



This publication
is financed by the
European Union



TIPS FOR ENPI CITIES ON HOW TO DEVELOP A SUSTAINABLE ENERGY ACTION PLAN

Based on the experience of Polotsk, the first city in Belarus, and Salé, the first city in Morocco and in the South Mediterranean region to join the Covenant of Mayors, as well as Murcia (Spain) and Friedrichshafen (Germany), European signatories of the Covenant of Mayors.



CONTENTS

INTRODUCTION 3

CHAPTER 1.
What is the SEAP and why do cities need it? 8

CHAPTER 2.
What are the content and form of the SEAP?..... 12

CHAPTER 3.
How to develop a SEAP?..... 18

CHAPTER 4.
How to implement the SEAP? 38

CHAPTER 5.
What are the SEAP pilot actions?..... 46

CHAPTER 6.
Energy benchmarking of the four partner cities. 50

CONCLUSION 58

INTRODUCTION

Dear friends,

Did you know that cities are responsible for 80% of energy consumption and CO₂ emissions? This startling fact, announced in 2008, made the European Commission think of the role of local governments in combating climate change and mitigating its consequences. This is how the Covenant of Mayors, a multi-level governance network of local and regional authorities who wish to commit to sustainable energy policies and reduce their energy consumption and CO₂ emissions by at least 20% by 2020, came into life.

The Covenant of Mayors started as a European initiative, but it was too exciting a project to remain within the borders of the European Union. Already in 2008, the Covenant got its first signatories from such non-EU countries as Norway, Croatia, and even as far as New Zealand. When the Ukrainian city of Kamyanets-Podilsky and nine other Ukrainian cities joined the Covenant in December 2008, it became clear that municipalities from

other countries covered by the European Neighbourhood Partnership Instrument (ENPI) will soon too become members of this international agreement. And it was evident that, in order to fulfill obligations imposed by the Covenant, these cities will need support from European municipalities which once were in their shoes.

In 2009, the German city of Friedrichshafen submitted a project proposal entitled *SURE: Sustainable Urban Energy in the ENPI region – towards the Covenant of Mayors* to the European Commission. The idea of the project was to take two cities from the EU neighbour countries that have not yet joined the Covenant – one from the ENPI Eastern region and one from the ENPI Southern region – and to guide them through the whole process of becoming members of the Covenant of Mayors. The proposal was supported by the European Commission and became one of the 21 projects that received grants within the CUIDAD (Cooperation in Urban Development and Dialogue) Programme.

For almost three years, thanks to the project, the cities of Polotsk in Belarus and Salé in Morocco have been receiving comprehensive support from the city of Friedrichshafen which holds the European Energy Award® (eea®), the Spanish city of Murcia which signed the Covenant of Mayors in 2008, and the Intermediterranean Commission of the Conference on Peripheral Maritime Regions (France) on how to revise their energy policy and bring it closer to European standards. Most importantly, Polotsk and Salé have been offered help in drafting and launching their Sustainable Energy Action Plans (SEAPs) that will allow them to implement the 20-20-20 strategy of the EU, which aims to reduce CO₂ emissions by 20%, raise the share of renewable energy sources up to 20%, and increase energy efficiency by 20% by the year 2020.

This publication aims to help ENPI-East and ENPI-South city experts and stakeholders who will be responsible for development and implementation of Sustainable Energy Action Plans once their cities join the Covenant of Mayors. It gives an idea of what SEAP is, why ENPI cities need it, what components need to be included in the SEAP, how SEAP is developed and what are the first steps on the way to its implementation. The publication summarizes

the experiences of Polotsk and Salé that relate to the Sustainable Energy Action Plan in the form of Questions and Answers. The questions have been formulated by SURE experts and represent main aspects of the SEAP development. The answers have been given by Belarusian, Moroccan, German and Spanish experts and stakeholders who have been involved into the development of the SEAP in Polotsk and Salé, as well as representatives of the Covenant of Mayors Office. You will find their contact details below so that, should you have difficulties related to the SEAP development, you can contact them for advice. This publication has been produced in four languages – English, French, Russian, and German – and will be distributed in the Southern Mediterranean region, Eastern European and Southern Caucasus region, and the EU.

Team of the SURE project wishes you luck in developing your Sustainable Energy Action Plan and leading your city towards greater energy efficiency and greener future!



Ms. Marina Borisova
Press officer / communications and visibility manager
for the SURE project, City of Polotsk, Belarus

+375 29 873 35 82
marina.and.borisova@gmail.com

We thank experts and stakeholders of the SURE project for providing answers to the questions in this publication, in particular:



Mr. Miguel Ángel Cámara Botía
Mayor of the City of Murcia /Spain/



Mr. Andreas Brand
Lord Mayor of the City of Friedrichshafen /Germany/



Mr. Noureddine Lazrek
Mayor of the City of Salé /Morocco/



Mr. Aliaksandr Pazniak
Mayor of the City of Polotsk /Belarus/



Ms. Ulrike Janssen
Director of Climate Alliance and representative of the Covenant of Mayors Office /Germany, Belgium/
+32 2 504 78 62 (helpdesk on general inquiries of the Covenant of Mayors Office in Brussels)
www.eumayors.eu



Ms. Ana Rita Neves
Member of the Covenant of Mayors Office /Belgium/
+32 2 504 78 62 (helpdesk on general inquiries of the Covenant of Mayors Office in Brussels)
www.eumayors.eu



Dr. Tillmann Stottle
Head of the Department for Environment and Nature Conservation of the City of Friedrichshafen /Germany/
+49 7541 203 2190
umweltamt@friedrichshafen.de



Mr. Fernando Sánchez Lara
Industrial Engineer of the Department of Environment, City Council of Murcia /Spain/
+34 968 358 600 / Ext: 2620
fsanchezlara@ayto-murcia.es



Mr. Juan Ros
Engineer Expert of BIONET Servicios Tecnicos /Spain/
+34 902 170 704
juan.ros@bionet.com



Dr. Francisco Javier Sánchez Velasco
Engineer of ALEM: Local Energy Agency of Murcia /Spain/
+34 968 200 293
ingenieria.agenciaenergia@ayto-murcia.es



Dr. Anass Laalou
SURE Local Project Assistant in Salé /Morocco/
+212 661 471 163
anasslaalou@yahoo.com



Mr. Mohammed Chahri
Engineer, Head of Urban Planning and Programming Department, City of Salé /Morocco/
+212 661 466 011
chahri.med@hotmail.com



Ms. Anastasia Adamovich
Head of Planning and Economy Department of Municipal Unitary Enterprise "Housing Maintenance and Utilities Board of the City of Polotsk" /Belarus/
+375 214 42 46 58
nana-ad1@yandex.ru



Mr. Ivan Shchadranok
SURE Local Project Assistant in Polotsk /Belarus/
+375 29 632 48 72
sure.polotsk@gmail.com

The European Union



The European Union is made up of 27 Member States who have decided to gradually link together their know-how, resources and destinies. Together, during a period of enlargement of 50 years, they have built a zone of stability, democracy and sustainable development whilst maintaining cultural diversity, tolerance and individual

freedoms.

The European Union is committed to sharing its achievements and its values with countries and peoples beyond its borders.

<http://europa.eu>

CIUDAD Programme



The “Cooperation In Urban Development And Dialogue” (CIUDAD) programme aims to help local governments in the ENPI region enhance their capacity to plan for sustainable, integrated and long-term urban development using good governance principles. It does this through capacity building and by promoting mutual understanding, exchange of experience and cooperation between local actors in the EU and in the Partner Countries of the

ENPI region in the implementation of common projects. By creating new partnerships and strengthening existing ones among local and regional authorities in the ENPI region (South-South, East-East and South-East partnerships), it also hopes to achieve long-term benefits extending beyond the life of the programme.

<http://www.ciudad-programme.eu>

The European Neighbourhood Policy and European Neighbourhood Partnership Instrument

The European Neighbourhood Policy (ENP) was developed in 2004. The ENP is a broad political strategy which has the ambitious objective of strengthening the prosperity, stability and security of Europe's neighbourhood in order to avoid any dividing lines between the enlarged EU and its direct neighbours. European Neighbourhood Partnership Instrument (ENPI) is the financial instrument which supports the ENP through certain assistance

actions. The ENPI is the main source of funding for the 17 partner states: ten Mediterranean countries – ENPI-South (Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Occupied Palestinian Territory, Syria, Tunisia) and six Eastern European countries – ENPI-East (Armenia, Azerbaijan, Belarus, Georgia, Moldova, Ukraine), as well as Russian Federation.

<http://ec.europa.eu/world/enp>

The Covenant of Mayors



The Covenant of Mayors is the mainstream European movement involving local and regional authorities, voluntarily committing to increasing energy efficiency and use of renewable energy sources on their territories. By their

commitment, Covenant signatories aim to meet and exceed the European Union 20% CO2 reduction objective by 2020.

<http://eumayors.eu>

CHAPTER 1/ WHAT IS THE SEAP AND WHY DO CITIES NEED IT?

What does SEAP stand for and why do European cities adopt them?



Mr. Miguel Ángel
Cámara Botía,
Mayor of the City of Murcia
/Spain/

SEAP stands for Sustainable Energy Action Plan. It is the official municipal document that summarizes the way the City of Murcia has decided to go for the next years until 2020 in the field of energy management including all the fields and activities in which the city can directly act or influence. The SEAP includes two parts. The first part is the Energy Diagnosis, which is the picture of the all CO₂ emissions produced by energy consumption. This is the starting point. The second part is the SEAP itself, which includes the environmental and energy targets and the list of actions to be implemented during next years, including a program for the implementation. The SEAP is a document officially approved at political level, but it is produced on the basis of a prior technical work and quantitative analysis.

The reason why many European cities are adopting a SEAP is because it consists of a scientific approach on energy management. This approach includes a calculation of the impact of each action in terms of environmental or financial efficiency for performing a more rational energy management. We follow up our Energy Plan through a regular Energy Diagnosis every two years. For this purpose, we collect the data of local energy production and consumption in order to make strategic analysis to identify the key fields of action in which we have the highest

potential of savings. In 2007, Murcia created its Local Energy Agency (ALEM) financed by the Intelligent Energy Programme of the EU. Its main duty is to provide technical assistance on energy management to the City Council of Murcia.

The SEAP of Murcia is the key document for the implementation of our municipal energy policy until 2020. It is our modest contribution for building a more sustainable world.

City of Murcia.
Puente de Hierro (Iron Bridge) ↓



In September 2011, Friedrichshafen joined the ranks of Covenant of Mayors Signatories, at the occasion of a memorable signature ceremony which also saw the adhesion of Salé and Polotsk.

What brought you to take the political decision to take part in this initiative?



Mr. Andreas Brand,
Mayor of the City of Friedrichshafen
/Germany/

From a very early stage we identified the need for energy efficiency and a transition to renewable energy sources and made this a key focus of our local actions. The city of Friedrichshafen and its public utility company have been using targeted energy-saving and climate protection measures in practice for 20 years now. Friedrichshafen is one of the first cities in Baden-Württemberg that can present a practical, specific energy and climate protection approach; it received the European Energy Award for the first time in 2008. Therefore, it was part of this approach to also commit to the “superordinate” targets of the European Energy and Climate Policy by joining the Covenant of Mayors.

At Lake Constance, we also notice the changes in climate warming due to heat waves and droughts, gales and thunder-

storms causing considerable damage to agriculture – so we see how necessary it is to adapt to these changes and counteract further global warming by consistently pursuing strategies to avoid CO₂ emissions.

In addition, we want to motivate other cities from neighbouring countries of the European Union to become part of the Covenant, especially upon considering that Polotsk (Belarus) and Salé (Morocco) are facing much greater challenges than we are. Advantages of the Covenant of Mayors are the close cooperation between the cities and the opportunity to share experience, with the aim of finding citizen-friendly approaches.

Why did Polotsk decide to develop a SEAP?



Mr. Aliaksandr Pazniak,
Mayor of the City of Polotsk
/Belarus/

These days, the issue of energy efficiency and energy saving has become of crucial importance to us. Our people are now becoming more aware of what they, as citizens, can do in order to join global fight against climate change, make their city a green and lovely place to live in, and save money – both from their own pockets and from the municipal budget. Thus, intentions of citizens and actions of the municipality are closely tied up. We wish energy efficiency and energy saving in our

city to keep up with latest experiences and best practices that exist in Europe. Sustainable Energy Action Plan is, in fact, the embodiment of how these state-of-the-art practices are applied in Polotsk in accordance with local needs of the city and its people. Sustainable Energy Action Plan will help us to complement activities of the annual Energy Saving Plan with such important domains as work with population, land use planning, etc.

Why do cities in the ENPI-South need a SEAP?



Mr. Nouredine Lazrek,
Mayor of the City of Salé
/Morocco/

Cities in the ENPI-South need a SEAP as it is a pattern that frames all other action plans that the city is already involved in. First, it gives the city a framework of reference in which it oper-

ates. Second, it affords the city a methodology or a structure that enables it to well assimilate its needs and well handle its problems related to sustainability and development.

CHAPTER 2/ WHAT ARE THE CONTENT AND FORM OF THE SEAP?

What major elements are included into the SEAP?



Dr. Francisco Javier
Sánchez Velasco,
Engineer of ALEM: Local
Energy Agency of Murcia
/Spain/

The energy diagnosis and the greenhouse gas emissions inventory of the city territory are the initial elements needed in the SEAP. With them, it is possible to elaborate the most important element of the SEAP, the list of concrete measures proposed to achieve the final objective of the SEAP: the reduction of the greenhouse gas emissions of the city by at least 20% by 2020. This list defines the measures, their implementation period, their

energy saving potential and the amount of greenhouse gas emissions that could be saved. This list of measures should be comprehensive and should target various sectors of activity, such as saving in public buildings and facilities, mobility measures, clean electricity production, land use planning among others.



Mr. Juan Ros,
Engineer Expert of BIONET
Servicios Técnicos
/Spain/

The major elements to be included into the SEAP are the actions to be taken in order to be sustainable by meeting the objectives set by a target year. The SEAP has to contain a coherent set of measures covering the key sectors of activity, not only the buildings and facilities that are managed by the lo-

cal authority, but also the main sectors of activity in the territory of the local authority: residential sector, tertiary sector, public and private sector. The plan must contain a clear outline of the strategic actions that the local authority intends to take in order to reach its commitments in 2020.



Ms. Ana Rita Neves,
Member of the Covenant
of Mayors Office
/Belgium/

A SEAP should answer three major questions: ‘where we are’ by providing a baseline emission inventory; ‘where we want to go’ by defining a clear and shared vision for the sustainable energy future of the municipality and by specifying objectives and a greenhouse gases emissions reduction target; and ‘how do we get there’ by defining a comprehensive set of actions that will allow reaching the objectives and target. These actions

should focus on reducing energy demand in several sectors of activity in the local authority’s territory as well as in using local renewable energy resources to match local energy demand. Finally, the SEAP should also foresee how we are going to track progress towards the target along time, by defining a process for monitoring.

City of Murcia at night.
Murcia is one of the cities with the largest number of lighting points in Spain.



Is there a template for the SEAP? Where can I find it?

Dr. Francisco Javier
Sánchez Velasco,

Engineer of ALEM: Local
Energy Agency of Murcia
/Spain/



A template for the SEAP can be downloaded from the Covenant of Mayors Office website, a supporting structure created by

the EU in order to assist the local authorities in their process of creating a SEAP: www.eumayors.eu

Mr. Juan Ros,

Engineer Expert of BIONET
Servicios Técnicos
/Spain/



All Covenant signatories commit to submitting their Sustainable Energy Action Plans (SEAPs), within the year following their adhesion, and therefore showing how to reach their CO₂ reduction target by 2020. To assist the Covenant signatories in achieving their target, a SEAP template has been developed by the Covenant of Mayors Office in close collaboration with the Joint Research Centre of the European Commission. This user-friendly document must be completed on-line in English by the Covenant signatories themselves at the same time when submitting their Sustainable Energy Action Plan in their own (national) language. The SEAP template can be found in: www.eumayors.eu/IMG/xls/template_en.xls

Ms. Ana Rita Neves,

Member of the Covenant
of Mayors Office
/Belgium/



The SEAP template is available for Covenant Signatories on the CoM website restricted area – ‘My Covenant’. The SEAP template should be completed in English by the signatories and allows them to summarise the results of their Baseline Emission Inventory as well as the key elements of their SEAP. It has to be carefully filled in with sufficient level of detail to well reflect the content of the action plan. A public copy of the SEAP template (PDF & Excel format) and specific instructions document for filling in the template are available in the CoM website library. The SEAP assessment procedure is mainly based on the information provided by the signatory in the SEAP template. Therefore all Covenant Signatories should ensure that information filled in the SEAP template is complete and well-consistent with their full action plan. More information: Frequently Asked Questions, http://www.eumayors.eu/support/faq_en.html

What other SEAP tools can I find on the Covenant of Mayors website?

Dr. Francisco Javier Sánchez Velasco,
Engineer of ALEM: Local Energy Agency of Murcia /Spain/

Among other tools, you can find examples of SEAP of other cities and territories, a direct contact line for technical support, and information about financing mechanisms.

Ms. Ana Rita Neves,
Member of the Covenant of Mayors Office /Belgium/

In the CoM website library (www.eumayors.eu/support/library) you will find several supporting documents such as the SEAP guidebook which provides detailed step-by-step guidance on the SEAP development process or the thematic leaflets on financing schemes and on SEAP elaboration. In the CoM website you can also find all the submitted SEAPs as well as a section dedicated to relevant examples of actions being implemented by Covenant Signatories – ‘Benchmarks of Excellence’. E-learning and webinars are available via the restricted area to Covenant Signatories.



Photovoltaic panels on the roofs in Murcia. ↑

Solar City Wiggenshausen is a solar energy quarter in Friedrichshafen that allows to save 366 tonnes of CO₂ a year. ↓



Murcia Cathedral. The City of Murcia pays a lot of attention to sustainable energy management of the city centre and its historical buildings.



CHAPTER 3/ HOW TO DEVELOP A SEAP?

Who should develop a SEAP and who should be involved in its development?



Dr. Tillmann Stottele,
Head of the Department for Environment
and Nature Conservation of the City of
Friedrichshafen
/Germany/

Since only cities and communities – represented by their mayors – can become member of the Covenant of Mayors, only municipalities are in charge to submit a Sustainable Energy Action Plan at the Covenant of Mayors office in Brussels within one year after signing the declaration of accession to the Covenant of Mayors.

The SEAP does always refer to the entire municipal area; that means the SEAP considers all the energy which is produced and consumed in this area by the significant sectors and stakeholders respectively – public utilities, private households, trade and services, commerce and industry, traffic, energy suppliers etc.

Although the local authorities design the general planning for building, traffic and infrastructure, in the end they are only in charge to decide on the energy consumption of the municipal buildings, institutions and services. Those consume in Central Europe only 2 – 5% of the total energy demand of all consumers in the municipal area. In the ENPI-region the consumption is at most at 5 – 20%.

That means that 80 – 98% of the total energy demand is consumed in the private sector which cannot be controlled directly

by local authorities. But the 20-20-20 goals of the SEAP refer to all areas of action. Only the industrial sector can be excluded.

Therefore it is obligatory that all stakeholders are involved in the development and implementation of the SEAP. Although the local authorities initiate and coordinate the SEAP, it will never be accepted as a basis for urban development without a clear commitment of civil society stakeholders – or, on the other hand, regional and governmental institutions - and the economy.

The local authorities can engage - depending on the qualifications of their employees - external service providers in the SEAP development. At least the local authorities have to cooperate with the big regional or national energy suppliers because they are the only ones having access to the necessary data.

It would be optimal when the SEAP is developed and approved in a transparent democratic consultation process with the participation of all significant stakeholders and authorities. This increases the acceptance, simplifies the financing and guarantees an implementation within the time frame.

Within the SURE project, external specialists from Spain were involved in SEAP development in ENPI cities (BIONET Servicios Técnicos for Polotsk and Local Energy Agency of Murcia (ALEM) for Salé).

Is it always necessary to involve foreign experts for SEAP development?
What are the benefits of involving foreign experts?

It is not necessary to involve foreign experts. The involvement of foreign experts was because the production of the SEAP of Salé and Polotsk was an action included in the European cooperation project SURE. The city of Murcia was in charge of coordinating the specification for subcontracting a consultant in the EU countries that had to coordinate a draw up the SEAP of Salé and Polotsk.



Mr. Fernando Sánchez Lara,
Industrial Engineer of the Department
of Environment, City Council of Murcia
/Spain/

Involving foreign experts has the benefit of having people from a different economical, legal framework and this allows having a comparison between contexts of different countries. This permits to identify barriers but also advantages and perform a deeper analysis of these variables in cooperation with local staff.



Ms. Anastasia Adamovich,
Head of Planning and Economy Department of
Municipal Unitary Enterprise "Housing Maintenance
and Utilities Board of the City of Polotsk"
/Belarus/

Within the SURE project, it was decided to involve foreign experts for development of the Sustainable Energy Action Plan for Polotsk. Involvement of foreign experts makes it possible to apply modern methods and consider latest technologies that are used in other countries. Belarusian experts also contributed greatly

to the development of the SEAP. Judging from our experience, when Belarusian and foreign experts work together to develop the Sustainable Energy Action Plan for a city, their common work is very likely to result into an effective combination of state-of-the-art methods and activities in the sphere of energy saving.



Mr. Ivan Shchadranok,
SURE Local Project
Assistant in Polotsk
/Belarus/



Since Polotsk is the first city in Belarus to join the Covenant of Mayors and commit to developing a Sustainable Energy Action Plan, it is quite evident that here in Belarus we have absolutely no experience in development of such documents. Meanwhile, Polotsk is not eager to follow the steps of a number of Covenant signatories which entered into a commitment to develop a SEAP but, when left on their own, failed to do so in the time frame fixed by the Covenant of Mayors. Experts from the City of

Murcia and BIONET have already dealt with development and implementation of such plans; their involvement made it possible for the Polotsk experts to avoid many problems while developing their own SEAP. Not only did Polotsk experts get professional support from their European colleagues, but they also understood that SEAP is not just another strategy paper, but an important guidance that European municipalities use in their everyday work.



Mr. Mohammed Chahri,
Engineer, Head of Urban
Planning and Programming
Department, City of Salé
/Morocco/



Salé has involved foreign experts in SEAP elaboration in view of benefitting from their expertise in issues related to energy efficiency. This collaboration has allowed transfer of expertise and know how, and of any idea likely to be adopted by Salé experts in their dealing with energy efficiency in urban areas.



Dr. Anass Laalou,
SURE Local Project
Assistant in Salé
/Morocco/



I think it is of paramount importance to involve foreign experts in SEAP development. It fits perfectly in the spirit of ENPI policy which stipulates cooperation among its members and allows not only technology transfer but also a know-how transfer. Such exchange is necessary for both parties to help each other confront the major environmental and developmental issues. Another reason why involvement of foreign experts is important is because it helps all operators to know what each of them has achieved in matters of sustainability and environment protection.

What is the starting point of the SEAP development?

Dr. Francisco Javier Sánchez Velasco,
Engineer of ALEM: Local Energy Agency of Murcia /Spain/

The starting point is to elaborate an energy diagnosis and a baseline emissions inventory.

Mr. Juan Ros,
Engineer Expert of BIONET Servicios Técnicos /Spain/

A baseline review is the starting point for the SEAP process from which it is possible to move to relevant objective-setting, elaboration of adequate Action Plan and monitoring. The baseline review needs to be based on existing data. It should map relevant legislations, existing policies, plans, instruments and all departments/ stakeholders involved.



There are a lot of green areas in Polotsk, which partly accounts for the city's low CO₂ emissions. ↑

How to perform energy diagnosis and develop a baseline emissions inventory?

What were the main challenges in Polotsk and Salé?

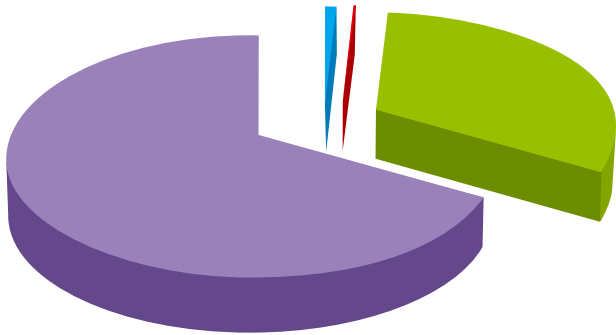
What are the main conclusions of the energy diagnosis and baseline emissions inventory for Polotsk and Salé?

Ms. Anastasia Adamovich,
Head of Planning and Economy Department of Municipal Unitary Enterprise "Housing Maintenance and Utilities Board of the City of Polotsk" /Belarus/

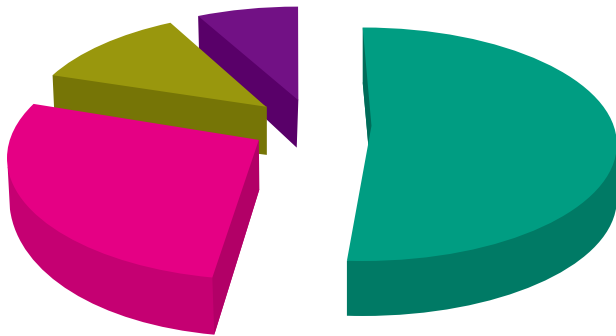
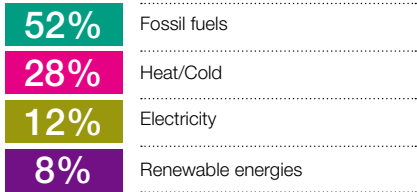
Like any other analysis, energy diagnosis should start with the collection of baseline data on energy consumption for a certain time period. In Polotsk, it was decided to take 2010 as the baseline year. Collection of baseline information on consumption of fuel and energy resources presented no problem for us. In Belarus, there is a long-lasting practice of regularly collecting information on consumption of all types of energy resources by businesses, enterprises, and population, and translating it into statistical data. The only challenge was that here in Belarus we

use different measurement units, but this problem was easy to solve. When developing a baseline emissions inventory, our main challenge was to calculate emissions from consumed energy resources. This was where support of experts from BIONET was particularly helpful. Major results of our energy diagnosis, if expressed in graphs, are as follows:

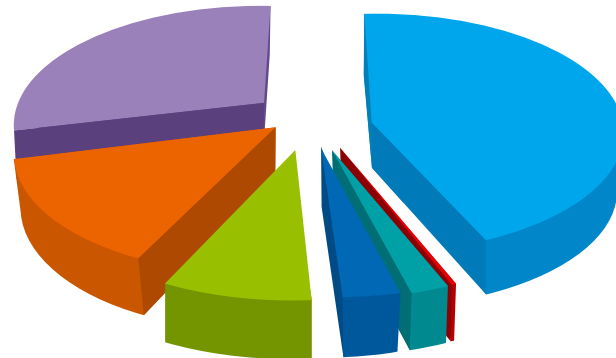
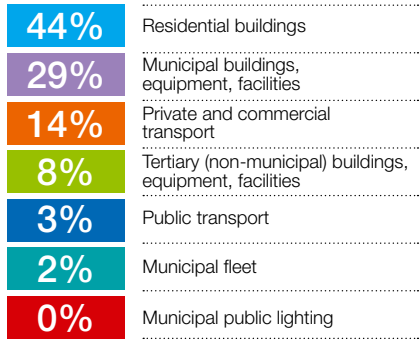
Electricity consumption in Polotsk



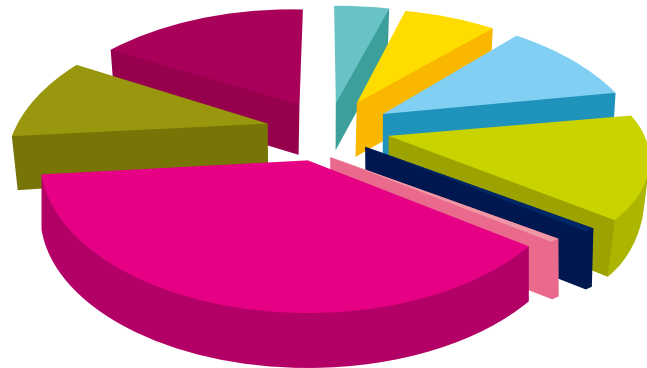
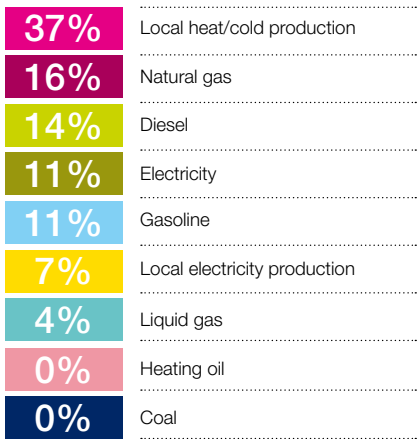
Final energy consumption in Polotsk



Primary energy consumption in Polotsk per sector



Greenhouse gas emissions generated in Polotsk per source



Mr. Juan Ros,

Engineer Expert of BIONET
Servicios Técnicos
/Spain/



Completing a baseline review requires adequate resources, in order to allow the data sets to be collated and reviewed. The steps for conducting the baseline review include selecting the review team, identifying the most important indicators, collecting the baseline data, compiling the CO₂ baseline emission inventory and analysing the data, then writing a report.

Main challenges for Polotsk were working out an agreement of which fields where actions have to be taken are more relevant for the different stakeholders.

The main conclusion of the energy diagnosis and baseline inventory was that, as Polotsk energy profile shows, the city has a low consumption of energy and therefore a low production of green house gases. The reason why Polotsk is rated as a low consumer of energy is because in the SEAP we set a benchmark comparing the European Union and Belarus, so once the various factors that measure the average of energy consumption were calculated and compared, it became evident that Polotsk is behind the EU and Belarus in energy consumption terms.

Dr. Francisco Javier
Sánchez Velasco,

Engineer of ALEM: Local
Energy Agency of Murcia
/Spain/



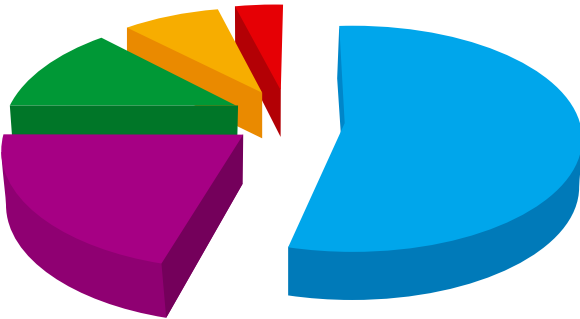
In order to elaborate energy diagnosis, the first step is to collect the energy consumption data on the territory during one year, including electricity, fuel and any other type of energy consumed. It is important also to include the consumption from renewable energy sources. This data should be available by sector, such as residential, tertiary, municipal, transport, and others. A request for provision of this data must be sent to the utilities and energy supply companies of the territory. In case of electricity companies, it is also important to ask them for the emission factor of the electricity supplied, i.e. the amount of greenhouse gas emissions generated in the production of electricity supplied. For the rest of energy sources, these factors can be found in the literature. After collecting this data, the diagnosis and the inventory can be done by filling out the Covenant of Mayors template and by the ad-hoc analysis of energy experts that will show local authorities existing opportunities and weak points where action is needed.

Mr. Mohammed Chahri,

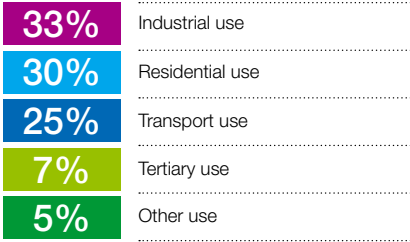
Engineer, Head of Urban Planning and
Programming Department, City of Salé
/Morocco/

Salé's energy diagnosis has given the following data:

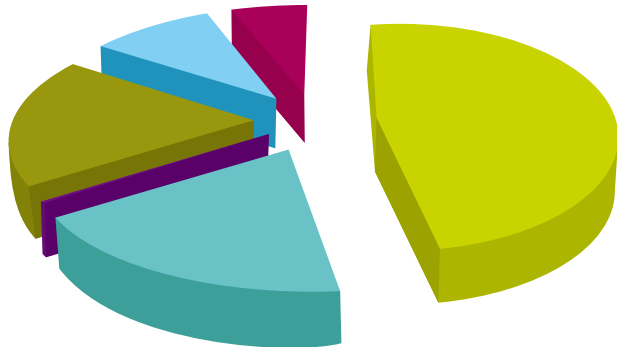
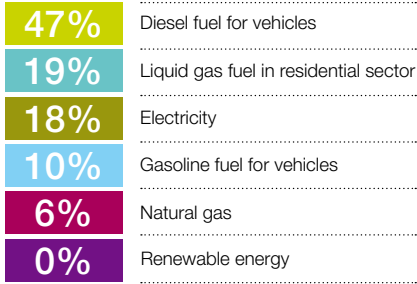
Electricity consumption in Salé



Energy consumption in Salé per sector



Final energy consumption in Salé by energy vector

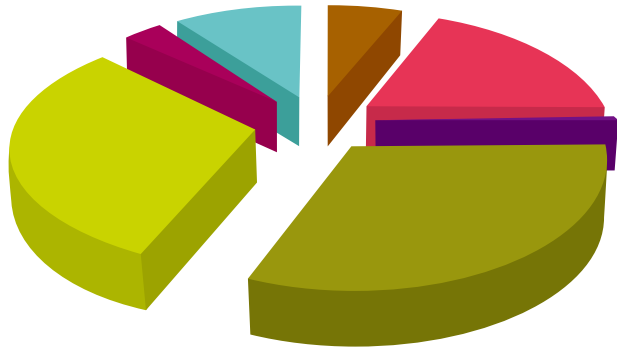
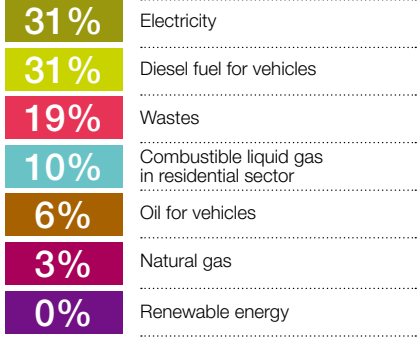


The main difficulty was to collect all data for the energy diagnosis. When we did not have all data readily available, we held meetings with the departments like electricity and water supplier, the local authorities and Ministry of Energy, Mine, Water and Environment to provide us with the unavailable data to be used

for diagnosis. The meetings proved very helpful as these departments offered us valuable and interesting information, without which the diagnosis would be unreliable.

Dr. Francisco Javier Sánchez Velasco,
Engineer of ALEM: Local Energy Agency of Murcia /Spain/

Greenhouse gas emissions inventory by source in Salé



The main challenge in Salé was to collect the energy consumption data and related statistics, since this information was scarce and disperse. The process of data collection was hard and very time consuming because we needed to contact the utilities and other energy distribution companies. Finally, these milestones were overcome thanks to the assistance of the Salé City Council and other partners of the project. They organized several meetings and study visits that helped us to contact the institutions and the personnel that had these data available.

As for the main conclusions of the energy diagnosis and baseline emissions inventory for Salé, the most important are to profit the strong potential in solar energy and to act on urban mobility through the elaboration and execution of a sustainable urban mobility development plan. Such a plan will assist Salé in adapting the mobility dynamics of the city to fully operate the capacity of new infrastructures such as the Salé-Rabat Tramway and other public transports in coordination with the promotion of cycling.

How to perform energy audit of municipal buildings?

What were the main challenges in Polotsk and Salé?

What are the results of the energy audit in Polotsk and Salé?

Ms. Anastasia Adamovich,

Head of Planning and Economy Department of Municipal Unitary Enterprise "Housing Maintenance and Utilities Board of the City of Polotsk"
/Belarus/

Residential sector accounts for a major share of primary energy consumption in Polotsk.



Energy audit of public buildings is, in fact, the basis for development of actions that target municipal sector in the SEAP. When selecting public buildings for energy audit, it is very important to choose wisely. Energy audit makes it possible to come up with standard activities that will help to reduce energy consumption and CO₂ emissions in the most effective way. When conducting energy audit, climate conditions have to be considered; therefore, we recommend that energy audit should be conducted in

two stages. At first, you will need to collect and analyze technical data. Next, you will need to take measurements and conduct a thermal imaging survey. Energy audit results showed that municipal sector has a significant saving potential. It is expected that, by 2020, total energy saved will have reached 437,000 MWh, which equals to 56.6 million Euro, or roughly 6 million Euro per year.

Mr. Mohammed Chahri,

Engineer, Head of Urban Planning and Programming Department, City of Salé
/Morocco/

To carry out an energy audit in municipal buildings, we need the following steps:

- To identify the selected buildings to be audited
- To collect data on energy consumption for the buildings
- To analyze the energy needs
- To do a study on energy saving and efficiency at the level of the audited building.
- To analyze and optimize the energy bill
- To diagnose and offer concrete suggestions to improve the elements of construction, internal lighting, hot water, etc.
- To study the possibility of introducing installations that use renewable energy, carry out a technical and economic feasibility study, especially those related to solar energy.
- To progressively substitute the old equipment. A global vision of buildings will help to do a hierarchization of priority on each building and a complementary implementation of ventilation that should be in compliance with the regulation and needs. Isolation works on external walls are envisaged. This could be thought of as a programme in the long run as it is very costly.
- To elaborate a programme aimed at mastering energy consumption by the implementation of a general metering of energies. This latter could give a precise idea about consumption of

sites according to energy types, and allow a close follow up on them so that there is prompt reaction in case there is over-consumption. The energetic gain is economic as well.

Although we managed to collect the data needed and came up with an energy audit for the city, we were confronted with various problems. Firstly, we faced the difficulty of choosing the right municipal buildings to be audited. We needed buildings that should truly reflect the real consumption of energy in the city of Salé. The buildings to be audited had to be relatively new and reliable in order to give us an accurate assessment of the expected audited results. We also were confronted with the rarity of data as the city's archives are scattered around the city and there are different operators involved in data collection and data archiving.

We can summarize the results obtained in the course of the energy audits of the city of Salé by saying that the city wastes so much energy because of bad management of the energy resources available and the shortage of training of people who extensively use energetic sources. There are also poor sensitization programs to raise the citizens' awareness as to the various ways of efficiently using energy.

How to translate figures obtained in the course of the energy diagnosis into actual activities for the city?

How to choose most relevant activities for the Sustainable Energy Action Plan?

Ms. Anastasia Adamovich,
Head of Planning and Economy Department of Municipal
Unitary Enterprise “Housing Maintenance and Utilities
Board of the City of Polotsk”
/Belarus/

In order to develop specific activities, one should have a very clear understanding of the objective that needs to be achieved. Our objective, 20-20-20, is concise, specific and easy to comprehend. In Belarus, we give much attention to energy saving and improvement of environmental situation, and Polotsk has already done much to reduce energy consumption. Polotsk City Executive Committee and its institutions perform system-

atic analysis of energy consumption, identify its saving potential and come up with specific actions aimed at reduction of energy consumption. The choice of certain actions is justified by their effectiveness. It is also important to consider whether such actions have ever been implemented before, and whether this experience has been successful. In the end, actions with most effectiveness are likely to be included into city planning.

See **CHAPTER 6**
for energy
benchmarking
of the four
partner cities,
including
figures obtained
in the course
of the energy
diagnosis.

Mr. Juan Ros,
Engineer Expert of BIONET
Servicios Técnicos
/Spain/



The results of the energy diagnosis will conduct the way to perform the SEAP. In general, the actions to be taken should tackle those sectors that, based on the results of the baseline emission inventory, are characterized by high emission of CO₂. Developing graphs that show the consumption of energy and CO₂ is a good tool that helps to come up with real activities for the city.

The most relevant activities to be chosen should be based on the indicators selected in the baseline review. Such activities should follow the principles of the SMART acronym: Specific, measurable, achievable, realistic, and time bound. Proper calculations of CO₂ reductions must be carried out in order to develop relevant activities.



Dr. Francisco Javier
Sánchez Velasco,
Engineer of ALEM: Local
Energy Agency of Murcia
/Spain/



The conclusions of the energy diagnosis and the greenhouse gas emissions inventory make it possible for the energy experts to identify key sectors where to act. These are sectors that consume most energy and account for the major share in the city's energy bill and/or the ones that produce most of the greenhouse gas emissions of the city. Once key sectors are identified, energy experts propose concrete measures for the city based on the results of those measures in other cities. It is also useful to have a look at the Covenant of Mayors Office documents of proposals and activities that have been elaborated by the EU with this purpose.

As for how to choose most relevant activities for the Sustainable Energy Action Plan, the criteria for the selection are based on the best use of available resources. By estimating the execution costs of each measure, its payback period and total amount of energy and greenhouse gas emissions that can be saved, it is easy to select the most efficient activities.



Salé is a fast growing agglomeration, with electricity and diesel fuel for vehicles accounting for the major share in its greenhouse gas emissions.

How does the SEAP look like when it is ready?



Sustainable Energy Action Plan of Polotsk

Sustainable Energy Action Plan of Polotsk

SECTORS & fields of action	KEY actions/measures <u>per field of action</u>	Responsible department, person or company (in case of involvement of 3rd parties)	Implementation [start & end time]	Estimated costs <u>per action/measure</u> [EUROS]	Expected energy saving <u>per measure</u> [MWh/a]	Expected renewable energy production <u>per measure</u> [MWh/a]	Expected CO2 reduction <u>per measure</u> [t/a]
BUILDINGS, EQUIPMENT / FACILITIES & INDUSTRIES:							
Municipal buildings, equipment/facilities	Introduction of solar thermal facilities in the sports centers and city council public buildings with high hot sanitary water demand. 10 facilities	City Council of Polotsk	2013-2017	114 000	200	200	40
	Energy auditing of all public buildings of the City Council Building of Polotsk Implementation of the measures recommended. 100 buildings	City Council of Polotsk the Vitebsk district administration of national department of energy efficiency	2012-2019	60000	574		115
	Introduction of the heat recovery and extraction systems with high capacity. 1 building	City Council of Polotsk	2014	1 850	1,45		0,67
Comment:This measure has been added by the City Council of Polotsk	Modernisation (exchange) of the pumping equipment in boiler houses with the new one. Total number of pumps - 11 items.	City Council of Polotsk	2011-2012	75 988	5 682		2 608,21
Comment:This measure has been added by the City Council of Polotsk	Modernisation of the heat supply network (4,000 m/year).	City Council of Polotsk	2011-2020	4 794 400	408		82
Comment:This measure has been added by the City Council of Polotsk	Installation of 3 boiler of 3 mWt capacity, with usage of wood chips	City Council of Polotsk	2012	706 287	4 715	4 715	943
Comment:This measure has been added by the City Council of Polotsk	Installation of the boilers of smaller heat and electricity capacity in boiler houses: Bogatyrskaya, Borovukha, Trosnitskaya, Uzlovaya Bolnitsa	City Council of Polotsk	2015-2019	45 994 148	145 635		29 127

SEAP for Polotsk



On this page, you will find a summary of SEAP for Polotsk, with main sectors and proposed activities.

POLOTSK SEAP ACTIONS

Buildings, equipment & facilities

Introduction of solar thermal facilities in sports centers and municipal public buildings with high hot sanitary water demand

Energy audit of all public buildings

Introduction of heat recovery systems

Modernisation of pumping equipment

Modernisation of heat supply network

Installation of wood chip boilers

Improving insulation of walls and roofs

Renovation of windows

Substitution of conventional lights for low energy lights

Installation of LED technologies for street lighting and traffic lights

Installation of light management systems

Transport

Development of Sustainable Urban Mobility Plan

Implementation of the Sustainable Urban Mobility Plan

Development of a biking system

Cycling lanes construction

Local electricity production

Feasibility study for implementation of solar photovoltaic plants on roofs

Installation of internal combustion engines

Local district heating/cooling, CHPs

Modernisation of network pipelines

Land use planning

By-law on energy efficient new buildings

Execution of an Urban Cycling master plan

Maintenance of agriculture and forest land protected against urban development

Public procurement of products and services

Introduction of energy efficiency criteria in City Council Tenders

Introduction of energy saving equipment and technologies

Annual city competitions to identify businesses and institutions with good energy saving indicators

Government measures

Requirement of solar thermal energy by-law in city council facilities

Working with citizens and stakeholders

Creation of staff allocated for development of SEAP and energy saving actions

20% emissions reduction commitment for citizens

Urban mobility working group with stakeholders

Energy comity with stakeholders

Introduction of energy saving classes in schools, universities, colleges

Comprehensive public awareness raising campaign

Workshops on energy saving at home

Programme for the use of bicycle among students

Energy Saving Family Award

Energy Efficiency Commerce Award

Actions and conferences programmed within the SURE project

Government measures

Sustainable Energy Action Plan of Salé

Sustainable Energy Action Plan of Salé

SECTORS & fields of action	KEY actions/measures per field of action	Responsible department, person or company (in case of involvement of 3rd parties)	Implementation [start & end time]	Estimated costs per action/measure	Expected energy saving per measure [MWh/a]	Expecte d rene wable energy product ion per measur	Expected CO2 reduction per measure [t/a]
BUILDINGS, EQUIPMENT /							
Municipal buildings, equipment/facilitie	Introduction of solar thermal facilities in the sports centers and city council public buildings with high hot sanitary water demand. 5 facilities	ADEREE PROMASOL II Programme	2012-2013	170000MAD- 15000EURO/building	275	275	95
	Energy auditing of all public buildings of the City Council of Salé. Implementation of the measures recommended	ADEREE. Délégation de l'Union Européenne auprès du Royaume du Maroc. Ligne BGUE-B2008-19.080101-C1-AIDCO	2012	12000MAD-1000EUROS/building	14	0	10
	Substitution of conventional traffic lights by LED traffic lights	City Council of Salé. ADEREE	2012-2013	3200MAD-281EUROS/traffic light block	8 480	0	5 008
	Installation of presence detector systems in common spaces of City Council Buildings	City Council of Salé	2012	1700MAD-EUROS/detector	1	0	0
	Installation of high efficiency lighting technology in the future city council buildings	City Council of Salé	2013-2020	0	83	0	58
	Energy saving measures in fountains and parks watering systems	City Council of Salé	2013	280000MAD - 25000EUROS	278	0	195
	Elaboration of a internal regulation of energy efficiency of the City Council. It fixes the use of a minimum energy efficiency of new equipments and equipments to be substituted.	City Council of Salé	2013-2020	0	70	0	242

On this page, you will find a summary of SEAP for Salé, with main sectors and proposed activities.

SALÉ SEAP ACTIONS

Buildings, equipment & facilities

Introduction of solar thermal facilities in sports centers and municipal public buildings with high hot sanitary water demand

Energy audit of all public buildings

Introduction of LED technology in conventional holiday lighting, public lighting and traffic lights

Installation of presence detector systems in common spaces

Installation of high efficiency lighting technology in future city council buildings

Energy saving measures in fountains and park watering systems

Elaboration of an internal regulation on energy efficiency of the City Council

Installation of water saving devices in the points of consumption of hot sanitary water

Introduction of heat recovery in HVAC systems of public buildings with high power installed

Green Commerces Certification Program; shops, restaurants, hotels, shopping centers

Transport

Progressive renovation of the City Council fleet by electric and hybrid vehicles

Ecodriving courses for City Council staff

Tramway Rabat-Salé

Execution of a Sustainable Mobility Urban Plan

New taxis only hybrid, electric or with alternative fuels

Development of a biking system

Cycling lanes construction

Tax reduction fo hybrid, electric or high efficiency vehicles

Local electricity production

Installation of solar photovoltaic plants on roofs of public building

Installation of internal combustion engines for the generation of electricity from biogas in the waster treatment plant (plant Oulja & Akreuch landfill).

Land use planning

By-law on energy efficient new buildings

Solar thermal by-law for new buildings

Plantation of trees in parks, gardens and public land

Maintenance of agriculture and forest land protected against urban development

Execution of an Urban Cycling Master PAn

Public procurement of products and services

Introduction of energy efficiency criteria in City Council Tenders for services and infrastructure

Requirement of solar thermal energy in all new city council facilities with hot sanitary water demand

Working with citizens and stakeholders

Creation of staff allocated for SEAP development and energy saving actions

20% emissions reduction commitment for citizens

Bicycle working group with stakeholders

Mobility working group with stakeholders

Energy comity with stakeholders

Car pooling program

Awareness campaigns for energy saving, ecodriving, promotion of renewable energy, use of sustainable mobility modes

Green School Award Programme

Workshops on energy saving at home

Ecodriving courses for citizen

Programme for the use of bicycle among students

Energy Saving Family Award

Energy Efficiency Commerce Award

Cycle to work programme

Actions and conferences programmed within the SURE project

CHAPTER 4/ HOW TO IMPLEMENT THE SEAP?

What happens after the SEAP is developed?

Have there been any obstacles on this stage and what advice can be given to other cities?



Mr. Fernando Sánchez Lara,
Industrial Engineer of the Department
of Environment, City Council of Murcia
/Spain/

After the SEAP is developed, it should be presented to the political bodies of the city for its legal approval. It can be approved by the Mayor, by the City Executive Committee or by the Plenary. It is important to have as much support as possible. In preparing the legal approval, it is important to have some time for the hearings, to give the civil society the opportunity of making comments and suggestions. These hearings could have place before the SEAP is presented at political level, or more officially between an initial and a definitive political approval.

After the Energy Plan is fully approved, the implementation process will start. From my point of view, a good organization for the SEAP will assign the actions to different departments in the city, each of them is used to manage some municipal facilities, buildings, sport centers, public roads, etc. These departments should be informed about their responsibilities during the drafting of the SEAP.

A detailed SEAP will have the description of each measure in terms of time, investment and the department of the city that is responsible for each action. A certain department of the City Council should carry out the task coordinating and supervising

the whole implementation process in order to ask other departments to accomplish the planned measures. Anyway, the implementation phase should be somehow flexible, because the SEAP will integrate many actions that will be probably linked to other plans of the city and many of them can suffer from modifications, depending on the circumstances or depending on available funding that comes from regional, national or international programs.

City of Murcia, and the Mayor of Murcia personally (on the left), encourage and promote the use of bicycles as an eco-friendly means of transport.



Ms. Anastasia Adamovich,

Head of Planning and Economy Department of
Municipal Unitary Enterprise "Housing Maintenance
and Utilities Board of the City of Polotsk"
/Belarus/



After the SEAP is ready, there comes the most important part, which is its approval and implementation. SEAP for Polotsk was approved by the Polotsk City Council of Deputies in late March 2012. Before and during this stage, certain questions arouse in the community. People were interested to know what the SEAP was, why it had been developed and how it would be implemented and financed. In Polotsk, we tried to give people answers to these questions by organizing public consultations, spreading our project news and achievements in the mass media and inviting local energy development experts to all project events that took place in our city.

The City of Salé is now working on integrating SEAP into
the Urban master development plan for 2012-2016.



Mr. Mohammed Chahri,

Engineer, Head of Urban Planning
and Programming Department,
City of Salé
/Morocco/



After the elaboration of the SEAP, we have to take the following steps:

- Cty council's approbation of the SEAP;
- Organization of a meeting with the architects in charge of projects programmed the city of Salé in view of integrating SEAP in their development programme of the Urban master development plan of the city of Salé 2012-2016;
- Presentation of the SEAP at the city's session held at the city Council's headquarters in the framework of a competence pole;
- Sensitization of the public for the SEAP results, through a large awareness campaign. On the other hand, civil society constitutes the main interface with the local population and at the level of Salé's industrials and estate agents in view of integrating energetic efficiency in their investment programmes;

One of the obstacles at this level is related to the integration of SEAP in ongoing projects as their financial breakdown of costs was already established and it has not allowed efficiency at the source.

Who should be responsible for the SEAP implementation?



Ms. Anastasia Adamovich,

Head of Planning and Economy Department of
Municipal Unitary Enterprise "Housing Maintenance
and Utilities Board of the City of Polotsk"
/Belarus/



Implementation of the SEAP will be the task for more than one organization. Polotsk City Executive Committee will hold the overall responsibility for the implementation of the plan. Vitebsk Regional Administration for Control over Rational Use of Fuel and Energy Resources (structure of the Department for Energy

Efficiency of the State Committee of Standardization of the Republic of Belarus) will provide methodological and operational support. As for actual activities of the SEAP, they will be implemented by heads and experts of city organizations and businesses, which have formed a Sustainable Energy Group.



Dr. Anass Laalou,

SURE Local Project
Assistant in Salé
/Morocco/



The city is the only body responsible for the implementation of the SEAP. Consequently, the city experts will follow up on its setting up and will have to make sure they respect the expected deadlines; Mr. Chahri will be the lead expert to supervise the whole operation.

Mr. Mohammed Chahri,

Engineer, Head of Urban Planning and
Programming Department, City of Salé
/Morocco/



To implement SEAP in Salé, Salé's city council has designed a multidisciplinary committee made up of experts of the city, elected members of the city, and members of civil society. Organization charter of this committee is being set up.

Is there any reporting on SEAP progress?

By signing the Covenant of Mayors, the cities commit to carry out a regular evaluation of the impact and the SEAP implementation every two years, and to submit it to the Office of the Covenant of Mayors in Brussels. These reports will quantify the achievement of the targets set up in the SEAP. These reports should be transparent so that our citizens can know the effort the city is doing for having a more sustainable energy management looking for a more rational management of resources.

The regular report could use the same format used for the

Friedrichshafen, a dynamic waterfront community, is situated on the picturesque Lake Constance and is a holder of the European Energy Award® (eea®).



Mr. Fernando Sánchez Lara,
Industrial Engineer of the Department
of Environment, City Council of Murcia
/Spain/

Energy Diagnosis. It should include all the energy produced and consumed in the city, broken down per energy sources. And it should include, of course, those actions planned in the SEAP which are already implemented at that time, those which are not, delays in implementation, changes in the planning, new actions and justification. All this should be quantified, so that we can know, objectively, where we are and possibly modify our trajectory to 20-20-20.

Salé, a Southern Mediterranean city with a population of almost a million inhabitants, lies across the river from Rabat, the capital of Morocco, and has high potential for the use of photovoltaic and solar heat.



Is the SEAP a tool to attract funding/investments?
What mechanisms exist for funding SEAP activities?

Covenant signatories, committed to meeting and exceeding the EU target of 20% CO2 emissions reduction by 2020, are on the lookout for funding opportunities, crucial to finance the actions featured in their Sustainable Energy Action Plans. In cooperation with their local partners, banks, private companies and civil society, they develop innovative financial schemes which give a decisive kick off to foreseen investments. Such pioneering ideas and methods increase the efficiency of public finance management and have a significant leverage effect.

The European Commission, for its part, has adapted and developed specific financial tools and programmes (e.g. Structural and Cohesion Funds, ELENA, JESSICA, Smart Cities, etc.) financed from the European budget to support local authorities in fulfilling their commitments and to mainstream the EU energy and climate policy to the local level.

With the decision to support the expansion of the Covenant of Mayors initiative to local authorities in Eastern Europe, the Caucasus and Central Asia, a logical next step will be the shaping of existing or development of new funding programmes for local sustainable energy policies in these countries. The work



Ms. Ulrike Janssen,
Executive Director of Climate Alliance
and representative of the Covenant
of Mayors Office
/Germany/Belgium/

programme of the Covenant of Mayors EAST Office includes a complete task dedicated to donor coordination and financing of local action. A first step has already been undertaken by creating the Covenant Grant Agreement, which seeks to support capacity building in local authorities, SEAP development and implementation including the setting-up of investment plans and local financial facilities as well as the creation of lasting partnerships between local authorities in the EU and in the ENPI region.

Solar park Rickelshausen near Friedrichshafen.
Photo: CIUDAD Supporting Mechanism.



What sources has Friedrichshafen identified to finance the development and implementation of its SEAP?

Dr. Tillmann Stottele,
Head of the Department for Environment
and Nature Conservation of the City of
Friedrichshafen
/Germany/

First of all, this is done by investments which have been planned in the city's budget to maintain or refurbish existing buildings and/or to develop new construction areas and the respectively required infrastructure. Our public utility company is also investing considerable sums in the modernization of the public power supply, local heat, renewable energies and public transport.

Apart from that, we would also like to have support from the EU with specific financing mechanisms so we can put the defined energy action plans into practice; actually, we think they are absolutely necessary in view of the future tasks to be fulfilled by the cities and municipalities – also as a consequence of EU legislation.

The City of Friedrichshafen, which took the overall responsibility for helping Polotsk and Salé to join the Covenant of Mayors, has also decided to become part of this ambitious European initiative and signed the Covenant in September 2011.



What are the City's next actions, which concrete step/investment is planned?

Ms. Anastasia Adamovich,
Head of Planning and Economy Department of Municipal
Unitary Enterprise "Housing Maintenance and Utilities
Board of the City of Polotsk"
/Belarus/

Our next step is to implement what has been planned. Our Sustainable Energy Action Plan includes a list of specific actions to be conducted, and we should not forget that certain actions have already been implemented by the City of Polotsk. In ad-

dition to that, in May 2012, we installed LED street lights in the central avenue of the city, which was a pilot action financed from the SURE project budget.

Mr. Mohammed Chahri,
Engineer, Head of Urban Planning and
Programming Department, City of Salé
/Morocco/

The concrete actions to be carried out in Salé are:

- Implementation of the pilot action;
- Updating of the city's development plan to integrate SEAP results;
- Integration of photovoltaic panels in some commercial projects whose construction are on their way (municipal media library, cultural centre, etc.);
- Introduction of LED technology and/or other highly efficient technologies in public lighting;
- Mobilization of the necessary funds to concretize SEAP results.

The City of Salé is working on introduction of LED lighting all the way through the new tramway route.



CHAPTER 5/ WHAT ARE THE SEAP PILOT ACTIONS?

Out of the SURE project budget, 40 000 EUR was earmarked to finance a pilot SEAP action in Polotsk and Sale.

Here is what the cities decided to use this money for:



Mr. Nouredine Lazrek,
Mayor of the City of Salé
/Morocco/

Our pilot action consists of supply and installation of an 8KWc photovoltaic field on the roof of the city's indoor sports centre. Main objective of this pilot action is to raise awareness of all local stakeholders, from civil society to private and public operators. This pilot action will demonstrate how to efficiently make use of city's natural resources by using renewable energy in urban areas.

Approximate cost of this pilot action equals to 32 800 Euro. The remaining sum – a little over 7 000 Euro – will be used for the supply and installation of an awareness raising panel that will display the amount of electricity produced by the installation per hour, per day, and per year. The panel will mention that the facility has been funded by the EU and will explain the main objectives of the SURE project.

It should be noted that the sports centre where the photovoltaic facility will be installed has been recently rehabilitated, and its day-to-day management is taken over by a special depart-

ment in the city council. The sports centre is used for hosting local, national and international sports activities. An EU-funded photovoltaic facility on its roof will help us to transmit the ideas of European cooperation in sustainable energy and climate protection to our citizens.

Indoor sports centre in Salé. ↓





Mr. Aliaksandr Pazniak,
Mayor of the City of Polotsk
/Belarus/

Our pilot SEAP action is the installation of high efficiency LED street lights in the main avenue of the city, Frantsysk Skaryna Avenue. Not only is LED lighting an environmentally friendly solution; it is also a very profitable investment. LED lights use only 10% of the energy consumed by incandescent lights, their lifetime is over 50 times longer, and their maintenance is significantly cheaper. With 40 000 EUR out of the SURE project budget, we decided to purchase 75 LED lights and install them along the Frantsysk Skaryna Avenue, which is more than 2 km long and serves as a promenade both for citizens and tourists. New street lights are accompanied by an information board with some facts about the installation's energy saving potential and an indication that this pilot action has been financed within an EU-funded project.

Other alternatives for pilot actions included installation of a solar photovoltaic facility or a solar thermal facility on the roof of a public building, as well as a biomass facility in a public sauna. Although these alternatives had greater energy saving potential, we decided to go with the LED lighting, mainly for visibility reasons. Forty thousand euro is not a huge sum in the context of municipal housing; with this money, we cannot drastically

reduce our energy consumption at one stroke. However, what we can do is invest this money into a highly visible novelty that will boost green thinking among our citizens and guests and will demonstrate that Polotsk is committed to the principles of sustainable urban energy.

Frantsysk Skaryna Avenue in Polotsk.
Photo: Sergey Plytkevich



The City of Polotsk is interested in adopting methods of architectural lighting used in Murcia in order to accentuate the beauty of its major attraction, St. Sophia Cathedral, at night time in the most efficient way possible.



CHAPTER 6/ ENERGY BENCH- MARKING OF THE FOUR PARTNER CITIES

SURE partner cities proved to have fruitful cooperation, despite great difference in size, geographic location and climate.

Is it possible to compare these four cities in terms of their energy policies and SEAP targets?



Dr. Tillmann Stottele,
Head of the Department for Environment
and Nature Conservation of the City of
Friedrichshafen
/Germany/

Cities that have signed the Covenant of Mayors worldwide vary in size from small villages to major metropolitan areas such as London or Paris. Despite obvious differences, each of them commits to similar objectives, so it might be interesting to compare various Covenant signatories in terms of their sustainable urban energy and energy efficiency efforts and achievements, based on the information gathered while developing the baseline emissions inventory. In the following table, we decided to take four partner cities of the SURE project as an illustration of what conclusions can be made from the selected data.

Looking at the geographical location of the partner cities, we have Polotsk as a middle size town with 80,000 inhabitants in the east of Europe with a fresh climate, Friedrichshafen with almost 60,000 citizens in Central Europe with a temperate climate, and bigger cities Murcia and Salé in the south of Europe with 440,000 and 900,000 inhabitants respectively, both characterized by a warm climate. Salé is the most compact and fast growing city of the quartet, with almost 8,000 inhabitants per square kilometer, whereas Murcia has the widest expanse with the lowest popula-

tion density.

Climate as well as area and economic structure influence the final energy consumption of the four cities significantly. Friedrichshafen and Polotsk have the highest consumption per capita, mainly due to the need of industry, the share of which equals to about 45% of the total energy consumption. In the widespread capital of the south Spanish region of Murcia, traffic consumes nearly 50% of the final energy. Municipal buildings and facilities require in general not more than 5%, except for the Belarusian city of Polotsk with an exceptional high proportion of public buildings (16%). The low consumption per capita in Salé is partly due to the high percentage of new inhabitants in undeveloped settlements as it is typical for many fast growing agglomerations in the South. These facts are also expressed in the electric annual consumption of public lighting and the number of units of streetlights per capita. These figures are closely related to the size of the city area and the population density: Murcia, which is characterized by the largest area and lowest population density, has the highest consumption, followed by Friedrichshafen. Salé

and Polotsk, although characterized by the lowest consumption, still have a high potential for energy savings.

In relation to climatic conditions the contribution of renewable sources to energy supply is absolutely underdeveloped, especially in the South. Friedrichshafen's main source of renewable energy is hydropower purchased from the nearby Alps. Primary sources of production in the area of the city are wood and biofuel – just like in Polotsk. Murcia produces most of its low part of renewable energy with wind and hydropower, while the primary origins of the still neglected amount of renewables in Salé are photovoltaic and solar heat. In total, renewable energy has a considerable proportion only as a source of electricity; in Friedrichshafen, its share is about 50 % thanks to the neigh-

Influence of the landscape on sustainable urban energy: the share of renewable energy in Friedrichshafen is about 50% due to the proximity of the mountain range of the Alps.
Photo: Achim Mende



bourhood of the mountain range of the Alps, in Murcia its share equals to one third, and in Polotsk – to a quarter out of power-heat-integration. Still, most of the energy consumed in the four SURE cities comes from oil derivatives and natural gas.

Looking at the SEAP targets at the end of the table, we see how ambitious the four SURE signatories of the Covenant are in terms of reduction of CO₂ emissions, as well as in energy saving and energy efficiency goals. Murcia and Salé want to greatly increase the amount of renewable energy that is produced locally and imported out of the surrounding region. And all cities are willing to invest a considerable amount of public money for reaching these targets until 2020.

Influence of the climate on sustainable urban energy: cold and snowy winters in Polotsk account for greater energy consumption for heating purposes, while also preventing the citizens from using bicycles all year round.



Energy benchmarking of the partner cities

	FRIEDRICHSHAFEN	MURCIA	SALÉ	POLOTSK
Latitude	47°39'3"N	37°59'10"N	34°02'N	55°29'N
Longitude	9°28'32"E	1°7'49"W	6°48'W	28°48'E
Elevation above mean sea level [m]	400 - 500	43	10	133
Average temperature [°C]	9.1	17.8	17	6.3
Annual precipitation [mm]	1009	301	560	796
Area of the city [km²]	70	882	127	40.3
Land use [%]				
Settlement- and traffic area:	28.7	13	70	91
Agriculture and pomiculture:	51.1	17	1	1.4
Forest:	19.3	23 (protected)	14	7
Rural horticulture and farmland:	0	47	0	0
Others:	0.9	0	15	0.6
Population	58,800 (2010)	441,345 (2010)	903,485	83,632 (2010)
Population density [inhabitants/km²]	840	500	7,900	2,054

Energy benchmarking of the partner cities (with industry)

	FRIEDRICHSHAFEN	MURCIA	SALÉ	POLOTSK
Final energy consumption total [in MWh], (base year)	1,785,687 (2010)	7,475,170 (2007)	2,148,281 (2008)	1,517,718 (2010)
Final energy consumption per capita [in MWh]	30.37	16.94	2.4	18.33
CO ₂ emissions [annual tons per capita]	11.0	6.42	0.97	3
Final Energy Consumption: Sector Transport [%]	23.2	48.2	25	10
Final Energy Consumption: Sector Industry [%]	39.7	14.7	33	45
Final Energy Consumption: Sector Residential [%]	25.7	16.1	30	24
Final Energy Consumption: Sector Services [%]	8.9	19.5	7	5
Final Energy Consumption: Sector [%] Municipal buildings and facilities	2.4	1.5	5	16

Energy benchmarking of the partner cities (with industry)

	FRIEDRICHSHAFEN	MURCIA	SALÉ	POLOTSK
Renewable Energy total [MWh] (without power-heat-integration)				
Production	70,013	25,035	361	0
Purchase	267,000	0	0	0
Renewable Energy electric [MWh] (without power-heat-integration)				
Production	9,704	15,231	300	0
Purchase	267,000	0	0	0
Renewable Energy heat/cooling [MWh] (without power-heat-integration)				
Production	33,107	0	0	28,240
Purchase	0	0	0	23,298
Renewable Energy total (sources of production in the area of the city) [%]				
biofuel	29.2	0	0	37.8
biogas	5.5	4.3	0	0
biomass	0	0	0	0
geothermal	5.4	0.62	0	0
hydropower	0.1	43.5	0	0
landfill gas	2.3	0	0	0
photovoltaic	7.3	6.5	83.1	0
sewer gas	5.8	0	0	0
solar heat	6.3	0	16.9	0
veg-oil	4.0	0	0	0
wind power	0	45.1	0	0
wood	34.2	0	0	62.2

Energy benchmarking of the partner cities (with industry)

	FRIEDRICHSHAFEN	MURCIA	SALÉ	POLOTSK
Intermediate energy: oil derivatives [%]	38.3	56.7	76	13
Intermediate energy: Other fossil energy [%]	0	0	0	2
Intermediate energy: natural gas [%]	29.2	5.9	6	37
Intermediate energy: Renewable energy [%]	1.5	0.4	0	8
Intermediate energy: Heat/cooling [%]	2.1	0	0	28
Intermediate energy: Electricity [%]	28.9	37	18	12
Electricity (sources) [%]				
renewable	50.06 ¹⁾	32.3	7.9	0
nuclear	19.53 ¹⁾	20.6	0	0
power-heat-integration		0	0	28
coal		8.5	55	0
other fossil energy	30.41 ¹⁾	(fuel/gas) 37.5	(fuel/gas) 37.1	72

¹⁾ without industries

Energy benchmarking of the partner cities (without industry)

	FRIEDRICHSHAFEN	MURCIA	SALÉ	POLOTSK
Nr of units of streetlights (per capita)	8,314 (0.14)	95,888 (0.22)	16,000 (0.02)	6,051 (0.07)
Electric annual consumption of public lighting in MWh (per capita)	3,315 (0.057)	55,000 (0.125)	23,381 (0.026)	2,100 (0.025)
Final energy consumption of the municipal buildings and facilities in MWh (per capita)	33,298 (0.56)	85,525 (0.19)	16,873 (0.018)	247,657 (3.00)

S.E.A.P TARGETS (2020)				
	FRIEDRICHSHAFEN	MURCIA	SALÉ	POLOTSK
Reduction of CO ₂ emissions [%]	20	40	20	20
Total Energy Saving [%]	20	20	20	20
Energy Efficiency [MWh/year]	130,000	314,375	1,029,479	825,400
Renewable Energy				
Production [in MWh]	90,000	196,016	77,548	33,888
Purchase [in MWh]	101,330	1,145,300	655,365	30,499
Municipal investment costs for reaching these targets 2011-2020 [in mill. Euro]	27	38 202 (tramway)	21 9,5 (tramway)	54

CONCLUSION

What do you think are the benefits of placing climate and energy considerations at the top of the urban planning agenda?



Mr. Andreas Brand,
Mayor of the City of Friedrichshafen
/Germany/

Today's urban planning sets the course for the energy consumption in the next decades. The municipal area development scheme in Germany allows us to make specifications for energy supply in new construction areas and industrial parks as well as for the mobility of the future. Energy efficiency, avoiding CO2 emissions, and using renewable energies as main energy sources are our central principles.

Promoting renewable energies makes sense - both ecologically and economically. The cities become more independent from fossil fuels and less dependent on expensive energy imports. At the same time, we are creating the basis for increased energy efficiency in existing buildings, business, and traffic. The money saved this way can be invested in the region. In addition, the refurbishment of existing buildings and innovative solutions for new buildings will create jobs for trade and business in Friedrichshafen.

Moreover, we are making sure that we live up to the current demographic trends and create a city of short transport paths. With a state-of-the-art city bus system which is coordinated in a close network with rail, ship and air traffic as well as a compre-

hensive cycling approach, we promote environmentally friendly mobility which avoids noise, emissions, and energy consumption.

Our citizens' quality of life is improved by all these approaches.

The City of Friedrichshafen aims to improve the quality of life of its citizens by stimulating energy efficiency, encouraging the use of renewable energies and promoting environmentally friendly mobility.





This publication is financed
by the European Union



Photos provided by:

City of Murcia
City of Salé

City of Polotsk
City of Friedrichshafen

This document has been produced with the financial assistance of the European Union.
The contents of this document are the sole responsibility of the City of Friedrichshafen and
can under no circumstances be regarded as reflecting the position of the European Union.