representatives of the state institutions, energy production companies and big industrial companies. The municipality currently lacks basic information on energy production and energy consumption, especially RES, at the local and regional level. The process of data collection will however be facilitated as the municipality recently concluded a contract with EVN Bulgaria (electricity distribution company) to receive data and information for production and consumption of energy, especially from RES. In order to establish an information database, political commitment and technical support will be necessary.

Significant actions taken

Technical: Improving energy efficiency through retrofitting of public buildings and housing blocks

Several energy efficiency programmes, mainly focusing on building refurbishment and retrofitting, were launched in 2009. Two projects financed under the EU Structural Funds Operational programme "Regional development" aimed to improve the educational and cultural infrastructure in Burgas municipality and have led to the introduction of energy efficient measures in a number of schools, kindergartens and cultural buildings. The project "Demonstration renovation of multi-family buildings," supported by the Ministry of Regional Development and Public Works and implemented as part of the UN Development Programme (UNDP), includes energy and other technical audits, technical renovation projects for buildings and the issuing of technical passports providing opportunities to obtain an energy certificate. A block of flats renovated within the project received a Class A Energy Certificate valid until 2015. The total energy savings are estimated at 64 569 kWh and the reduced CO_2 emissions at 20 895 kg. 46 households in three residential areas in Burgas benefit from the project. The expected energy savings is estimated at 60%.

Social: Raising public awareness and maintaining a participatory approach
Encouraging civil participation at all levels of the local decision-making process is one aspect of transparent and good governance that the municipality is trying to achieve. Burgas' organization of awareness-raising campaigns in relation to European events is considered to be especially successful: examples include the Energy Week in Burgas in September 2009, which served the objectives of the Sustainable Now project, the Week of Ecology and the European Mobility Week. Horizontal governance methods are commonly used in the work of the municipality by involving civil society structures at the local and regional level. Such an approach is also used in the planning and evaluation of other processes such as the annual budgeting process.

Environmental: improving the air quality in Burgas
The local industry, which includes LukOil Neftochim Burgas, the largest oil refinery in Southeast Europe and the largest industrial enterprise in Bulgaria, has deteriorated the air quality in the region, and the municipality is thus considered an "environmental hotspot". In recent years, the increase in road traffic has further contributed to the problem. As a result, local residents have increasingly expressed concern for air pollution problems. Through a technical assistance project financed through the JASPERS initiative[85], Burgas municipality is implementing a project for integrated urban transport. The project includes several components working towards a shift to environmentally friendly modes of passenger transport, improving the environment and increasing the attractiveness of

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[85] JASPERS (Joint Assistance to Support Projects in European Regions) helps the 12 EU Member States from Central and Eastern Europe increase their capacity to absorb the available EU Structural and Cohesion Funds. JASPERS is managed by the European Investment Bank (EIB) and co-sponsored by the European Commission, the European Bank for Reconstruction and Development (EBRD) and Kreditanstalt für Wiederaufbau (KfW).

the city. Main priorities includes reducing traffic congestion and increasing the capacity and commercial speed of the public transport system as well as developing trolleybus systems and/or buses with low levels of emissions.

In line with the local energy policy, the municipality of Burgas and the Norwegian Institute for Air Research are implementing the project "Installation of a mobile laboratory for integrated air quality monitoring and management in Burgas", financed by the Financial Mechanism for the European Economic Area. Activities include an evaluation of the existing air quality measurement network, a screening study with passive samplers, development of a database for the mobile station, introduction of an assurance programme and standard operating procedures.

Cooperation opportunities

In order to develop a SEAP that fully covers the needs of the population and is tailored specifically to the region, Burgas is applying a bottom-up approach involving stakeholders and end-users in the process. This approach allows the municipality to outline the body responsible for each action, the economic resources required and the corresponding savings in greenhouse gases emissions. Thus, the active participation of the stakeholders is an integral part of the development of the SEAP, which is reflected through the work of the Advisory Council. For instance, outside stakeholder groups are expected to organize events for raising public awareness.

Burgas supports its energy efforts by participating in several EU projects. The most notable of these are the Sustainable NOW[86] and the Remining – Iowex projects. The Sustainable NOW project (European Sustainable Energy Communities - Effective Integrated Local Energy Action Today) is supported by IEE and focuses on helping local and regional governments guide their communities through the transition to sustainable energy. Project partners create instruments that build on state-of-the-art Sustainable Local Energy Action Plan developments to inform local government decisions concerning integrated energy management, climate mitigation actions and securing local energy supply. The Remining – Iowex[87] (Redevelopment of European mining areas into sustainable communities by integrating supply and demand side based on low energy principles) is co-financed by the EU Sixth Framework Programme CONCERTO II[88]

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[86] The Sustainable NOW project consortium is comprised of fifteen European partners and is coordinated by ICLEI.

[87] The participating communities are Heerlen, the Netherlands and Zagorje ob Savi, Slovenia. Associated communities are Czeladz Poland and Burgas Bulgaria.

[88] The CONCERTO initiative is a Europe-wide initiative proactively addressing the challenges of creating a more sustainable future for Europe's energy needs. Today, there are a total of 58 communities in 22 projects.

initiative and aims to demonstrate the use of low-valued renewable energy sources for heating and cooling redeveloped and renovated old buildings.

Challenges ahead

In the long-term, the biggest challenges with regard to the Burgas SEAP will be achieving a high share of RES in energy production and consumption on the regional and local levels, improving energy efficiency and reducing CO_2 emissions in line with the EU 20-20-20 targets. Burgas is striving to achieve energy independence at the local and regional levels.

Key challenges for local authorities in the policy-making process include finding efficient ways for cooperation between institutions, methods of stakeholder involvement and end-users in the whole process of local policy development, implementation and assessment. A challenge will be to establish a results-oriented approach to integrating financial, institutional and legislative mechanisms to encourage businesses, financial institutions and the local community to create an effective platform for finding realistic and practical solutions in the field of energy efficiency and the use of RES. The process of building a common understanding of the economic and social benefits and environmental effects of energy efficiency measures is yielding results among decision-makers in the region, but further efforts in this area will be needed.

Replication potential

The approach taken in Burgas has the potential to be applied in any other region, and the experiences and lessons learned from the process of developing the SEAP of Burgas can be of use to other European municipalities. The municipality intends to use all instruments available to disseminate its experiences, both good and bad. Among its good experiences, the horizontal governance approach of setting up an advisory board of local and regional stakeholders that oversees the process has proven to be useful in the case of the Council for Air Quality Management and Assessment and could be applied to other cities as well.

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Munich (Germany)

Introduction

The city of Munich is currently developing its Sustainable Energy Action Plan (SEAP). Political and financial support on the local, national and European levels and a well-functioning Europe-wide network of stakeholders and projects are key factors in successfully developing an energy action plan. In combination with political will (and the necessary elected majorities), Munich could benefit from existing, well-functioning internal governance structures. External expert studies helped to develop a target scenario. The city of Munich has made special efforts to promote renewable energies, energy efficiency and energy savings, all with the aim of reducing overall CO_2 emissions.

However, it remains to be seen how the implementation process will work in the future.

Quick facts:
- **Population**: 1.36 m (2008)
- **GDP per capita**: 56 306 € (2008)
- **Energy action plan established**: 2010
- **Biggest achievement**: high level of prosperity, well-developed short distance public transport, establishment of major businesses
- **Biggest challenge:** social integration of different cultures and generations

Analysis

Compared to the German average (2000: 9.3 %, April 2010: 8.1 %)[89], Munich has a comparatively low rate of unemployment (2000: 4.0 %, April 2010: 5.9 %)[90] and continuously tries to create new jobs. Therefore, it is a popular city and has always had a constant influx of new residents. Generally speaking, the social cohesion is very strong and Munich does not show alarming signs of social disintegration, apart from the deprived areas typical of every municipality/city. In Munich, the amount of people living in relative poverty is approx. 178 600[91], i.e. 13.4 % of the city's population. In the interviewee's opinion, the Lisbon Strategy did not significantly influence this statistic. Furthermore, according to the interviewee, the impacts of climate change are still rather small in Munich and, consequently, climate change is more of a political issue than a technical challenge in public opinion.

Munich's climate mitigation strategy is composed of two pillars. One is the alliance "Munich for Climate Protection" (Bündnis "München für Klimaschutz")[92] which affects Munich's companies and citizens, etc. while the SEAP (integrated climate protection action programme - Integriertes Handlungsprogramm für Klimaschutz in München, IHKM) builds the second pillar of Munich's local climate policy and will affect Munich's administration, including real estate. Concerning "Munich for Climate Protection", forums and working group sessions were held regularly during the first phase of its development (2.5 years). The results report of the first phase has already been completed and the implementation phase began in June 2010.

Munich's SEAP was adopted by the City Council on 23 June 2010 and was also published and has come into effect. The SEAP covers all aspects of energy demand and production, including transport (stationary and mobile energy appliances). It focuses on CO_2 emissions only; other greenhouse gases are treated only marginally. The three major areas of the SEAP are renewable energies, energy efficiency and energy savings. The SEAP is expected to re-

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[89] Statistical Office Munich (n.d.): Die Arbeitslosenzahlen und -quoten der Stadt München und dem Arbeitsagenturbezirk München 1) im Vergleich mit anderen Gebieten, http://www.mstatistik-muenchen.de/themen/arbeitsmarkt/jahreszahlen/jahreszahlen_2000/jt010614.pdf, 30 April 2010, and Bundesagentur für Arbeit (2010a): Der Arbeits- und Ausbildungsmarkt in Deutschland – Monatsbericht April 2010, Nürnberg: Agentur für Arbeit, p. 17.

[90] Statistical Office Munich (n.d.): Die Arbeitslosenzahlen und -quoten der Stadt München und dem Arbeitsagenturbezirk München 1) im Vergleich mit anderen Gebieten, http://www.mstatistik-muenchen.de/themen/arbeitsmarkt/jahreszahlen/jahreszahlen_2000/jt010614.pdf, 30 April 2010, and Bundesagentur für Arbeit (2010b): Statistik der Bundesagentur für Arbeit - Arbeitsmarkt in Zahlen, Kreisreport 01.04.2010, München.

[91] City of Munich (2010): Zusammen helfen. Fakten und Zahlen über Armut in München, February 2010, p. 6.

[92] See http://www.muenchenfuerklimaschutz.de, 21 June 2010.

duce Munich's CO_2-per capita emissions by 10 % every five years. By 2030, the CO_2-per capita emissions should be lowered by 50 % (compared to 1990 levels).

Process

The topic "climate change" falls within the remit of the city of Munich's Department of Health and Environment (Referat für Gesundheit und Umwelt, RGU) and thus the RGU is mainly responsible for the development of the SEAP. The RGU can be divided into the subdivisions "health" and "environment", the latter covering the area of "health and environmental reporting, energy and climate mitigation" (approx. 20 staff members), which is in charge of the SEAP. Within the RGU, about 6 staff members are responsible for the SEAP.

Binding decisions on the main targets of the SEAP are formulated by the RGU and adopted by the City Council. The overall target follows the proposal of the Climate Alliance (Klimabündnis e.V.).[93] The SEAP is being created in close collaboration with the following other departments:

- building,
- municipal issues,
- district administration,
- work and economy,
- urban planning and building regulations,
- school and cultural affairs,
- social affairs, as well as
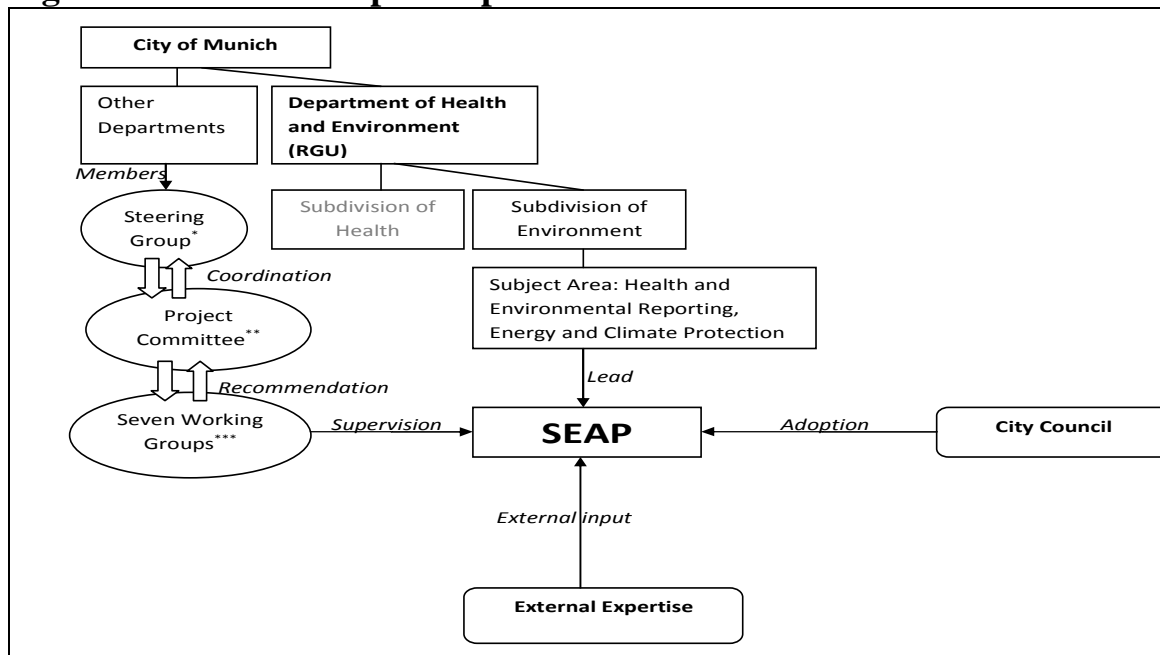- the city treasurer.

The RGU has taken the first step by writing the initial draft, which can be considered the driving force for establishing a SEAP. The other departments and the 3rd senior mayor provided input as well. The main fields of work are not discussed publicly, but on a working level. About once a week, the seven working groups assemble, coordinated by a **project group** that works on proposals for the steering committee. The latter is composed of the office of the 3rd senior mayor and supervises the process. It makes decisions based on recommendations from the project committee. The project group gets together every four to six weeks and is composed of an interdisciplinary team, including trained social scientists (sociologists, geographers, environmental scientists, technicians). However, many of the departments involved consist primarily of engineers providing the necessary expert knowledge. In addition, reports by external experts have been commissioned.[94]

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[93] The Climate Alliance (Klimabündnis e.V.) is an association of cities, municipalities and districts on climate mitigation: http://www.klimabuendnis.org/.

[94] For instance, Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) (ed.) (2005): Kommunaler Klimaschutz. Strategien für eine Halbierung der CO_2-Emissionen am Beispiel der Stadt Mün-

Figure 7: SEAP development process Munich

The work of the project group is integrated into the overall political process: The City Council (Environment Committee) will officially see the project group's first draft during the adoption of the SEAP in June 2010 and will then be able to formally request amendments, but information can already be exchanged beforehand through informal channels within the municipality's structures.

Of course, different kinds of problems occurred during the process of creating the SEAP, most of them resulting from the sheer size of the administration (30 000 staff members at the municipality, 800 in the environment division).

Funding
The main financial instrument used to support the investment in energy efficiency and renewable energies is the so-called Intracting-model (internal

contracting model); the City Treasurer makes the investments, and savings should flow back to the City Treasurer. This model is regularly applied with success to climate mitigation scenarios concerning municipal buildings in Munich. When the City Council adopts the SEAP, the City Treasurer must consider the SEAP's decisions in the financial planning.

So far, major funding for the SEAP has come from the local level.

A lack of funding can be overcome if creative staff members find new ways of financing the SEAP and/or projects to support the goals of the SEAP.

For example, the support programme Energy Saving, financed via local taxes, is a local funding programme with a current investment factor of 10 to 11, i.e. every euro of subsidies triggers local or regional investments amounting to ca. EUR 10.

As mentioned earlier, different levels of governance can be used to build coalitions that work on the same topic. It is important to note that the benefit of multilevel governance in this respect is that all the different levels can cooperate with each other, e.g. the local level can directly cooperate with the EU-level without having to necessarily include the national level. This direct cooperation between the EU Commission and local authorities has even been strengthened by the creation of the initiative "Covenant of Mayors" in 2008. Meanwhile, this initiative comprises 1 800 local authorities who committed themselves to go beyond the EU "3 E.s target" (for more information see: www.eumayors.eu).

Implementation

The same people and institutions that comprise the SEAP, i.e. the separate technical departments (Referate) including the RGU, are also responsible for its implementation. The 3rd senior mayor has political control over the process in this circumstance as well. Since the personnel capacities of the municipality are limited, the Forschungsinstitut für Energiewirtschaft e.V. (www.ffe.de) provides scientific support. The SEAP is a separate agenda item during individual department meetings (and of the Munich climate mitigation alliance) and forms an integral part of the city's policy. However, it remains to be seen how the implementation of the SEAP will function in practice once the SEAP is approved.

Concerning multilevel governance aspects, the implementation process is limited to the local level. Multilevel governance aspects are irrelevant in this respect.

Monitoring

While the RGU is responsible for the development and implementation of the SEAP, the 3rd mayor supervises the process. The Forschungsinstitut für Energiewirtschaft e.V. regularly and systematically evaluates the measures; the results of these regular evaluations influence the target setting and implemen-

tation process. This sort of monitoring will continue as long as all measures are being implemented (probably approximately 20 years).

Energy data of private consumers are mainly being collected by the municipal utilities of Munich (Stadtwerke München), but also by the building directorate (data for municipal buildings) and municipal department (data on waste management). The sectoral division between wholesale and tariff customers is proving to be a challenge. The liberalization of the electricity market causes small gaps in the amount of data, but as 95 % of all private customers in Munich use the municipal utilities, these gaps are considered to be marginal. Generally, the data on electricity consumption are very comprehensive, while data on thermal energy are partly inaccessible (mainly for fuel oil and other combustibles). The solution might be the software EcoRegion created by Ecospeed and offered by Climate Alliance (Klima-Bündnis e.V.), partially calculating the local consumption by using regional and national data. Another problem is that the data may only become available one or two years later.

All collected data are administered with the help of open source spreadsheet software (Calc) comparable to Microsoft Excel.

Again, only local authorities and external partners are involved in the monitoring process. Concerning the monitoring process, multilevel governance aspects do not play a role.

Significant actions:
- **Technical**: *Refurbishment of existing buildings to improve energy efficiency*

  The biggest technological possibilities for CO_2 reductions exist in the residential and building sector, both throughout Germany as well as in Munich. By reducing the energy use of residential, commercial and public buildings, almost 21 % of Munich's present CO_2 emissions could be saved by the year 2030, compared with reference developments.[95] To this end, the installation of windows with thermal insulation glazing and improved insulation of all outer building surfaces are necessary. With the substantial energy costs that can be saved, most of these measures can prove to be cost-efficient for the home owner if they are installed during upcoming building renovation. Owing to the generally long refurbishment cycles (around 50 years), installing these measures at the time of refurbishment can be an impediment for energy saving measures. In Munich, the rents are already very high, excluding heating costs. Consequently, it is hardly feasible to refinance the costs of energy renovation through rent increases.

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[95] Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) (ed.) (2005): Kommunaler Klimaschutz. Strategien für eine Halbierung der CO_2-Emissionen am Beispiel der Stadt München, Research by Öko-Institut e.V., p.14.

The city of Munich offers comprehensive energy consulting and supports refurbishment measures within the framework of the communal energy saving promotion programme with grants of up to EUR 50 000. Since 1995, the city of Munich has created several tables informing citizens about heating costs (*Heizspiegel*) and published them on flyers and in the media. The latest heating table is being developed in conjunction with the campaign "climate seeks protection", sponsored by the Federal Ministry for Environment (BMU). The calculated reference values for heating energy consumption and costs enable homeowners and tenants to rapidly pre-check their heat costs billing procedure. If values are alarmingly high, they can request a free written expert report. In combination with online guides (for heating energy, modernisation and promotion) that are offered on the web pages of the city, incentives for energy efficiency measures should be given (further information at www.klima-sucht-schutz.de).

In addition, Munich organizes forums and offers an energy passport for existing buildings which informs residents about the energy efficiency of a building.

According to the Öko Institut study (2004), there are further opportunities for Munich to stimulate energy efficiency building measures, for example, the development of an ambitious renovation standard in collaboration with planners and craftsmen. Since this study, this standard ("Münchner Qualitätsstandard") has actually been created.[96] In order to promote the implementation of this standard in the field, self-commitment from the housing industry would be necessary. Moreover, the information on energy efficiency measuring possibilities for craftsmen, homeowners and tenants should be increased and updated continuously. These recommendations by Öko-Institut shall be implemented within the framework of the SEAP.[97]

– **Social:** *User behaviour and energy consumption*

Within the alliance "Munich for Climate Protection", the city of Munich's utilities are running an energy saving programme for socially disadvantaged households. These households get advice on energy saving behaviours and, in some cases, their old equipment (refrigerator, washing machines, etc.) is replaced with a new one.

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[96] See www.muenchen.de/bauzentrum, 12 June 2010.

[97] See Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) (ed.) (2005): Kommunaler Klimaschutz. Strategien für eine Halbierung der CO_2-Emissionen am Beispiel der Stadt München, Research by Öko-Institut e.V.

– **Environmental:** *Transport*

Integrated transport concepts not only help to cut emissions, but also reduce noise and increase quality of life in the community. Passenger and freight traffic (excluding air traffic) caused about 13 % of Munich's CO_2 emissions in 2000. The share of motorised individual transport in the traffic volume of passenger traffic is over 60 %; local public transport is 27 %. Non-motorised traffic by foot and bicycle accounts for about 10 %. The reference scenario for Munich until 2030 predicts a decrease of the greenhouse gases from transport by a third. Fuels saving vehicle technologies, therefore, clearly overcompensate only slightly for increasing traffic volume. Theoretically, the CO_2 emissions provoked by transport could be further reduced by 350 000 tons per year through additional measures. The city's level of influence on this reduction potential, however, varies for different transport carriers. In the area of short-distance public transport, additions to the tramway and the subway networks are under construction. Likewise, officials are currently planning the construction of a second *S-Bahn* tunnel.

As early as 1993, the City Council adopted a bicycle infrastructure programme. Since then, approx. EUR 35 million have been spent to extend the bikeway network. In 1996, the city also adopted a package of measures for a "pedestrian-friendly city." In addition to the transport development plan for bicycle traffic, a concept for bicycle parking is being developed; various bike & ride locations have already been established. A newly developed parking space management system is currently being implemented district by district after a successful testing phase. According to a study by the Öko-Institut, there are further options for improvement. The city could, for example, manage parking space more intensively and install a pedestrian guidance system to bring about further CO_2 savings. An increased bike traffic lump sum in the city's budget could finance an intensified extension of the bicycle infrastructure. Although Munich has already raised ridership in short-distance public transport impressively in recent years, its promotion still remains important in the longer term. An extension of car-sharing, traffic-avoiding urban development, mobility consulting that embraces all transport carriers, communication with traffic participants, and instruments for operational mobility management could all be profitable.[98]
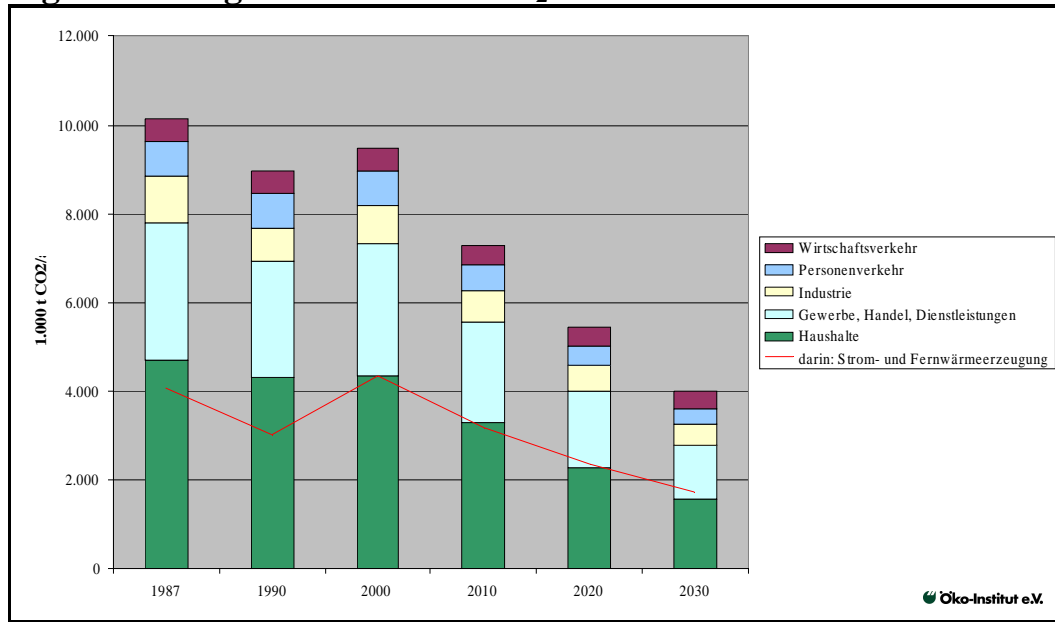
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[98] Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) (ed.) (2005): Kommunaler Klimaschutz. Strategien für eine Halbierung der CO_2-Emissionen am Beispiel der Stadt München, Research by Öko-Institut e.V., p.21.

Action Plan

The SEAP is expected to reduce Munich's CO_2-per capita emissions by 10 % every five years. By 2030, the CO_2-per capita emissions should be lowered by 50 % (compared to 1990).

Figure 8: Target scenario for CO_2 reduction

Source: Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) (ed.) (2005): Kommunaler Klimaschutz. Strategien für eine Halbierung der CO_2-Emissionen am Beispiel der Stadt München, Research by Öko-Institut e.V., p. 19.

Munich's CO_2 reduction potential is about 2 309 000 t CO_2 per year, corresponding to approximately one third of the CO_2 reduction potential 1987-2030 in the scenario of objectives.[99]

Promising fields of action for CO_2 reduction, beginning with the most important, are:

- renewal of old buildings;
- households and businesses;
- use of biomass and biogas in CHP plants;
- change of user behaviour in household areas and in the ITS (GHD) sector;
- change of fuels in heating systems;
- energy-saving in building construction;
- lighting in public offices, businesses, schools;
- energy conservation in industry;
- household equipment, white goods in private homes;
- communication and media appliances in private homes.

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[99] Presentation by Mr. Gerhard Urbainczyk, City of Munich (2009): Methodology for a City Sustainable Energy Action Plan, presentation held in Burgas, Bulgaria, 24-25 September 2009, p. 8.

Cooperation opportunities

Through the alliance "Munich for climate mitigation" (www.muenchenfuerklimaschutz.de), citizens, scientific facilities and, above all, businesses are participating in the decision-making process for general climate mitigation (not SEAP-specific). Four subject-specific forums have been established for stakeholders from the city:

1. Energy supply (municipality utilities of Munich + research facility),
2. Sustainable mobility (Munich transport society),
3. Energy savings in the building sector (municipal and private housing associations),
4. Efficient energy use (Chamber of Industry and Commerce).

Additionally, a study group on educational work and public relations has been established to disseminate the findings.

For the SEAP in particular, there is no **stakeholder participation** at present. However, after the publication of the SEAP, the stakeholders can comment on the plan, and public hearings will be held. Public stakeholders could not participate in the preparation of the SEAP as it would have delayed the process.

External stakeholders are not (yet) authorised to lead initiatives within the action plan, but there is constant communication with external networks (EUROCITIES, Climate Alliance, Energy-Cities).

Multilevel governance

The development and implementation of the SEAP is supported politically at the **local level** only, as the SEAP will only cover measures and/or policies at this level. There is also a so called role model region for electric mobility (i.e. a region in which electric mobility is tested in order to learn how to use it on a larger scale). However, it is not an integral part of the SEAP.

At the **federal state and national level,** different political party constellations can harm cooperation, and parliamentary majorities at every level are crucial for this cooperation. For example, at the federal state level, cooperation could – and should – be improved in spite of the existing political party constellations (*Land* Bavaria: CSU/FDP coalition, city of Munich: SPD/Green coalition). At the national level, there has been direct communication with the Federal Environment Ministry (BMU) and the Federal Environment Agency (UBA). While the cooperation with the UBA will most likely continue, the future collaboration with the BMU is still uncertain because contact with the Federal Ministry for the Environment still has to be established. At present, there seem to be no severe obstacles to cooperation, since the different political parties share many common views on climate mitigation.

The SEAP fits very well into Munich's status as a European metropolitan area and a role model region for electric mobility. Therefore, it is convincingly integrated into local policies.

At the **European level**, the political support for the development and implementation of the SEAP is even more pronounced than at the national level, especially because the SEAP can be traced back directly to a European Commission initiative, the Covenant of Mayors. Furthermore, the Covenant of Mayors' political support is particularly important. Such support is partly due to Munich's Europe-wide networking (EUROCITIES, Klimabündnis, Energie-Cités) and its participation in the Covenant of Mayors Association. Some conferences on climate change (e.g. "Rio+10" in 2002) have even been co-financed by the EU, so obstacles have turned out to be comparatively small. A bureaucratic burden was not perceived by the interviewee.

To sum up, the case of Munich shows that governance on different levels brings both advantages and disadvantages for the development of a SEAP. The disadvantage is that if there are different political constellations ruling at different levels, it can cause obstacles to cooperation. However, the advantage is that at the same time, both political and financial support can be found at other governance levels. The city of Munich, for instance, is cooperating well with the national and EU-level, but the regional (*Länder*) level needs improvement.

Challenges ahead and lessons learned

The main obstacles along the process of SEAP development and implementation have been the lack of personnel and money, as the situation for local communities in Germany is generally characterised by financial and personnel constraints. Yet, measures that provide the financial means will probably be approved by the City Council in the near future. Concerning political party barriers, coalitions of the willing should be founded in order to create a favourable environment for the SEAP.

Replication potential

There is some potential to implement Munich's strategy in other cities, towns and communities of the EU, depending on the **financial power** and the **political intent** of the respective administration. If these factors do exist, then these strategies are feasible. The general interest at the European and network level is very high, especially for economically weaker East European cities. Partnerships with several cities worldwide exist (e.g. with seven twin cities and with many cities and towns, who are members of the city networks named above).

Sources

List of interview partners and consulted documents

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Rožnovsko (Czech Republic)

Introduction

The micro-region of Rožnovsko has benefitted greatly from its participation in the IEE ASPIRE project, through which the Sustainable Energy Action Plan (SEAP) for the Rožnovsko micro-region was drafted. The plan was adopted in 2009 and is evidence of the region's ambition of becoming a sustainable energy community. Stakeholder and community involvement have been particularly important during the development of the action plan and, through the Stakeholder Steering Boards, will continue to be a foundation for its implementation. Increased use of biomass and solar energy and improvement in district heating are seen as potential environmental advances for the region. Other priorities include improvements in the district heating system. With the help of the ASPIRE project, the SEAP has brought about several new energy efficiency measures in the Rožnovsko region.

Quick Facts:
Population: 35 625 inhabitants. Over 17 000 live in the regional captial Rožnov pod Radhoštěm
GDP per capita: 90 % of CR average and 60 % of EU average
Biggest achievement – development of a Sustainable Energy Action Plan for the Rožnovsko micro-region (adopted 2009).
Biggest challenge – raising awareness of key stakeholders in the implementation process and increasing citizen involvement.

Analysis

State of play in city

The micro-region of Rožnovkso is a voluntary association of nine municipalities, situated in the north-eastern region of Zlin. The city of Rožnov pod Radhoštěm is the regional capital and the centre for jobs, culture and public services.

Since 1973, the whole area of Rožnov has been part of a nature protection area (CHKO Beskydy). Renewable Energy Sources (RES) are a high priority in the region, as reflected in the Zlin Region Energy Strategy (approved in 2005 by the Regional Government). During the same year, the city of Rožnov developed its Air Quality Improvement Programme, designed to reduce emissions from households and mobile sources. The programme contains recommendations relevant to the SEAP, mainly concerning the domestic sector, the use of solid fuels in small boilers and emissions reduction from mobile sources, such as transport. Both strategies target CO_2 as well as PM_{10} emissions reductions. Currently, Rožnovsko is working towards becoming a Sustainable Energy Community (ESC) by seeking to increase energy independence, placing RES and EE in the centre of the energy policy and strongly involving the local community in the planning and implementation process.

Although the GDP of the Rožnovsko micro-region has grown in the last decade, its economic underachievement is still one of the region's key weaknesses. The region's GDP is 90% lower than the Czech average and approx. 60% of the EU-25 average (in PPS). The region also lags behind in GDP growth compared to the national level, and unemployment remains higher than the Czech average.[100] Although the number of people employed in the research and development (R&D) sector nearly doubled during the period from 2000 to 2005,[101] the overall proportion of employment in the sector still remains low. The municipality sees a sustainable energy economy as a way to create jobs and generate growth. Currently, local renewable energy sources amount to 10% of the total primary energy consumption.[102]

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[100] SEAP of Rožnovsko, March 2009.
[101] Operational Programme Central Moravia.
[102] SEAP of Rožnovsko, March 2009.

Table 10: Regional GDP in the Zlin Region in current prices (2007)

	2001	2002	2003	2004	2005	*2007**
MEUR	3 328	3 844	3 846	4 013	4 611	*9 180*

The 2007 data is not compliant with the 2001-2005 data. The 2007 value has been calculated as a percentage of the Czech average (90%).
Source: Operational Programme Central Moravia Cohesion Region 2007-2013.

Table 11: Registered unemployment rate (in %) in the Zlin Region

	1995	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Registered unemployment rate (in %)	2.4	7.0	8.7	8.1	8.5	10.2	10.6	10.6	9.3	7.75

*Source: Operational Programme Central Moravia Cohesion Region 2007-2013.*

- **SEAP state of play**

The Energy Action Plan for the Rožnovsko micro-region (SEAP) was ratified by the General Assembly of the micro-region and by the SSB in September 2009. The ASPIRE project, supported by the IEE, played a crucial role in the development of the SEAP.[103] The general objective of the ASPIRE project for Rožnovsko was to involve the micro-region's municipalities in sustainable development by promoting energy policies in line with the programmes of the European Union for reducing CO_2-emissions, securing energy supply, reducing energy import dependency, increasing renewable-based energy production and mitigating the impacts of energy production and use. The SEAP covers the period until 2027. The Rožnov City Council Project Management Department (PDM) holds the overall responsibility for the SEAP. The Stakeholder Steering Board (SSB) of the Rožnovsko Sustainable Energy Community (SEC) was established in August 2007, with support of the ASPIRE project, to ensure local commitment to the development and implementation of the Sustainable Energy Action Plan. The SSB consists of politicians (mayors of the municipalities) and public authorities, entrepreneurs and representatives from the non-profit sector (officials and external experts). Furthermore, the SSB includes representatives from the community sector, housing co-operatives, local authorities, local energy utilities (DH operator), consultants and representatives of a local action group. The set-up and the operating guidelines of the SSB were approved by the General Assembly of the micro-region.

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[103] The ASPIRE project, supported by the Intelligent Energy Europe, was launched in October 2006, bringing together a partnership of 11 organisations representing 9 communities across the EU. The project ended on 31 March 2009. Source: http://www.aspire-project.eu/.

The SEAP's priorities were decided by the SSB and also correspond to the planned Energy Conception (EC) of the city of Rožnov pod Radhoštěm, the Strategic Development Plan (SDP) of Rožnov pod Radhoštěm (the main strategic document of the City Council) and its action plans. The EC of Rožnov pod Radhoštěm was drafted during the ASPIRE project, and its implementation is part of the next step of the energy policy.

Figure 9: Organisational chart of the SEAP of Rožnovsko
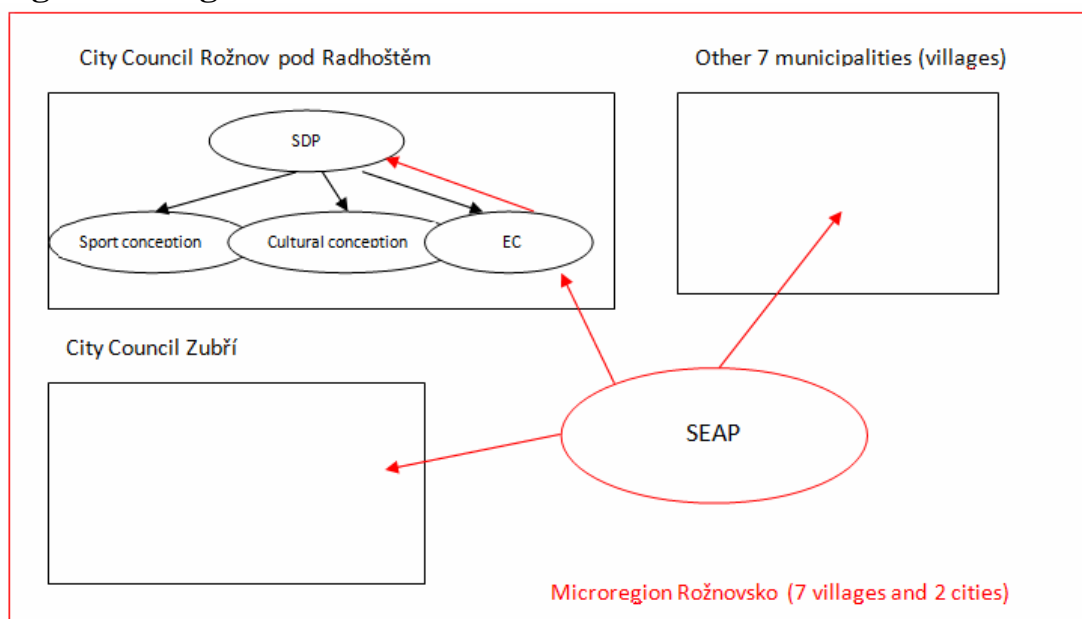
Source: Jan Kucera.

Process

Decisions concerning the SEAP targets are made by members of local governments on the basis of external expert suggestions. The main steps of the SEAP process were:

- ♦ Identifying stakeholders in the SEC, establishing SEC Stakeholder Steering Boards (SSBs), identifying planned developments and schemes;
- ♦ Increasing awareness of the social and economic roles energy plays within society, and of the benefits of exploiting local RES;
- ♦ Drafting of SEAPs and consulting with citizens and key stakeholders;
- ♦ Formal adoption of SEAP.

Multilevel government cooperation on the regional and local level is very important, even though state involvement in the SEAP is minor.

Figure 10: Methodology adopted for SEAP development (Rožnovsko)
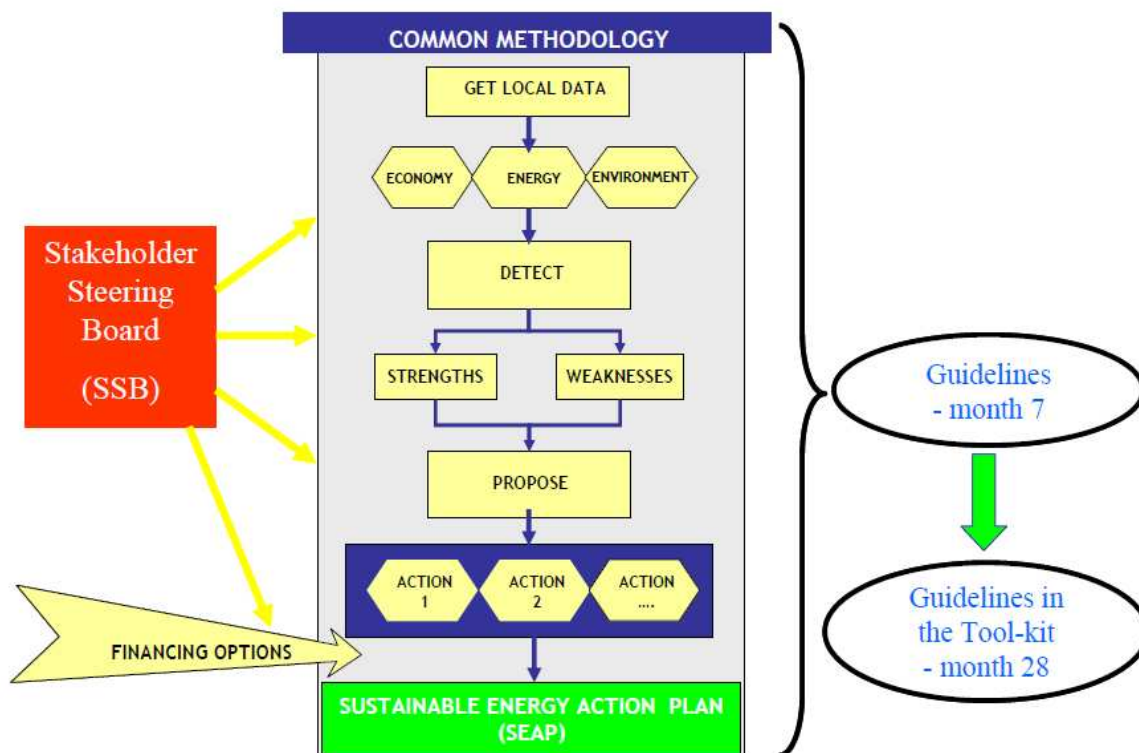
Source: SEAP of Rožnovsko, March 2009.

Funding

In the selection of measures and activities for the SEAP, close attention was given to actions that could be co-financed or subsidised by available grants and soft loans. The measures included in the SEAP are financed through a number of different types of investment. The EU Structural Funds for the period 2007-2013 provide for a number of financing opportunities. Seven operational programmes (OPs) provide funding for EE and RE (e.g. OP Environment, which provides support for sustainable energy actions such as investments in energy efficiency and renewable energy, and the OP Entrepreneurship and Innovation, which supports heat and electricity production from RES). Apart from the EU instruments, most of the financing comes from the national level. Funds are available for public buildings and entrepreneurs in the form of subsidies from the Czech Republic Green Investment Scheme (GIS).[104] Since May 2009, households have been able to benefit from this programme. Another na-

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[104] The GIS is administered by the Ministry of Environment and is implemented through the State Environmental Fund. Financing will be given to projects in certain categories, e.g. heat insulation of buildings, support to passive houses and support to renewable energy. Grants will be given as a percentage of the investment, with a given ceiling. Source: Aspire, SEAP

tional financing mechanism that can support the implementation of the SEAP is the dual system of feed-in tariffs and "green bonuses" for REC electricity, which was introduced in 2006 (replacing a fixed feed-in tariff scheme from 2002). Indirect support could come from the environmental taxes introduced in 2008.

Barriers
Specific barriers that the project addressed are listed below:
- ♦ lack of awareness among decision-makers of the importance of RES and Rational Use of Energy (RUE) for economic and community development;
- ♦ lack of opportunities for key stakeholders to participate in community energy planning;
- ♦ lack of awareness and understanding among key stakeholders of the opportunities for integrating RES and RUE technologies and schemes into the regional planning and development process;
- ♦ lack of political initiative and leadership at the local and regional level for promoting and supporting greater integration of sustainable energy measures in addition to a weak policy framework at the national level.[105]

Implementation
The SEAP identifies cost-effective measures and activities to be taken by specific municipalities, sectors and communes in the micro-region. These measures also include capacity-building, and information and awareness-raising, all of which will support the implementation of the SEAP in the region. The region's long-term vision is to create:
- a region with an alluring business community and a growing economy based on a diversified industry, agriculture and services;
- a tourist destination linked to long cultural traditions and a healthy environment.

Two key priorities in terms of energy are identified:
- Reduction of energy demand;
- Securing supply from renewable energy sources.

The priorities identified for Rožnovsko to increase its energy sustainability include, for example:

- Biomass expansion;

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[105] SEAP of Rožnovsko, March 2009

- Solar energy use in photovoltaic cells and for hot water preparation in both new buildings and in existing houses and facilities;
- Increased attention to low-potential heat utilisation;
- Low-energy house construction and extended utilisation of renewable energy in buildings;
- Promotion of school involvement in educating younger generations about environmental issues.[106]

The responsibility for implementation is shared by the main stakeholders, such as the Rožnov City Council, politicians, and members of the business sector, such as entrepreneurs of central heating systems (since heating is a main priority of the SEAP).

Table 12: Available renewable energy potential (GJ/year)

Renewable energy sources	Currently utilised potential (GJ/a)	Not yet used potential (GJ/a)
Solar heating systems	2400	20 195
Solar PV systems	68	5 000
Small water dams	504	1 400
Wind energy		0
Geothermal and low-potential heat	1499	8 400
Biomass - grown	0	4 977
Biomass – wooden wastes form wood processing plants	796	37 917
Biomasa – wood, briquettes, pellets	170 351	12 500
Biomass - straw	0	0
Biomasa – dried grass	0	0
Biogass from grass	0	1 436
Biogas from water treatment plant	3 900	2 125
Total	179 518	93 950

Source: Rožnovsko SEAP, 2009.

Monitoring

There is currently no way to measure how effectively the SEAP is being implemented. The responsibilities of the SSB include overseeing the implementation of the SEAP, and some SSB members provide monitoring data to local authorities. The central responsibility of collecting data for all micro-regions falls on the Project Management Department of Rožnov. In turn, other municipalities in the micro-region provide data to the PMD.

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[106] SEAP of Rožnovsko, March 2009.

<u>Notable/Significant actions taken</u>

<u>Technical</u>
Many renewable energy producers are located in Rožnovsko and in neighbouring regions. Several investments supported by the EU and national financing instruments have been undertaken during the past few years in Rožnovsko, and there are also a number of installations for a variety of RES. The most developed RE source in the region, which has, according to the SEAP, the highest energy potential achievable through technology, is biomass.

The district heating system in the municipality of Valašská Bystřice is considered to be a first step towards replacing the fossil fuel reliant heat production from coal with heat produced from wood chips and other biomass. The district heating system was built in 2005 and is fuelled by by-products of one of the biggest industries in the municipality: wood processing and saw plants. A new company was established to operate the boiler house and the distribution network.

Expansion of the current district heating current system is also a priority in the SEAP. Although a number of limitations (lack of financing and available biomass) currently restrict its expansion, there is potential for improvement in the distribution system of many of the micro-region's municipalities.

<u>Social</u>
Cooperation between the SSB and the children's parliament was established while drafting the SEAP. The children's parliament is also part of the educational and information pillar of the ASPIRE project that promotes citizen involvement and education. Children were found to be the most suitable target group to spread enthusiasm for reaching the SEC goals. Information dissemination in the field of environmental sustainability is a future priority for the micro-region; projects to educate children and involve schools in energy and climate change issues applied for funding in 2009.

<u>Environmental</u>
With the help of the ASPIRE project, the SEAP has brought about several energy efficiency measures in the Rožnovsko region. For example, the SEAP caused the City Council to declare energy efficiency one of its

most important targets.[107] Owing to the awareness-raising activities, the importance of the environmental aspects of development has been reinforced. Energy audits have been performed in several municipalities; in many cases, the measures recommended have been implemented.

Cooperation opportunities and barriers

Technical support for the implementation of the SEAP is provided by the Energy Agency of the Zlin region (established by Intelligent Energy Europe (IEE). The agency provides targeted information on SEC issues, facilitates information-sharing and assists in preparing for grant applications.

The IEE ASPIRE project (Achieving Energy Sustainability in Peripheral Regions of Europe) has been instrumental in the development of Rožnovsko's energy policy. The micro-region was one of six European communities[108] that took part in the ASPIRE project during the period from October 2006 to March 2009. The project aimed to develop Sustainable Energy Communities through the preparation of local SEAPs and a combination of wide stakeholder involvement, education, capacity-building and community-engagement activities. The SEAP of Rožnovsko was developed through this project, with the cooperation of the ENVIROS consultant group; it has succeeded in making energy efficiency one of the most important targets of the City Council. This effort has been the first conceptual and concrete activity focused on energy efficiency in the region. The activities within the project have initiated cooperation between stakeholders and new initiatives in line with the regional energy policy.

Potential barriers to the creation of an SEC and the implementation of the SEAP include the lack of political support at the national level, lack of institutional capacity of the civil service, and lack of expertise. Lack of long-term planning and a low level of awareness among public authorities and politicians also need to be taken into account.[109] Technical assistance and capacity-building is needed to overcome these barriers.

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[107] Jan Kucera.

[108] The core partners , who carried out the majority of measures to establish Sustainable Energy Communities (SEC) were: Community Energy Plus (UK), Region Värmland (Sweden), University of Vaasa (Finland), Institute of Physical Energetics (Latvia), Rožnovsko micro-region working with ENVIROS sro (Czech Republic) and Mountain Community of Val di Scalve, working with the Italian Thermotechnical Committee (Italy).

[109] SEAP of Rožnovsko, March 2009.

Challenges ahead/lessons learned

The biggest forthcoming challenge will be to change the current approach of the regional government into one of conceptual sustainable development based on citizens' needs. For instance, the EU submitted complaints about the use of the EU Structural Funds for 2007-2013 because these were used on merely aesthetic and visible projects, such as constructing beautiful squares and pavements instead of on investments with potential for regional growth and sustainable development. In the past few years, however, the City Council and the politicians in the region have made efforts to prioritise and implement actions that have an actual effect on regional growth. Still, further changes are needed to get away from the rather populist approach inherited from the past. Capacity-building, disseminating information, raising awareness, and promoting good practices would be effective means of improving the regional government's working methods.

Replication potential and lessons learned

The SEAP of Rožnovsko will be presented by the Project Management Department to neighbouring regions (such as the Walahian micro-regions) and can inspire other regions to follow suit. Experiences from the implementation of the SEAP in Rožnovsko continue to help bring attention to various energy issues in the community. The ASPIRE project has been beneficial for Rožnovsko in terms of international transfer of knowledge by increasing awareness at the EU level of the issues faced by communities that are peripheral to national energy networks and of the solutions that exist to increase their energy and economic sustainability. The micro-region of Rožnovsko shows that setting common objectives through a joint effort will increase the likelihood of accomplishing set targets far more than if small municipalities operate alone.

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Siena province (Italy)

Introduction

- **Brief summary of case study**

The Province of Siena is one of ten provinces in the region of Tuscany. The provincial authorities are responsible for the planning and implementation of environmentally sustainable actions across its 36 municipalities. The area is particularly rich in geothermal energy; almost $\frac{9}{10}$ of the energy produced in the province is generated by the Earth's heat. Efforts have also been made to develop solar and biomass capacities, and an integrated energy plan has been effective since 2003. The province intends to fully integrate its development objectives through effective, sustainable implementation in a coordinated and long-term planning exercise.

Quick facts:
- **Population**: 260 882 (2005)
- **Energy action plan established**: 2003
- **Biggest achievement**: Sustainable strategies for the entire province
- **Biggest challenge**: Becoming a 'zero emission' province

Analysis

- **General state of play**

The Province of Siena is a predominantly rural area and has enjoyed steady economic growth throughout the last decades. It boasts a 3% unemployment rate. This success has its roots in a diverse economy based on manufacturing, services, high-value-added agriculture and a dynamic tourism sector.

The Provincial Administration of Siena has long cultivated a system of government that aims to preserve and appreciate the environment. Independently of the Lisbon Strategy, urban sustainable development was addressed in 2001 through discussions about the economy, environment and society. Despite the fact that the discussions took place roughly at the same time as the launching of the Lisbon Strategy, Siena province officials do not see their development as linked to the European strategy. In any case, the discussions started in 2001 paved the way to Siena's Agenda 21 strategy. In 2003, the Provincial Energy Plan (PEP) was launched and resulted in a boost of RE installation and diversification. Later, in 2006, all the municipalities of the Province of Siena pledged to uphold the Aalborg Commitments.

The Province of Siena was the first Italian provincial administration to earn the ISO 14001 Environmental Certification – awarded in 2003 – for planning activities, territorial management, environmental monitoring, managing of infrastructures and services, and was the first province to undertake a journey towards "territorial" certification. Since 2006, Siena has also been EMAS registered.

- **State of play of energy action plan**

The PEP was officially approved and adopted in 2003. It was developed in collaboration with the Department of Chemistry of the University of Siena, and with the support granted by the Monte dei Paschi di Siena bank foundation. The five objectives of the PEP, in order of importance, are the following:
- The rationalization and reduction of non-renewable fossil fuel consumption by public buildings;
- The reduction of pollutant and climate-altering emissions based on the agreements of the Kyoto Protocol commitments in Italy;
- The development and implementation of energy production – electric and thermal – based on renewable sources;
- Cooperation with the European Regional Development Fund and the European Agricultural Guidance and Guarantee Fund;

- Coordinated planning with the Regional Energy Plan and the Provincial Territorial Coordination Plan.

Thus, the PEP is a strategic plan that gives guidelines and directions to improve energy efficiency, energy saving and develop RES. It is, however, not an instrument of technical rules and how-to's (i.e. it does not specify any specific targets).

In short, the more recent targets of the PEP are to go beyond the 20/20/20 goals proposed by the Covenant of Mayors. Multilevel governance aspects, nevertheless, prevent provincial authorities from setting clear goals because it is not the province, but the authorities of the Region of Tuscany that determine the share of the regional targets that are assigned to each province. Therefore, once the Region decides on the shares of energy targets for each province, Siena must set (or adjust) its own targets accordingly.

A new version of the PEP—or a sustainable energy action plan—is being prepared and is expected to be launched in 2011. It will further develop and diversify the sources of RE, even suggesting ways for the province to become carbon neutral as soon as 2015. The new PEP guidelines also recommend developing research in the renewable energy sector, diversifying methane sources, reconverting polluting plants, improving buildings to make them more energy efficient and promoting citizen participation in energy reduction measures.

Process/Implementation/Monitoring

The objectives of the PEP are translated into action by the planners at the provincial level, and are then implemented by the Provincial Agency for Energy and the Environment (APEA) of the Province of Siena. APEA is also responsible for overseeing the successful implementation of the actions. The Agency consists of roughly five employees, who manage the implementation of sustainable energy actions and work in close collaboration with other provincial authorities, based in the same building.

The monitoring of CO_2 emissions (and emissions reduction) has been carried out with software, a tool developed in 2006. New software is currently being developed that will allow for the monitoring of a wider range of parameters.

As the province is in control of the whole implementation and monitoring process, no multilevel governance conflicts arise here. In fact, all energy actions of municipalities are coordinated by the Province of Siena, with the same goals and strategy, for the whole Sienese territory.

Funding

The Province of Siena relies on various sources of funding. National and European funding are important as well as the province's own funds. Funding from the Monte dei Paschi bank foundation has also been a cornerstone of the PEP and its actions.

Provincial authorities approach the financing question in a pragmatic way: one must generate outstanding ideas in order to attract funds from regional, private, national, or European sources. Since the PEP came into force in 2003, Siena has, to a satisfactory extent, been able to obtain resources to transform its targets into actions and reality.

- **Significant actions**

- Technical: *Establishing the APEA*
The creation of the APEA has been crucial in implementing energy action plans. The technical expertise acquired and close collaboration with the provincial authorities has made the PEP a successful endeavour.
The APEA was established in 2003 as an initiative of the Province of Siena. APEA has been identified as an opportunity to conceptually and operatively realise the objectives set by the PEP. It focuses on the promotion of initiatives and measures dealing with the saving and rationalization of energy resources, the promotion and development of renewable energy resources, and the negotiation of energy in the free market.
APEA offers services that do not substitute agents in this sector but that support and direct them towards the recognized and shared aims of PEP.
APEA conducts inspections of thermal plant emissions, is involved in the creation of a plan to audit energy consumed by homes and produces energy balances of municipalities and of the Provincial Administration. APEA also supports the province in its evaluation of feasibility plans related to the use of local renewable sources.
In order to fully carry out its role, APEA also offers technical support for environmental certification and provides operational assistance to a substantial group of municipalities that are committed to achieving ISO 14001 Certification and the EMAS certification.

- Social: *Changing behaviour through well informed citizens*
In order to inform citizens and companies about energy efficiency measures, incentives, and the variety of services provided, each municipality of the province has an "Energy Front Office".
The local communities have actively engaged in initiatives to promote sustainable development, such as the implementation of Agenda 21 Terre di Siena. Agenda 21 Terre di Siena has also been introduced into public schools, with the project *S.S.O. – Didactic Experiences of Sustainable Development for Schools*. The project intends to demonstrate the innate correlation between individual behaviour and the imbalances of the local and global ecological system in order to encourage active, sustainable behaviour among children and youth.

Likewise, engaging citizens from the 36 municipalities has proved to be a considerable challenge for the provincial government. The government has met this challenge by reaching out to citizens through diverse measures: awareness-raising campaigns, creation of informative websites, exhibitions, sustainable energy week events, and education projects, among other efforts. The focus of the approach has been information dissemination but has also involved input from the citizens to such an extent that the provincial government considers it a 'bottom-up' approach. The province values the community's involvement for its constructive criticism and views it as an important factor for success.

- Environmental: ***Expansion and diversification of renewable energy portfolio***
The province is endowed with a great opportunity for making use of geothermal energy and it has taken advantage of it. Two new plants to be commissioned in 2011 will bring the geothermal capacity of the province to 220 MW. In total, roughly 96 percent of all electrical energy consumed in the province comes from renewable sources.
Efforts are being made to expand the installed capacity of solar panels, which have faced considerable opposition by municipalities partly due to budget constraints, and in part due to aesthetic opposition, as many view PV proliferation as damaging to the cultural heritage of the area. Despite these setbacks, installed capacity has risen from just 0.2 MW in 2008 to 5 MW today.
Biomass initiatives and energy-to-waste solutions have also been developed; presently these supply energy to forty thousand citizens of the province.

- **Cooperation opportunities**
The Province of Siena is actively engaged in European initiatives such as the Covenant of Mayors. It has also been involved in European projects such as Managing Urban Europe-25, which provided a method for cities and regions to work with integrated management systems, and with the project Sustainable NOW, which promotes collaboration among European communities dedicated to developing local sustainable energy action plans.
Throughout the province, the coordination between the regional government and the 36 local municipalities has been successful in the implementation of energy efficiency measures, despite the fact that the PEP is strictly connected only to the regional and national levels, which follow the relevant European policies. In this sense, collaboration among municipalities and the provincial government in the Province of Siena can be considered a good example of cooperation between two levels of government.

- **Challenges ahead**
Some of the challenges encountered by the Province of Siena on the road towards sustainability have been:

- o Lack of data: when the PEP was first implemented in 2003 and in subsequent years, some data, necessary to calculate the total provincial value, such as the type of fuel used and emissions data from industries, was difficult to collect at the local level. A matrix was developed which collects this information in a systematic way, so that today data is available to whatever extent desired;
- o A zero-emissions province: Siena is aiming to become a zero-emissions province and presently faces the challenge of how, at what speed, and at what cost to accomplish this goal. Collaboration across several levels of government is necessary if Siena is to understand the national government's expectations for the province, and the opportunities for cooperation with other European institutions as well as from the 36 municipalities of the province;
- o Setting ambitious targets: taking into account that almost 90% of the electricity generated in the province comes from geothermal sources, it is important to establish a target that does not take this resource into account and that therefore encourages the expansion of other RE sources. This will bring about further efforts to reduce energy consumption and increase EE.

- **Lessons learned for the development of local energy action plans**

 The bottom-up approach has been a key ingredient in the achievements of the PEP, and similarly it forms one of the foundations of the new sustainable energy action plan to be launched in 2011. Citizen involvement in public processes through efforts to encourage participation and incorporation of stakeholder inputs into the discussion helps maintain a high level of bilateral communication and interest. In Siena this has been achieved through awareness-raising campaigns, educational projects, and a constant reliance on communication at the municipality level. Throughout this process, it was crucial that the ideas brought about added value and that the community felt encouraged to collaborate with the authorities in these efforts and continued to be receptive.

One example of encouraging citizen actions are the Energy Front Offices, created in every municipality to inform citizens and companies about incentives of the energy market and its services, which seek to promote independent actions by individuals.

Availability of funding naturally plays a major role in developing a long-term strategy and implementing actions. Diversifying potential sources, understanding the needs of the community, and conveying this meaningfully to funders is necessary. Spreading the portfolio across many energy actions is an effective way to attract funding and partners from different areas and increase the energy security at the community (in this case provincial) level as well.

Sources

<u>List of interview partners and consulted documents</u>

<u>Interview date(s):</u> 12th and 31st March 2010

Name, position, organisation
Paolo Casprini
Director, Environmental Policies Area
Province of Siena

<u>Documents:</u>
Presentation given by Mr. Casprini at the EUSEW workshop "Guiding cities towards an effective, integrated Local Energy Action Plan", 25 March 2010, Brussels, Belgium.

Figure 11: Geothermal power plant "Piancastagnaio 5" in the Province of Siena

Stockholm (Sweden)

Introduction

Brief summary of case study

Stockholm recently presented its Sustainable Energy Action Plan (SEAP) in accordance with the requirement of the Covenant of Mayors. The plan was adopted in April 2010. The SEAP will be the third of its kind in Stockholm since 1998. For the past several decades, the city has made systematic efforts in the area of energy and climate; this has resulted in an administrative system that guarantees that environmental aspects are taken into account in the budget, operational planning, reporting and monitoring and promises results. Achieving political consensus has given climate measures security and stability and has proven to be a key factor in Stockholm's successful climate measures. A significant reduction of CO_2 emissions has been achieved since 1990, and investments in district heating and green transport have been instrumental in reaching the CO_2 emission reductions. Such measures have also been complemented by awareness campaigns which have increased the responsiveness among residents and companies and thereby facilitated implementation.

Quick facts:

- **Population**: 832 641 (March 2010). The city is expected to reach 1 million inhabitants by 2030. Inhabitants of the surrounding region total 1.9 million.
- **GDP**: 452 000 SEK (EUR 45 120) per capita
- **Environmental Programmes established:** In the mid 70s. GHG emission reduction action plans have been established since the mid 90s. The third plan, "Climate and Energy Action Plan 2010-2020" was adopted in April 2010.
- **Biggest achievement**: Decoupling CO_2 emissions from GDP growth. Establishment of comprehensive environmental programmes and action plans for the city.
- **Biggest challenge**: Reaching the ambitious targets set for the city.

Analysis

- **State of play in city**

  Stockholm has much experience in developing environmental programmes. With goals decided on the political level for all environmental sectors, the city has, during the last decades, continuously developed into a more environmentally, socially and economically sustainable city.

  Even in the nineties, Stockholm was the most prosperous region in Sweden and a competitive city within Europe owing to its strong and diversified businesses sector, large number of knowledge-based institutions and a developed information and communication technology (ICT) sector, among other factors. The city has seen considerable growth during the past two decades: for example, the GDP growth 2000-2007 was approximately 25%. The concept of environmentally-driven growth has grown more prevalent during the last decade and is fully integrated in the perception of growth and job investments today.

Table 13: GDP and employment rate in Stockholm

	1997	2007
GDP per capita (current market prices)	41 700	48 500
Employment rate	77.9 %	77.0% (2008)
Employment in high-tech sectors (high-tech manufacturing and high-tech knowledge-intensive services)	9.97%	9.28%

Source: Eurostat.

Stockholm has worked on reducing CO_2 emissions since 1995, and the city adopted its first action plan for reducing greenhouse gases in 1998. The "Climate and Energy Action Plan 2010-2020" will be the third such strategy document[110]. Even before signing the Covenant of Mayors (CoM) in 2009, Stockholm had achieved the target set in the CoM, which was to reduce CO_2 emissions by more than 20 %. The long-term target of the city is to continue reducing CO_2 emissions at the same rate. The target set in the 2009 city budget, and repeated in the SEAP, is to further reduce emissions from 4 tonnes (2005) of CO_2 equivalent per citizen to 3 tonnes in 2015 (a 44% reduction from 1990 levels), taking into account a population growth of 22%[111]. The city aims to be free from the use of fossil fuels by 2050. Stockholm was

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[110] The second Stockholm Environment Programme covers the period 2007-2011. Six environmental priorities are identified in the programme; Traffic, Chemical Substances, Energy, Land and Water, Waste and Indoor Environment.

[111] Climate and Energy Action Plan, City of Stockholm, November 2009

the first city to be awarded the title of European Green Capital 2010 for its environmental performance by the European Commission.

Table 14: Stockholm's CO$_2$ emissions 1990-2020

| Year	Total emissions (thousand tonnes CO$_{2e}$)	Emissions per capita in Stockholm
1990	3668	5.4
2000	3509	4.7
2005	3109	4.0
2009	2775	3.4
2015 according to reference scenario	2590	3.1
2015 current and planned measures	2303	2.8
2020 reference scenario	2435	2.9
2020 possible measures	1548	1.8

Source: Climate and Energy Action Plan, City of Stockholm, November 2009.

Figure 12: Carbon intensity per kWh in Stockholm 1990-2005
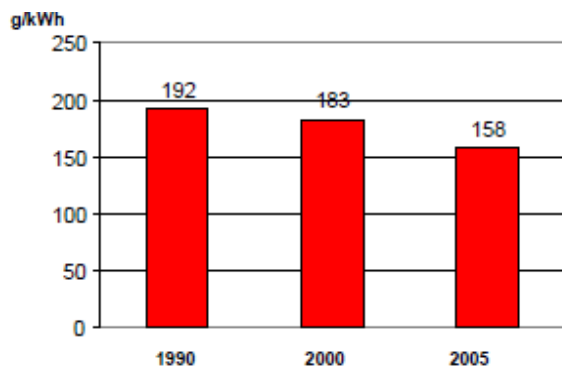
Source: Stockholm - Application for European Green Capital Award, 2008-12-05.

Figure 13: The climate objective of Stockholm (CO$_2$ equivalents)
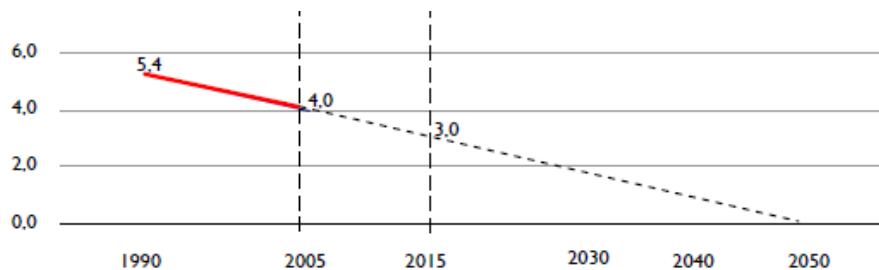
Note: the reduction has not been and will not be linear.
Source: Climate and Energy Action Plan, City of Stockholm, April 2010.

- **State of play of Stockholm Climate and Energy Action Plan 2010-2020 (SEAP)** The Climate and Energy Action Plan has been drafted in accordance with the CoM commitments. The city adopted the plan in April 2010.

  The SEAP consists of five main parts:
  - Base-line emission inventory;
  - Reference scenario over the expected 2010-2015 development period;
  - Effects of ongoing measures;
  - Effects of planned measures;
  - Suggested conceivable measures and their cost-effectiveness.

  What the SEAP is expected to achieve
  The SEAP addresses energy savings and reduces carbon emissions. The main priorities of the plan are to reduce energy use and greenhouse gas emissions from transport, use of electricity and heat, and coal production within the geographical boarders of Stockholm. The action plan prioritises the actions that are most cost-effective and consistent with regional and national policy directions. It also takes into account the reduction potential and level of municipal relevance.

  The suggested conceivable measures aim to continue the emission reductions beyond the 3 tonnes/person target set in the city budget. Examples of suggested targets:
  - reduction of CO_2 emissions to 1.5 tonnes per citizen by 2030 in the area of Norra Djurgårdsstaden;
  - a fossil fuel free Stockholm by 2050;
  - a fossil fuel free SL (The regional public transport company) by 2025.

  Process
  The Executive Office of the city of Stockholm, is responsible for the action plan while the development process is undertaken by the Environment and Health Administration, in cooperation with relevant city administrations and a board of external stakeholders. Horizontal governance plays an important role in the development of the plan, which is led by a steering committee that includes representatives from the Executive Office, relevant city administrations such as the City Planning Authority and the Traffic Office. External stakeholders such as Fortum, Stockholm's leading energy company, have been closely involved in the process. The plans to phase out fossil fuels from its district heating system were taken into consideration when setting goals, and technical consultants have been involved to compile measures concerning energy efficiency and emissions reductions from all stakeholders.

The city of Stockholm is run by a large administration hallmarked by a high level of decentralised responsibility. The City Council[112] establishes general goals and guidelines for the municipality's activities, which include climate targets, but maintaining dialogue with the national government is an integral part of the development of all plans and strategies for the city, even though the objectives are set independently.

Figure 14: Stockholm's Systematic Policy-Making Process
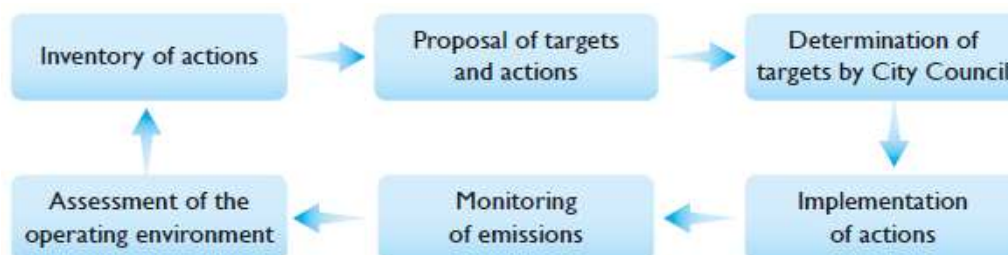
Source: Stockholm Environment and Health Administration, Stockholm's Climate Initiatives, June 2009

There is constant dialogue with state representatives from both the political and the civil sector, although the main emphasis is on regional and local co-operation. Examples include the process for biofuel taxing, in which all levels of government are involved, or the government's recently suggested revision of the National Environmental Quality Objectives. The County Administrative Board is responsible for the regional application of the objectives, while the city of Stockholm is responsible for the local level.

Funding

The city will continuously allocate resources to the implementation of the SEAP, and measures that require investments are considered in the city's annual investment planning. Additional financial instruments might also be available to support the implementation of activities like the Climate Investment Programme, 2003-2008[113], that financed many of the actions in the environmental programme. The funds were allocated by the Swedish Parliament (Riksdagen) to encourage municipalities, companies and other stakeholders to reduce their greenhouse gas emissions via long-term investments. The investment scheme has now been modified to support sustainable urban building where reduction of energy consumption is a priority, and the city is currently investing 10 billion SEK for refurbishment of buildings.

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[112] The City Council is the city's supreme decision-making body and is Stockholm's own "parliament".

[113] Between 2003 and 2008 the Swedish parliament granted 1.8 billion SEK in climate investments to municipalities and other stakeholders throughout Sweden. The investment programme has played a major role in Sweden's climate policy.

Implementation
The current Stockholm Environment Programme (SEP) and the SEAP not only complement each other but are also consistent with national-level legislation and strategies. The SEP is an overarching document that is applied in each governmental unit and department. The overarching objective of the programme also serves as the objective for the City Council. The SEAP recommends actions to be taken in the field of climate and energy. The suggested measures constitute a basis for decisions regarding the budget and environmental programme of the city. All activities within the city should be in line with the objectives of the programme.

Monitoring
The SEP indentifies the stakeholders that are most relevant to the six objectives and their respective targets in the programme and also points out the authority responsible for monitoring. A list of suggested indicators is presented in an annex to the SEP. Progress made towards reaching the targets in the SEP and SEAP is reported annually at the political level. Several indicators such as emissions of CO_2, CH_4 and N_2O (in CO_2 equivalents) from consumption of heating, electricity and transport within the geographical borders of Stockholm are monitored. The city is cooperating with several instances in the monitoring process: for example, data is retrieved from the National Institute of Statistics and from energy companies in the city. In previous climate action programmes, the city administration cooperated with the KTH Royal Institute of Technology in calculating the effects of the implemented measures. The municipal data is also reported at the national level and feeds into reports on the progress made towards the national environmental objectives[114].

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[114] Sweden's environment policy is based on sixteen environmental quality objectives for different areas, adopted by the Swedish Parliament in 1999 and in 2005.

- **Significant Achievements**

The achievements listed below were brought about through continuous environmental efforts made by the city as part of the environmental programmes and action plans.

- **Technical**: Stockholm has an efficient energy production system with a high percentage of renewables. Approximately 17% of the energy production comes from fossil fuels. Decisions are being made to further reduce the use of fossil fuels to 7% by 2016. Some of the main technical achievements are:
  - An expanded district heating system (approximately 80% of the market shares). Parts of the system were already operational in 1959 and have since then been gradually expanded. The system includes an extended district cooling system that replaces inefficient air conditioning systems. The district heating production is 80% renewable (mainly biofuels) and covers 70% of households. The conversion from oil to district heating has resulted in a reduction of greenhouse gases by 593 000 tonnes since 1990.
  - 25% of Stockholm's family houses are supplied by geothermal energy.
  - A modern and extensive regional public transport system that aims to be fossil fuel free by 2025. Public transport covers almost 80% of rush hour transportation and approximately 60% of daily transportation within the city. Nearly 75% of the Stockholm Public Transport traffic runs on renewable energy.
  - Through a systematic effort to increase the number of clean vehicles, the market share of clean vehicles (new cars) in the Stockholm region is now approximately 40%.

- **Social**: awareness of energy and climate issues is good among Stockholm's citizens and companies thanks to various awareness-raising campaigns.

  - The city, in cooperation with all the municipalities in the Stockholm region, provides residents and companies with free advice on how to reduce energy consumption and climate impact and simultaneously reduce costs. Information has also been targeted to single family homes on alternatives to oil and electric heating, and many tenant-owner associations received energy efficiency training.

- **Environmental**: for several decades, Stockholm has had a good track record on environmental sustainability and has achieved significant improvement within numerous environmental fields, such as biodiversity, water management, green area preservation, waste management, city

planning for low carbon emissions, reduction of carbon emissions etc. Stockholm has also managed to decouple economic growth from CO_2 emissions (see figure). The city has cut carbon dioxide emissions by 25% per inhabitant since 1990, which is a significantly higher pace than the national average. During the same period, total CO_2 emissions in Sweden declined by 7 per cent[115].

Figure 15: Development of GHG emissions, population and GDP of Stockholm 2000-2009
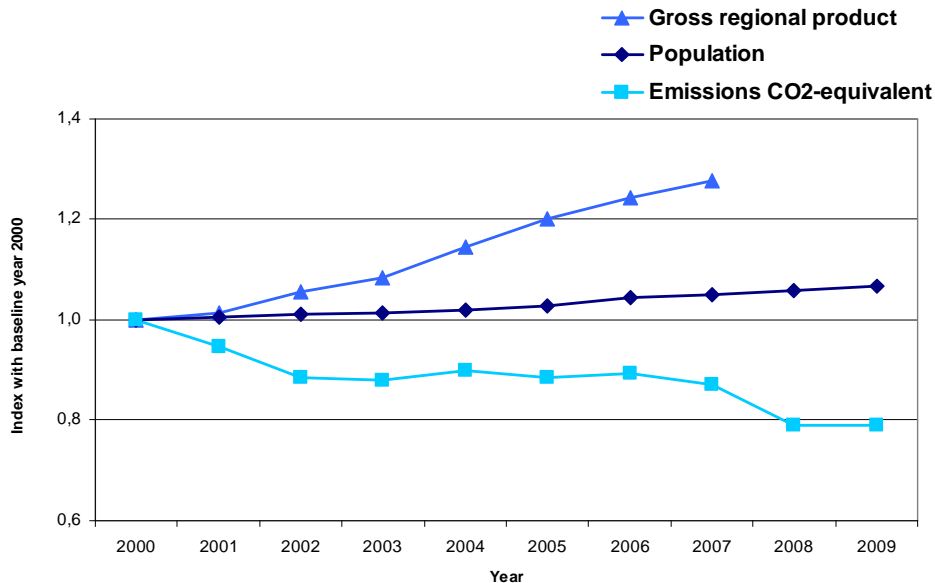
Source: Stockholm Climate and Energy Action Plan, City of Stockholm, April 2010.

- **Cooperation opportunities**
  Stakeholder involvement has played an important role in the development of the SEAP. The plan is decided upon by a board of stakeholders; this facilitates the implementation process. There is ongoing dialogue and networking between the municipal administration and the stakeholders to ensure involvement. The objectives of the Action Plan are being supported through major stakeholders' polices: for example, the regional public transport company has set a goal to be fossil fuel free by 2025. Politically, the city of Stockholm has started the Climate Pact with the city's business society. By setting the same environmental targets as the city, business representatives become important stakeholders in climate work. Today more than one hundred companies have joined the Climate Pact[116].

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[115] Stockholm Environment and Health Administration, June 2009, The city of Stockholm's Climate Investments

[116] http://www.stockholm.se/klimatpakten

International initiatives also play a role. Stockholm is currently taking part in the EU project "COMBAT" (Central Baltic INTERREG IV A 2007-2013)[117] together with Helsinki, Tallinn and Riga. The aim of the project is to exchange experiences on how to produce a SEAP, arrange Energy Days to increase the knowledge of the general public and decision-makers on energy efficiency and to involve citizens in the process.

- **Challenges ahead**
The biggest challenges Stockholm is facing are to continue to be an environmentally, economically and socially sustainable city, despite further development and the expansion of the capital, and to reach the ambitious targets that have been set. Stockholm's well-established, efficient approach to tackling such issues, described below, will help in overcoming the foreseen challenges. Substantial investments and major efforts will be needed to reach the emission reduction targets and to achieve Stockholm's long-term goal of becoming a fossil fuel free city by 2050.

Some suggested measures may require the use of regulation or legislation instruments outside of the municipal mandate. However, such mandates are still considered to be political initiatives that are possible on the local level and can be used to initiate changes in legislation and regulation on the national level. An example of this is the congestion charge scheme, for which national legislation was changed in order to allow municipalities to introduce congestion charge schemes.[118]

Increased traffic as well as increased electricity consumption in the city are factors that need to be addressed in all sectors in order to maintain current CO_2 reduction levels.[119]

- **Lessons learned for the development of Energy Action Plans**
Stockholm's case demonstrates that good stakeholder involvement, as demonstrated in the development process of the plans and programmes and in settling upon coming objectives, is extremely helpful in pushing important environmental measures forward. One factor in the success of Stockholm's climate efforts is the systematic establishment process which takes place before political decisions are made. The process has proven beneficial because it has solidified objectives among stakeholders working towards similar targets. There is strong political consensus in Stockholm on the importance of

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[117] http://www.projectcombat.eu/.
[118] The congestion tax scheme was permanently introduced in 2007. Vehicles are charged that are driven into and out of central Stockholm, Mondays to Fridays between 6:30a.m. and 6:29 p.m.
Source: http://www.transportstyrelsen.se/trangselskatt.
[119] Miljöförvaltningen, 2007, Minskade utlsläpp 2015.

reducing carbon emissions and saving energy, and thus targets set by the local government for reduction of emissions are very clear. The emission targets proposed are first analysed in terms of cost-efficiency and feasibility. The targets are then monitored before new political decisions are made. Stockholm's systematic approach and methods for establishing consensus and political support in setting energy and climate targets could successfully be applied to other European cities. The city demonstrates that ambitious, unanimous efforts and broad involvement from the city administration can attain significant progress in reaching the energy and environmental objectives set and in reducing CO_2 emissions.

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Woking Borough (UK)

Introduction

- **Brief summary of case study**

  Early consultation and communication, engagement of stakeholders in energy and climate change themes, and exploration of the availability of external funding sources are key factors in successfully developing and implementing an energy action plan. The Borough Council has made efforts in generating power and heat in a sustainable way, in improving energy efficiency, and in incentivising households to use energy sustainably. These three areas (explored below) are examples of areas in which Woking demonstrates good practice.

Quick facts:
- **Population**: 91 600 (2008)
- **Energy action plan established**: 2002
- **Biggest achievement**: Climate Change Strategy
- **Biggest challenge**: Engaging the public and other key stakeholders to make real reductions in local area emissions.

Analysis

- **General state of play**

  Energy management has been a priority for Woking Borough Council since the late 1990s. This concern led to the introduction of a comprehensive Climate Change Strategy action plan by the Borough Council in 2002, with challenging long-term targets, such as an 80% reduction of CO_2 equivalent emissions by 2050. Woking is indeed a clear front runner in the United Kingdom in terms of sustainability and climate change mitigation and adaptation.

  Energy is a pillar in the Borough Council's sustainability strategy. Efficient energy management, focussing on the minimisation of waste and operating efficient heating systems, is expected to bring considerable environmental and financial benefits to the population.

Renewable energies have also been at the top of the agenda. Woking has a target to meet 20% electric energy requirements using renewable sources by 2011.[120]

- **State of play of climate change action plan**
  The climate change action plan in Woking, which lists energy as a main pillar, has three clear priorities:
  - Reduction of CO_2 equivalent emissions
  - Promotion of sustainable development
  - Adaptation to climate change

  The Climate Change Working Group (CCWG), which consists of elected Members, officers (including the Chief Executive), and representatives from the community and business, is responsible for choosing the priority areas to be included in the action plan. They are also responsible for the action plan's development. The present CCWG consists of six elected members representing both the Conservative and the Liberal Democrat Party—part of the 36 members of the Borough Council, one third of which are elected every year—three staff members of the Borough Council, one representative from the Woking Chamber of Commerce and one representative from the Local Agenda 21 team. The CCWG structure allows for a broad representation of the community to influence the process of defining a strategy. The working group acknowledges the importance of keeping local energy actions and plans in line with national ambitions and thus have aligned the plan with the UK's Climate Change Act targets.

  The multilevel governance principle has been beneficial and useful for Woking and the region, as it has allowed for a dialogue on national policies across the four different levels of government: Woking Borough Council, Surrey County Council, the Government Office of the South East, and the national Government. Multilevel governance has permitted regional governments to coordinate their efforts with those of the national government and jointly work on policies. The Surrey Climate Change Partnership is a good illustration of this, where district, borough and county councils meet quarterly to facilitate discussion and to set a region-wide position on climate change issues.

  Process/Implementation
  Developing and implementing the energy action plan is a process which follows the following general guidelines:

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[120] Source: Woking Borough Council's Climate Change Strategy
(http://www.woking.gov.uk/environment/climate/Greeninitiatives/climatechangestrategy/climatechange.pdf).

Local **targets** are initially proposed by the Climate Change Working Group, and approval is then sought from the Borough's Executive Committee (i.e. the decision-making body) and full Borough Council elected members. Target definition is influenced by the general direction set by the Borough Council decision-makers and is rooted in the **baseline** values produced by the national government through the Department of Energy and Climate Change. The selection of **actions to be implemented** is based on an assessment of cost effectiveness and impact in terms of carbon reduction, cost savings and resource use intensity.

Woking's Energy Service Company (ESCO), Thameswey Energy Ltd., is the delivery vehicle for management of and consultation on the implementation of the actions (projects). Expert advice stems from within the council, while manpower and specialised technical expertise are outsourced.

Funding

Funding was established in two ways:

- A fund was established to cover the development of the climate change (which includes the energy) strategy and small-scale projects organised within the Borough Council. This fund consisted of GBP 100 000;
- For larger-scale projects, Thameswey Energy Ltd. is in charge of preparing a financial proposal, which is most often a combination of public and private finance—public funding being mostly from British, not European sources.

Monitoring

Monitoring the effectiveness of the actions is a crucial step in the success, effectiveness and long-term duration of the plan. In Woking, quarterly monitoring of the strategy's targets is undertaken by the Climate Change Working Group. The strategy document also undergoes a comprehensive review every 3 years. Annual **reporting** and monitoring of energy efficiency as well as of renewable and sustainable energy production is also conducted.

The action plan is centrally managed by the senior policy officer for Climate Change. Actions across the strategy are divided into key themes and service areas, and these are assigned in turn to the relevant officer or business area manager. Progress of these actions is reported to the Senior Policy Officer to be utilised as input for the decision-making software tool. This instrument has been developed by the Council and is applied in all Council decisions and business areas. Moreover, in order to ensure the application of sustainability criteria at all levels, all reports or projects proposed within Woking Borough Council must demonstrate how they contribute to the sustainability and climate change aims of the organisation.

The process of monitoring in Woking has evolved greatly over the past two decades. In the 1990s the Borough Council began to monitor energy efficiency and energy consumption. As climate change became a priority, it also focused on monitoring CO_2 emissions and the resulting potential savings. Since 2009, Woking reports on four indicators developed at the national level. They are:

- CO_2 reduction from local authority operations;
- Per capita reduction in CO_2 emissions in the local authority area;
- Percentage of people receiving income-based benefits living in homes with low and high energy efficiency ratings.

Climate change adaptation measures
- **Significant actions**

  - **Technical**: *Developing a town centre energy station*
    In 2001, Woking Borough Council and its energy services company Thameswey Energy Ltd. installed a town centre energy station, which at the time was the first commercially operating unit of its kind in the UK. It generates electricity, heat and cooling using Combined Heat and Power technology (CHP), which increases its efficiency in comparison with conventional power stations. The plant has an annual energy output of 1 352 kW electrical energy and 1 623 kW thermal energy. The primary fuel source is currently natural gas, but could be replaced by biogas in the future if economically and environmentally feasible. The technology means that a much higher level of efficiency is achieved than in conventional power stations. Energy production and use on the local scale reduces transmission losses, which are usually associated with centralised, large-scale power stations.

    The diagramme below shows how the station provides heat, power and cooling to town centre buildings.

Figure 16: Woking Town Centre Combined Heat and Power (CHP) station
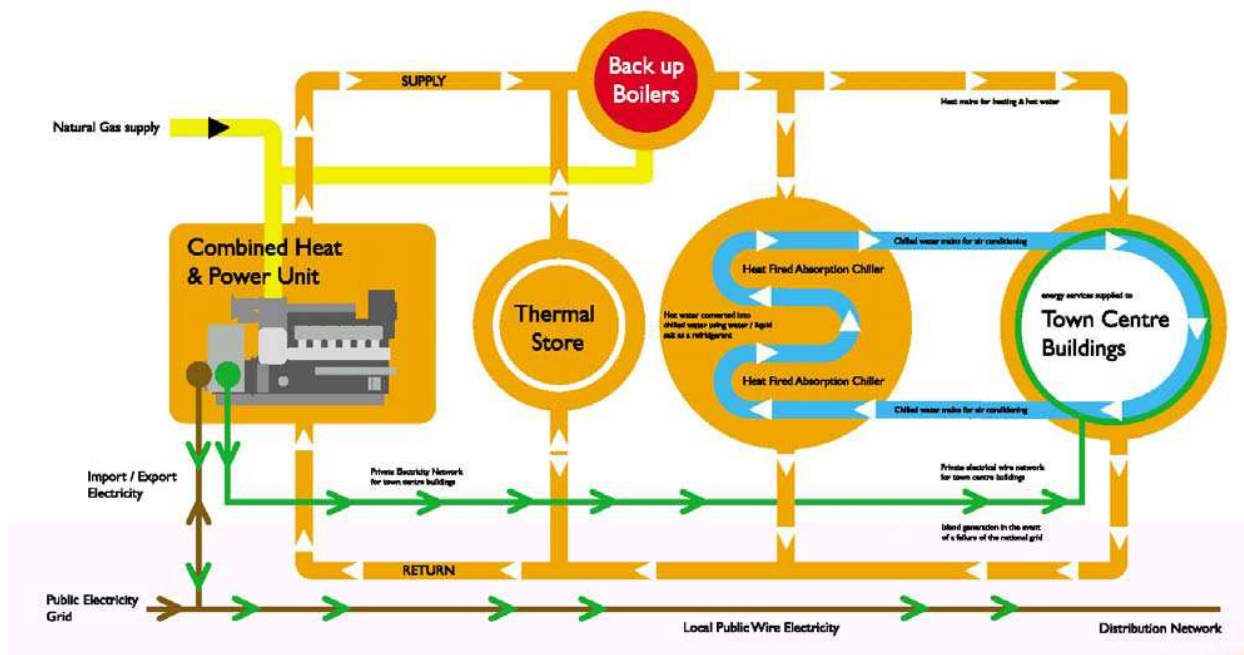
- **Social**: *Tackling Fuel Poverty*
  Poor insulation of buildings and homes, as well as inefficient heating systems, can represent a considerable burden for low-income households. The poor insulation also generates excess CO_2 equivalent emissions. When expenditure on home heating exceeds ten percent of the household's income, it is considered a fuel poor household. Fuel poverty is the combined result of low income and low energy efficiency in the home.
  Woking's energy action plan (which is embedded in its Climate Change Strategy) seeks to make heating an affordable commodity for more council tenants and to provide warmer, more comfortable homes, which also has associated health benefits.
  Already, there are promising results: 98% of the Council's own housing stocks are heated with less than 10% of the household's income.

- **Environmental**: *The Low Carbon Homes Programme & the Oak Tree House - a demonstration project on sustainable construction and living*
  At the centre of the Low Carbon Homes Programme, Oak Tree House has been transformed from an ordinary three bedroom detached house into Woking's first low carbon demonstration home - a showcase for energy efficiency, renewable technology and water saving improvements - to show local people what measures to implement in their own homes to

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make them more efficient. The Programme provides a pathway for all Woking residents to follow, with measures grouped in easy-to-understand packages to suit different levels of expenditure and commitment, which only require minor behavioural changes that do not adversely affect quality of life.

The measures installed in Oak Tree House have seen reductions in emissions from household energy use of 60% or more, and in water consumption of at least 30%.

The Low Carbon Homes Programme was developed as a means of delivering significant reductions in both domestic CO_2 emissions and domestic water consumption within the Borough. The target for spring of 2012 is to recruit 1 000 households to the Programme and assist each home in becoming a low carbon unit.

- **Cooperation opportunities**
  Stakeholder involvement has been an important part of Woking's success story in implementing not only an energy action plan, but a comprehensive Climate Change Strategy through the Climate Change Working Group. Regular participation of various groups who work and live in Woking during the planning and implementation of policies and strategies has been successful thanks to the serious consideration of stakeholders' inputs into final decisions.
  An example of this was the consultation with residents, local businesses and other stakeholders around the Local Agenda 21 and the most recent review of the Climate Change Strategy in 2008.
  The Surrey Climate Change Partnership mentioned above is an example of inter-council collaboration.
  Communication across and within sectors has allowed for more effective implementation of actions. Communication with certain sectors which used to be slow and insufficient (e.g. with the National Health Service) is greatly improving, as stakeholders understand the need to work together toward integrated solutions.

- **Challenges ahead**
  Woking has overcome a common barrier to planning and implementing sustainability measures by creating a separate budget for climate change activities. This budget, however, has been and remains constrained, as competition among departments is strong and climate change is one of a range of Council priorities.
  Individual projects within the Climate Change Strategy are evaluated through the Council's project management systems, and the cost and impact

of projects in terms of benefits / objectives are evaluated by the CCWG based on their overall contribution, in line with the indicators mentioned above.

Support structures at the regional, national and European level (both institutional and financial) are actively used by Woking. However, given the large amount of activity and initiatives being conducted at these various levels, coordination and centralisation of information and funding are identified as important areas for improvement. Improvements in these areas could also lead to better replication opportunities. Otherwise, many local authorities may fail to identify readily available opportunities, and opportunities would present themselves mostly to those local authorities which have developed (or have the capacity to develop) tools to identify them. National guidance would, then, be desirable. Likewise, coordination, communication and engagement of different tiers of policymakers are understood as critical in exploiting potential synergies.

- **Lessons learned for the development of local energy action plans**
  The importance of local political commitment cannot be overemphasized, as is shown in the case of Woking. Support from elected members and senior officers within local government, not least with respect to funding, is necessary in order to produce a long-lasting, effective plan. Inter-departmental awareness and commitment within the council is also crucial. Likewise, support from stakeholders, businesses and local residents is paramount.

  Woking demonstrates that early consultation and communication, stakeholder engagement in common themes, and exploration of the availability of external funding sources are three key elements in ensuring the success of the implementation of an energy action plan.

  When it comes to replicating the Woking model, potential success will depend on envisioning the plan as a long-term endeavour. A base must be formed which will serve as a solid foundation for the future. Starting small while retaining an overarching vision is critical for a long-term strategy. It is best not to start by creating an ESCO if an evaluation of energy efficiency or an inventory of emissions does not yet exist in the council.

  Creating strong links within and between organisations across different levels is also crucial in order to develop and distribute ownership of the strategy and to move in the direction in which the local authority wishes to go.

Sources

List of interview partners and consulted documents

Interviews date(s): 5 February 2010 and 6 April 2010

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Documents
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