imagine

# Low-Energy City Policy Handbook

## Part A

The city of the future, the future of the city

energycities
WHERE ACTION & VISION MEET

European Union
European Regional Development Fund

INTERREG IVC

# CONTENTS

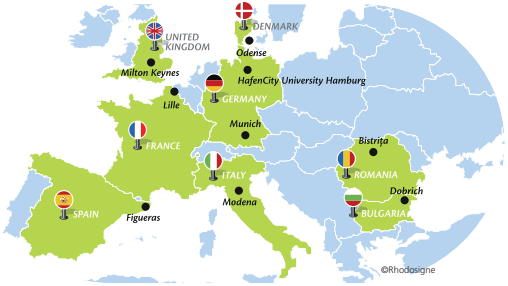
# IMAGINE...LOW ENERGY CITIES

Energy Cities started the *IMAGINE initiative* in 2006 to bring together cities and various stakeholders involved in urban energy issues. IMAGINE focuses on long-term perspectives and visioning approaches to energy and territory.

Although an increasing number of cities are committing to achieving the EU objectives, notably through the Covenant of Mayors, they are also facing several obstacles. One of them is the difficulty for cities, their citizens and stakeholders to imagine, evaluate and accept the changes that are needed. Helping cities overcome such obstacles is the objective of the IMAGINE initiative. It is a platform for foresight, collaboration and exchanges, leading to action and change.

Between 2012 and 2014, IMAGINE benefitted from the support of the INTERREG IV programme through a project called **"IMAGINE... low energy cities"**.

This project gathered 10 partners: Energy Cities - coordinator, HafenCity University - academic partner, and 8 pilot cities: Bistrița (Romania), Dobrich (Bulgaria), Figueres (Spain), Lille (France), Milton Keynes (United Kingdom), Modena (Italy), Munich (Germany), Odense (Denmark).




These local authorities have committed to involving local stakeholders in co-building their cities' **Local Energy Roadmaps 2050** thanks to participatory approaches.

**More information**

Project website: www.imaginelowenergycities.eu
IMAGINE Resource Centre: www.energy-cities.eu/imagine

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INTERREG IVC
www.interreg4c.eu
*The Interregional Cooperation Programme INTERREG IVC, financed by the European Union's Regional Development Fund, helps Regions of Europe work together to share experience and good practice in the areas of innovation, the knowledge economy, the environment and risk prevention.*
*EUR302 million is available for project funding but, more than that, a wealth of knowledge and potential solutions are also on hand for regional policy-makers.*

# WHO IS THIS HANDBOOK FOR?

**This handbook is aimed at decision makers in European local authorities searching for new ways to work towards achieving low energy cities.** It is intended to give inspiration and practical advice to elected political leaders as well as civil servants to run their own energy transition process at the local level.

There are two ways to read this handbook.

**In Part A**, it explains the way local authorities organise themselves to start and run a political and organisational process to set sustainable energy policies. This part of the handbook presents the results of the development of Local Energy Roadmaps 2050 in the eight IMAGINE pilot cities.

**Part B** provides insights on citizen and stakeholder involvement at city level, answering the question "how does a city, including all its components, manage to change its energy system?".
Indeed, the role of local authorities in tackling climate change and energy issues is essential, not only as important players, but mostly as coordinators of a whole mix of stakeholders. This part goes behind the scenes and gives details on the making of local authorities' efforts in favour of the energy transition.

*Who is this handbook not for?*

*What you will not find in this handbook are answers to technology-related questions. You will not learn about kWhs, energy production, energy management, building efficiency or "smart technologies".*


Too often, decisions are made behind closed doors, or are made because one didn't know better, or because "it has always been done this way". This handbook highlights the results of three years of interregional exchange of experiences. You will find processes that have been experimented, feedback on their implementation and advice on how to carry them out. You will find ideas for new forms of political practises, communication and participation processes, and inspiration to involve people and help them work together.

# LOCAL VISIONS AND ROADMAPS

## The energy transition

The energy transition is far more than switching from one energy source to another. It is the pathway towards a system based on low energy use, high energy efficiency and local and renewable energy sources. From a European perspective, this energy transition is a shift from a system dominated by finite (fossil and fissile) energy towards a (renewable) flow energy-based system. Beyond the pure energy aspects, such a transition is directly connected to many other societal aspects such as economic prosperity, jobs and working conditions and of course quality of life.

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### A transition to what?

We used to think in terms of *MegaWatts* and we are now starting to think in terms of *NegaWatts*. We used to consider energy only as gas, electricity and oil supply, we now think in terms of final needs (heating, cooling, lighting, mobility and leisure). Vertical, centralised energy systems are starting to make room for (more flexible and resilient) horizontal, decentralised and interconnected multi-energy systems based on concepts such as the Internet. Energy distribution networks will have to become smart networks capable of handling the collection of dispersed energy production. Energy used to be produced here and consumed elsewhere; we are starting to consider both simultaneously and in an integrated way at the scale of a building, a neighbourhood, a village or a city. While energy used to be in the hands of a few big concerns; now, a wide variety of players is emerging and consumers are becoming aware and active citizens. Central governments used to play a predominant part, but the role of local authorities will become decisive.

## A transition for what?

The energy system we have inherited was shaped at a time of abundant and cheap energy. The energy transition addresses various dysfunctions in our society, as well as in our urban, peri-urban and rural spaces. Employment, the economy, poverty, social inequalities, the use of natural resources, air quality, food, lifestyle and consumption patterns all have direct and indirect links to the energy system.

The energy transition is driven by the necessity to decrease the energy vulnerability of the cities and of their inhabitants. This demands a fundamental transformation of our societies; in fact, a new civilisation.

The energy question is more a cultural than a technical one. Addressing energy issues at all levels will transform constraints into as many opportunities. New economic activities will have to be found in order to create new jobs and reduce poverty, for example through energy savings and the development of local energy production. Cities and regions have to innovate to invent an energy future that does not exist yet, except as experiments, and have the potential to make it happen.
It is not, therefore, energy *strictly speaking* that we are interested in, but rather a way of building, transforming and leading a city towards a low energy model, that is a more autonomous, responsible and less vulnerable city.

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# The city of the future

What will the city of the future look like? No one knows, but everyone has their own idea, their own dream!

IMAGINE is not just another typical foresight exercise. Taking the opposite view against scientific scenario planning, the IMAGINE partners have pictured the city they would like to live in. This is the essence of the backcasting method: you start from a dreamed, ideal situation and then think about the possible ways to achieve it.

During one of the IMAGINE seminars, 10 characteristics of the city of the future have emerged.

| | | | | |
|---|---|---|---|---|
| Safety and resilience | Efficient networking | Participation | Prosperity | Learning |
| Health | No waste | Sharing | Culture | Innovation |
| IMAGINE.. | | the city of the future | | |

This translates into a picture of the city and activities taking place.

Life in the city of the future takes place around shared spaces (gardens, public places, workshops). People go around using public transports, biking, walking or car-sharing while goods are carried out by cargo-bikes, trains and ships.

Schools integrate and are integrated in lifelong learning. Education aims at raising thoughtful citizens. Much time is spent on discovering and experiencing nature and one's talents. Children have wide possibilities to experience the city on their own.

Working time[1] is reduced to a few hours. This gives time for non-paid activities such as taking care of the elderly, young or disabled, leisure, housekeeping, cooking, community activities, etc.

Energy is produced locally from renewable sources (solar, wind, biomass, biogas, etc.).

Food is produced locally. The agriculture sector is growing with new players and a new philosophy. Urban farming experiences a renaissance. Dietary habits give a large part to vegetarian diet.

Consumption goods are characterised by green technologies and produced locally. Most services are dematerialised.

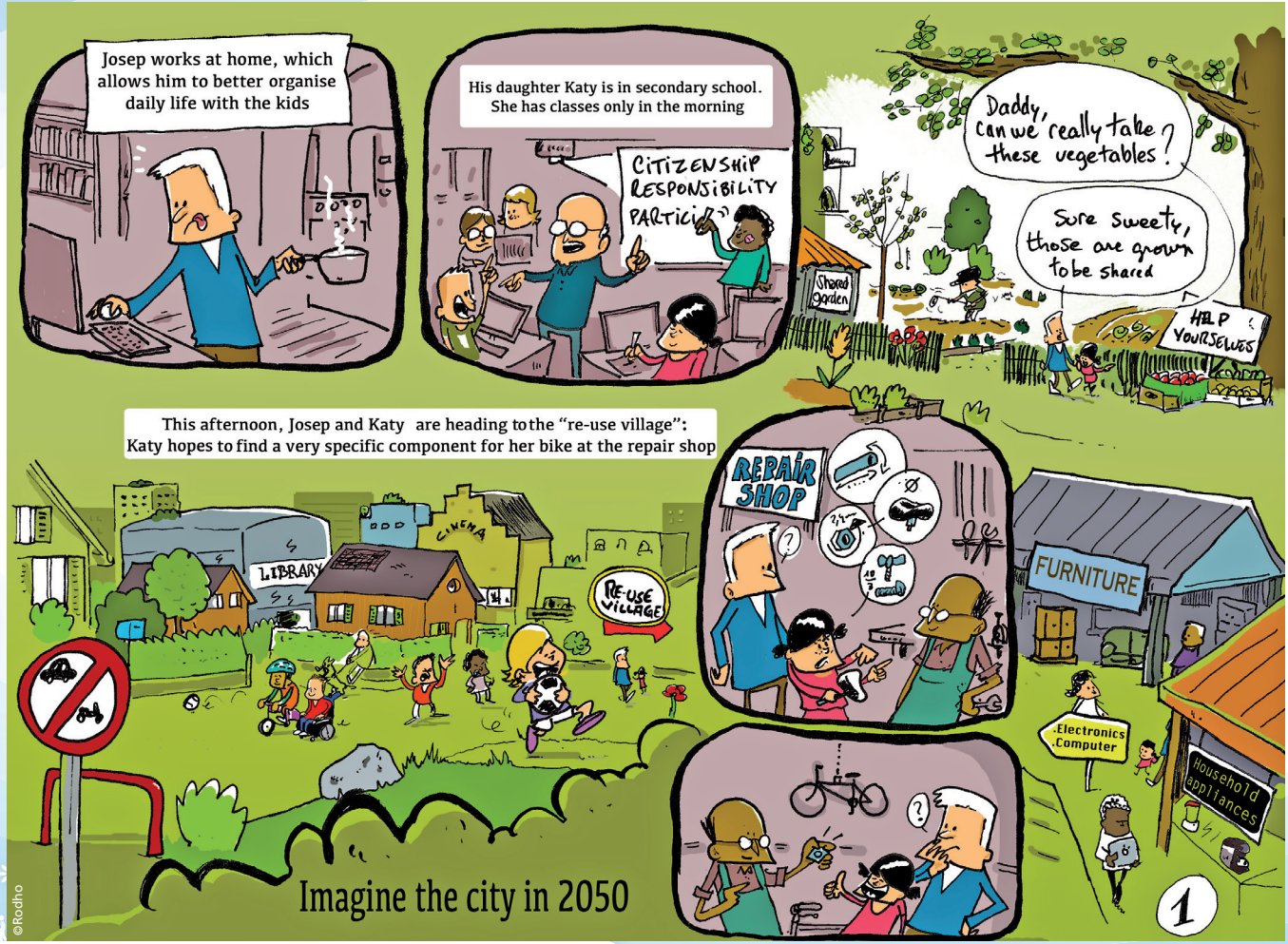
Circular economy allows for re-using resources and goods and maximises synergies amongst local economic players.

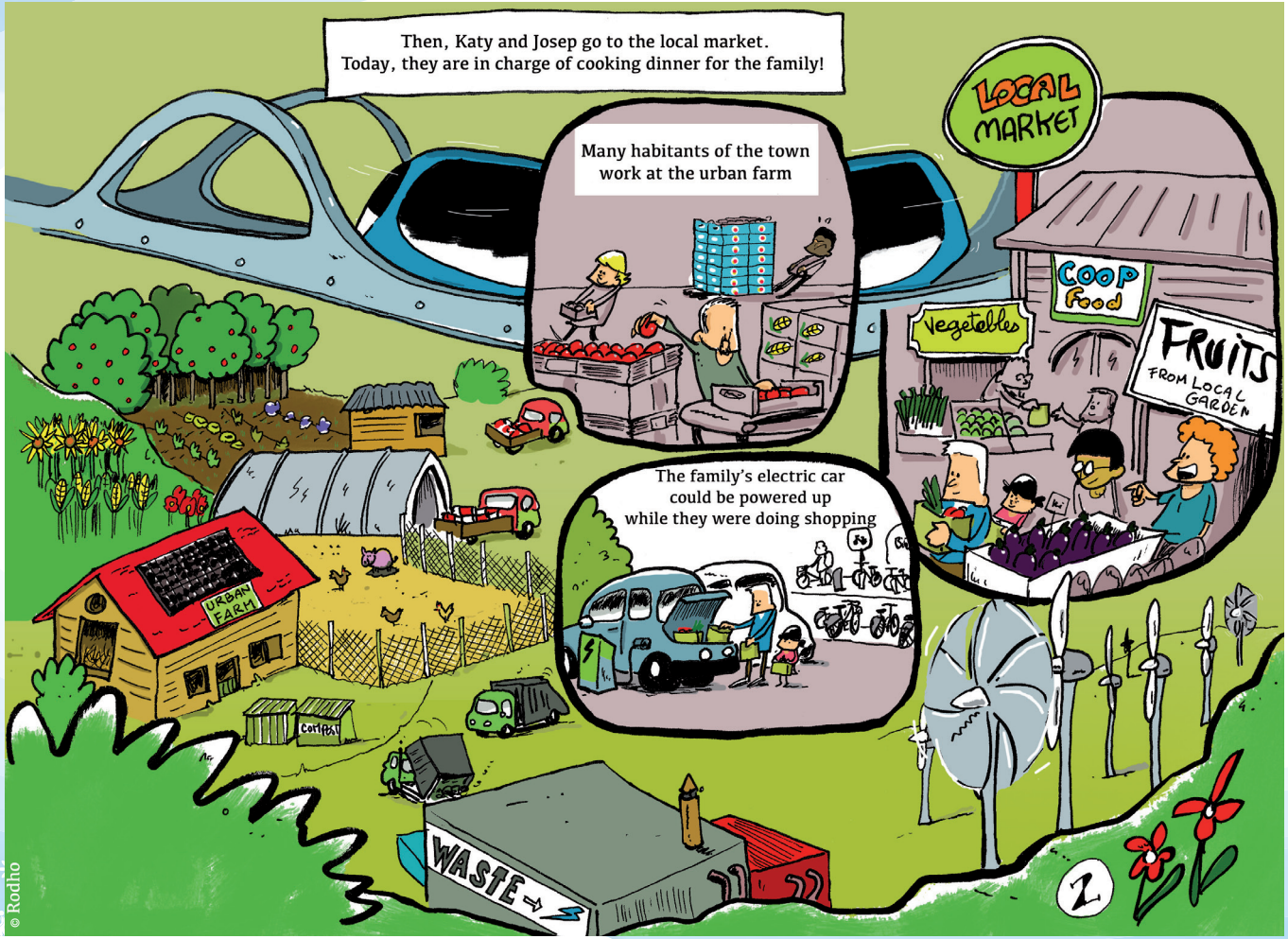
Nature has found its place in the city. Public space is used as meeting place and helps develop a sense of community.

Governance processes are open to all citizens, allowing communities to experience and apprehend social rules & values in a new way.

*"We always ask ourselves what world we will leave to our children. But we should also ask ourselves what kind of children we will leave to this world. "*
*Pierre Rabhi*[2]

1-Working time, here, refers to the period of time spent on paid occupational labour.
2-Vers la sobriété heureuse, éd. Actes Sud, Arles, 2010.


Josep works at home, which allows him to better organise daily life with the kids
His daughter Katy is in secondary school. She has classes only in the morning
CITIZENSHIP
RESPONSIBILITY
Daddy, can we really take these vegetables?
Sure sweety, those are grown to be shared
Shared garden
HELP YOURSELVES
This afternoon, Josep and Katy are heading to the "re-use village": Katy hopes to find a very specific component for her bike at the repair shop
LIBRARY
CINEMA
RE-USE VILLAGE
REPAIR SHOP
FURNITURE
.Electronics
.Computer
Household appliances
Imagine the city in 2050
1
©Rodho


Then, Katy and Josep go to the local market.
Today, they are in charge of cooking dinner for the family!
Many habitants of the town work at the urban farm
LOCAL MARKET
COOP Food
Vegetables
FRUITS FROM LOCAL GARDEN
The family's electric car could be powered up while they were doing shopping
URBAN FARM
COMPOST
WASTE
2

## What's a local energy roadmap?

Strictly speaking, a roadmap is a detailed plan to guide progress towards a goal. The European Commission already issued specific roadmaps on energy, such as the Energy Roadmap 2050[1] or the Roadmap for moving to a low-carbon economy in 2050[2]. Unfortunately, these roadmaps do not take into account the role of local authorities nor do they tackle the energy approach from a decentralised perspective.

While the cities committed to the Covenant of Mayors[3] are sending a clear signal by taking action to achieve (and go beyond) the 3x20 EU objectives, local authorities are starting to develop their own energy roadmaps in order to prepare the transition towards a sustainable energy system.

**Co-building a vision of the city?**

A long-term vision with a time horizon of one generation (2040-2050) gives a time frame to local authorities' present and future actions. It also legitimises the decisions that are made to change the current development course, a process that implies changing habits and mind-sets at all levels. A long-term vision also enables local players to commit to –and identify with– a territorial project.

A local energy roadmap links vision and action. It allows for defining responsibilities between the different stakeholders and for setting goals, actions and milestones. It pictures the organisation of the process and gives a soul to a Sustainable Energy Action Plan[4] as a qualitative counter-part.

A roadmap is not an official strategy of the municipality, but, a collaborative document, a reference for all local players. Therefore, the roadmap should be non-legal and non-political in order to transcend political differences and have a transversal aspect. The procedure, however, is similar to a legal document.

A local energy roadmap should:

- Include the vision that has emerged from the participatory process;
- Present the milestones towards achieving this vision;
- Define the priorities with regards to the local situation;
- Give details on how the roadmap is going to be conducted and implemented;
- Explain its own role and status within the local policy system;
- Picture the next steps.

1-http://ec.europa.eu/energy/energy2020/roadmap/index_en.htm
2-http://ec.europa.eu/clima/policies/roadmap/index_en.htm
3-www.eumayors.eu
4-Developed in the framework of the Covenant of Mayors

## Munich on the way to a 2000-Watt society

**Munich, Germany I 1.4 million inhabitants**

### Context

In 1998, Munich's city council adopted "Perspective Munich", a long-term flexible development framework for the city and invited all interested parties to cooperate in developing the city. Two of the founding principles are:

- to develop environmental standards and safeguard natural resources using energy in a sustainable and eco-friendly way;
- to create future-oriented residential areas through inner-city development in order to limit urban sprawl and ensure Munich stays "compact, urban, green".

In 2001, the city council adopted ecological guidelines ("Leitlinie Ökologie") which provide a strategic framework with specific goals and responsibilities in five fields of action: energy supply, lifestyles and health, land use and the environment, consumer behaviour, buildings, urban planning and mobility. In 2013, the fields "climate change" and "climate protection" were added.

In December 2008, the City of Munich adopted ambitious $CO_2$-emission reduction targets for 2030: a 10% reduction every 5 years and a 50% reduction per capita - compared to the reference year 1990. Then the "Integrated Action Programme for Climate Protection in Munich" was developed to ensure that the targets are met.

In 2007, the mayor founded a local alliance: "Munich for Climate Protection", a networking platform for all local public and private players engaged in climate protection.

Munich set an ambitious target for its municipal utility company (Stadtwerke München GmbH): by 2025, it should produce enough green electricity to meet the electricity demand of the whole city -at least 7.5 billion kWh per year and aims at using only renewables to feed the district heating system by 2040.

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## Vision

The vision for Munich in 2050 is to be well on track towards a 2000-watt society, with three main objectives:

- Reducing the energy consumption to 2000 watts/inhabitant;
- Reducing fossil fuel consumption to 500 watts/inhabitant;
- Reducing $CO_2$ emissions to 1 tonne/inhabitant/year.

At the same time, a safe, sufficient, eco-friendly and affordable energy supply must be provided with three main goals:

- Limiting climate change to 2° Celsius;
- Ensuring a global equity in resource allocation;
- Providing long-term security of energy supply.

Intense discussions with stakeholders from the administration, NGOs, businesses and industrial companies show that this vision is indeed realistic.

The following principles substantiate the 2050 vision and the local energy roadmap:

- In 2050, most of the existing buildings have low-energy-standard. New buildings are to be built according to passive house or energy plus standards.
- 100% of the electricity and heat demand are covered by renewables.
- Intelligent mobility concepts have improved the quality of life in Munich; public transport is emission-free and affordable.
- Citizens have adopted sustainable consumer behaviour: "use rather than own" is common practice.
- Munich is the most attractive location for sustainable businesses. The «Green Economy» business park has become a leading business location in Europe with 100% recyclable products.
- Munich creates a "Future Council": an independent advisory board supported by the scientific community. The Council serves as a politically-independent think tank.

## Roadmap

The elements of the local roadmap 2050 were drafted in cooperation with around 60 stakeholders. First, they were explained the concept of a 2000-Watt Society, and to the existing climate and energy targets and strategies of the city.

Then, interactive workshops were organised by a sustainability consultant offering the opportunity to collect ideas about the 2000-Watt Society by 2050 in Munich. Participants focused on four key areas: energy production and distribution, buildings and households, industry and commerce, and mobility. The topics were discussed in four parallel working groups focusing on three important levers towards a 2000-Watt Society: overall change in consumer behaviour, energy savings through efficiency gains, and meeting the remaining energy demand with renewables.

For each key area, milestones for the years 2050, 2040, 2030 and 2020 were defined by means of the backcasting method. The idea behind this method is to encourage a visionary way of thinking. The backcasting method often achieves more ambitious and innovative milestones than a forward-planning approach.

The detailed milestone plan represents a solid basis for further discussions about a local energy roadmap 2050 for Munich. As a result of the local IMAGINE Forum, it seems essential to extend the focus beyond those four areas.

## Partnership

The "2000-Watt Society" vision is a result from the previous participatory process when the different action fields of the environmental guidelines were discussed with the citizens.
In the preparation of the local energy roadmap 2050, around 60 stakeholders participated from the local administration, businesses, NGOs and the academic sector. Representatives from the business sector prepared their contributions to a low-energy society and these were discussed with the other stakeholders.

## Bugdet

ca. €150,000 for the participatory development process of the Environmental guidelines (2010-2011)
€27,000 for the Roadmap activities (preparation, moderation and assessment)

## Next steps

No formal decision has been taken yet regarding the implementation of the roadmap. However, the Department of Health and Environment will evaluate the recommendations for the implementation of the roadmap and is planning to present the results to the city council in early 2015.
The main recommendations to turn the roadmap activities into a visible, consistent and continuous process are the following:

- Creating a "Future Council", notably aimed at implementing the 2000-Watt Society vision in Munich,
- Setting up a communication strategy for the implementation of the roadmap: a website and a platform for stakeholder contribution are foreseen.
- Launching a stakeholder consultation process for each key area covered. The results of the Forum and the next steps have first to be discussed in existing work groups of the City of Munich (especially the Ecological Guidelines, the "Integrated Action Program for Climate Protection in Munich and the Local Climate Alliance).

# Munich's approach to the energy transition

*by HafenCity University - Hamburg*

## Cross-departmental integration

The environmental guidelines of Munich's urban development strategy *(Leitlinie Ökologie)* define the strategic approach and overall goals of the city's energy transition process. Furthermore, the local authority developed an integrated programme for climate protection *(Integriertes Handlungsprogramm Klimaschutz in München)* including processes of direct communication and cooperation between different municipal departments. This led to cross-sectorial and cross-departmental integration of measures.

## Renewable energy generation and energy conservation

Munich's approach to the energy transition focuses on the reduction of $CO_2$ emissions by increasing energy conservation and renewables. Measures are notably defined in the integrated programme for climate protection. They are included in the urban development strategy and directly connected to newly established forms of cooperation among different players.

## Facilitating local initiatives

The local administration acts as a driver of local transition activities because of the (financial) support it provides to third-party projects and initiatives such as the "Munich For Climate Protection" Alliance *(München für Klimaschutz Allianz)* composed of the local authority and stakeholders. Empowering stakeholders with respect to a shared long-term orientation benefits the energy transition process.

## Strategic framework of the energy transition

*Leitlinie Ökologie*, Munich's environmental guidelines, sets a frame of objectives, strategies and goals which are specific to certain fields of action (e.g. energy supply, buildings, urban planning and mobility). Qualitative objectives prevail and key projects to illustrate the strategies are detailed.

## Planning the energy transition

The purpose Munich's *"Integrated action programme for climate protection"* is to wrap up the activities of the municipality and to put the objectives of the guidelines into operation. Measures are developed in cross-departmental cooperation and are combined in packages based on sustainability aspects and their cost-benefit relation. The climate protection programme that is reissued on a regular basis attributes the packages to fields of action, allocates resources and sets internal directives.

## Project development and implementation

Munich for Climate Alliance *(München für Klimaschutz Allianz)* aims at developing and implementing climate mitigation projects in cooperation with local players. After a project planning phase, the alliance has developed with the "Munich for Climate Protection Club" and set stronger requirements for members: they have to produce an internal $CO_2$ balance and to engage in at least one $CO_2$-reduction project. The projects are of various kinds and focus, for instance, on informational, awareness-raising approaches as well as agreements on construction standards.

## Evaluation and learning

The city's climate protection report comprises a description of the different fields of action, sub-topics and measures taken, as well as quantification of the $CO_2$ emission reduction per capita. It does not take into account the results from third-party funded or subsidised measures or campaigns.

| OPPORTUNITIES: Munich. | | Activity | Opportunity | OPPORTUNITY: promoting participation processes<br>Recommendation |
|---|---|---|---|---|
| STRATEGIC ACTIVITIES | Problem structuring | | | Make problem structuring more participative in order to align sectors and stakeholders to collectively approved problems and establish the basis for integrated solutions |
| | Envisioning | | | Develop a more inspiring vision to mobilize actors. A fixed timeframe could help with improving vision's effectiveness |
| | Exchange of perspectives | | | Establish a participation platform to enable different stakeholders to participate in vision development and the definition of goals and strategies |
| TACTICAL ACTIVITIES | Thematic visions | | | Promote public debate on thematic visions and strategies |
| | Agenda | – | | Develop a transition agenda which integrates goals, guiding principles and specific actions |
| | Networks | | | Involve existing actor networks in participatory goal, plan and project development |
| OPERATIONAL ACTIVITIES | Experiments | | | Establish a close collaboration between local administration and developers in order to make experimental projects more flexible and revisable |
| | Implementation | | | Promote participatory project implementation and awareness raising. The great variety of measures could be more open for participation in order to reach shared implementation actions |
| REFLEXIVE ACTIVITIES | Monitoring / Evaluating | | – | Keep up current monitoring and evaluation efforts |
| | Adaptation / Adjustment | | | Adapt visions and long-term strategic goals to changing framework conditions. Regularly reflect on political goals and priorities as well as discuss and restructure the problem |

Legend: *Action of a plan* · *Goal* · *Group or network* · *Law* · *Plan* · *Project* · *Study or report* · *Vision* · *No activities* · *Opportunities*

# Modena's vision and roadmap: Combining tradition and innovation

**Modena, Italy I 184,500 inhabitants**

## Context

Modena signed the Covenant of Mayors[1] in 2010, prepared and submitted a Sustainable Energy Action Plan (SEAP) for 2020.
The municipality built on this SEAP to organise open debates and involve different stakeholders with increasing awareness related to sustainability issues.

## Vision

The preparation of the long-term vision of Modena for 2050 raised some challenges: difficulties in involving the local elected representatives in the long run, and in comparing and projecting indicators and numbers into a society that could be completely different.



## Roadmap

The roadmap is set up and monitored by the municipality but it includes actions to be implemented by other stakeholders.
The roadmap was prepared using two complementary approaches:

- The traditional approach: The city's staff (technicians and experts) prepared a document to be approved by the city council.
- Innovative approach: The first phase in the development of the local roadmap was to identify the key stakeholders to be involved. Thereafter, specific meetings, workshops and seminars were organised, targeting different groups of stakeholders. The results were considered when preparing the final document.

Furthermore, a dedicated webpage with a blog was created to collect ideas, allow for technical debates, offering a platform where innovative ideas and possible developers (technical and financial) can meet. The platform evolves and adapts to societal changes. Social networks (Facebook and Twitter) are available as permanent virtual platforms for stakeholder involvement, promotion of events and dissemination of results.

1-The Covenant of Mayors Office is led by Energy Cities. www.eumayors.eu

## Partnership

In Modena, stakeholders are grouped in fairly homogeneous clusters in terms of background, areas of interest, awareness on sustainable energy, etc., in order to achieve the greatest degree of involvement. The following groups were formed:

- Schools and families,
- Research institutions/universities,
- Associations and craftsmen,
- Traders and small and medium enterprises,
- Self-employed workers.

The main result achieved was a fruitful collaboration and synergies among the local stakeholders (institution entities, professionals, private companies, university, etc.).
The main results of the involvement of schools and families are:

- The strong involvement of families upon issues in the fields of climate change, energy efficiency, energy saving, smart solutions, sustainable mobility, water saving;
- Training and awareness-raising of teachers and education professionals;
- Effective collection of ideas and projects;
- Innovative points of view on the city of the future.

Some difficulties were faced in involving small and medium enterprises and professionals that sometimes expressed perplexities regarding the long-term vision and the necessity for them to be more pragmatic and to get answers in the midterm.

## Budget

€7,400 (estimated) for drafting, designing and printing the Local Energy Roadmap 2050
€30,548.52 for two experts to work on the roadmap and handbook
€9,642.50 for organising 4 local forums (incl. coffee break and catering)

## Next steps

The elements of Modena's local roadmap 2050 will be integrated in existing long-term planning tools (Urban Plan, Local Climate Plan, Local Energy Plan, etc.).

The next steps are:

- Monitoring the actions defined in the SEAP to be taken by 2015 and 2020;
- Checking compatibility between actions and programmes defined in the roadmap in the horizons 2030-2040 and 2050;
- Monitoring local activities for urban development, local economic development, new studies and scientific research, technologies applied to the territory, new opportunities for the participation of citizens to sustainable decisions, etc.

# Modena's approach to the energy transition

*by HafenCity University - Hamburg*

## Participation and co-development of projects

The local authority very actively enhances the dialogue among employees of the municipality, citizens, local organisations and businesses. For this, the municipality uses different forms of communication and participation: workshops, forums, newsletters, social networks and websites such as *Rete Civica "MoNet"* have been used to discuss strategies, plans and projects. Furthermore, participatory budgeting (*"via per via"*) is used to allow citizens to suggest, discuss and decide on the city's projects. The municipal staff is satisfied with the contributions to local plans and policies received through public participation. They are willing to integrate local community members in the policy planning and development. It allows for debates and introduction of new ideas and thus innovation into the municipality. However, the overall long-term goals and strategies of the City of Modena are not currently discussed in this way.

## Renewable energy generation, energy efficiency and savings

Modena developed a number of technical measures to enhance the energy transition, focusing on energy generation, improving energy efficiency and reducing energy demand. These measures are defined in the local energy plan *(Piano Energetico Comunale)* and the Covenant of Mayors Sustainable Energy Action Plan of the city. At city level, these measures are integrated in the midterm oriented vision *Modena Energy City*. This has led to the integration of the energy transition into the urban planning, transport and health sectors. Reducing $CO_2$ emissions is also discussed as a measure to improve air quality and therefore public health. Globally, the plans and measures of the local authority regarding energy efficiency and energy savings focus on technical measures for infrastructures and buildings.

## Education and awareness-raising

The energy transition process can be further enhanced by addressing the influence of individual behaviour and consumption patterns in discussions with citizens and stakeholders as well as in municipal strategies and plans.

In Modena there is a long tradition of working with schools. The local authority has developed educational programmes and projects to introduce the topic of energy consumption to pupils. Information materials, especially aimed at teachers and pupils, were developed[2]. Furthermore, Modena implemented the project *"Sole per tutti"* ("Sun for everyone") within which solar panels were installed on the roof of a school. A cooperative of parents, teachers and citizens was founded with the aim to finance the project in cooperation with the local authority. Thus, the energy transition process benefits from the creative combination of technical and educational measures with innovative forms of cooperative project development and financing. This bundle of measures contributes to raising awareness among local citizens and may contribute to long-term changes in people's behaviours and values. Furthermore, it may lead to social and organisational innovations which can further enhance the transition process.

## Strategic framework of the energy transition

*Modena Energy City*

Modena Energy City is a midterm vision which formulates the desired future targeted by the Sustainable Energy Action Plan of Modena. It covers the areas of energy efficiency, energy savings and renewable energy production for 2020. It integrates these energy transition fields into urban planning, transport and health. It defines the overall midterm goals of covering 20% of the city's energy demand thanks to renewable energy sources, reducing local energy consumption and the $CO_2$ emissions by 20% by 2020.

## Planning the energy transition

*Piano Energetico Comunale*

The local energy plan *Piano Energetico Comunale* is a municipal plan dealing with the topics of energy efficiency and use of renewable energy sources at local level. It defines a strategy and a corresponding action plan. The development of measures and the definition of goals are based on an extensive analysis of local $CO_2$ emissions. The plan is legally required by the Italian legislation for every city with more than 100,000 inhabitants. It supplements corresponding plans at regional and national levels.

2-Modena has a network of schools that has been developing educational projects on sustainable energy since 2001.

*Rete Civica "MoNet"*

The *Rete Civica "MoNet"* is a website initiated and operated by the municipality (www.comune.modena.it). It is used to spread information on municipal plans, strategies, measures, projects, etc., and to discuss them with citizens and stakeholders. Furthermore, the local community can introduce topics and suggest projects and measures to the local authority. This website, as well as other communication channels, allows a great part of the local community to be involved in the discussion on the energy transition of Modena.

## Project development and implementation

*Participatory budgeting "via per via"*

*Via per via* conducts a series of meetings which give local citizens the opportunity to decide on how some parts of the public budget will be spent. Citizens can propose, discuss and decide on projects. The topics covered during the meetings are safety, urban maintenance and quality of life.

## Evaluation and learning

The City of Modena developed an inventory of its $CO_2$ emissions which is used as baseline for the evaluation of measures, plans and strategies. The methodology for analysing the so-called *"pressione energitica territoriale"* ("spatial energy pressure") is defined by the Italian national legislation. Municipal plans are regularly checked and updated. Overall, the evaluation focuses on quantifying the influence of plans and (technical) measures on local $CO_2$ emissions.

| OPPORTUNITIES: Modena. | | OPPORTUNITY: promoting goal definition and integration | | |
|---|---|---|---|---|
| | | Activity | Opportunity | Recommendation |
| STRATEGIC ACTIVITIES | Problem structuring | | | Develop a participatory problem definition process. Establish a broader perspective on energy transition incl. influence of individual behavour and consumption |
| | Envisioning | – | | Develop an inspiring, attractive and imaginative transition vision in a participatory process to guide action towards long-term goals |
| | Exchange of perspectives | | | Use well-established practices of participation to communicate and discuss visions and goals |
| TACTICAL ACTIVITIES | Thematic visions | | | Integrate mid-term thematic visions towards the long-term vision as basis of an integrated approach towards energy transition |
| | Agenda | | | Develop targets and measures to address individual behaviour, consumption and awareness |
| | Networks | | | Enhance more continuous and formalized collaboration among local businesses, organizations and community members |
| OPERATIONAL ACTIVITIES | Experiments | | | Develop further experiments which support each other and overall goals of energy transition. Systematically monitor and evaluate experimental projects in order to learn about innovative projects and practices |
| | Implementation | | | Promote the participatory implementation of projects and measures. Increase stakeholder involvement in implementation |
| REFLEXIVE ACTIVITIES | Monitoring / Evaluating | | | Broaden the scope of monitoring and evaluation to capture non-technical aspects relevant for energy transition as well as long-term changes of framework conditions and the development of innovations |
| | Adaptation / Adjustment | | | Reflect on and adapt visions, long-term goals and problem definition |

*Legend*

*Action of a plan* · *Goal* · *Group or network* · *Law* · *Plan* · *Project* · *Study or report* · *Vision* · *No activities* · *Opportunities*

# Sustainable Energy Dobrich 2050

**Dobrich, Bulgaria I 90,000 inhabitants**

## Context

The National Energy Strategy 2020 is a fundamental document approved by the Council of Ministers of Bulgaria.
This national strategy can be summed up with the following five objectives:

1. Guarantee the security of energy supply;
2. Reach the targets set for renewable energy;
3. Increase energy efficiency;
4. Develop a competitive energy market;
5. Protect consumers' interests.

These priorities also define the government's vision of energy in the coming years:

- Maintaining a safe, stable and reliable energy system;
- Supporting the energy sector which remains a leading branch of the Bulgarian economy;
- Focusing on clean and low-emission energy, such as nuclear and renewables;
- Finding the appropriate balance between quantity, quality and prices of the electric power produced from renewable sources, nuclear energy, coal and natural gas;
- Ensuring that energy companies are managed in a transparent, efficient and highly professional way.

In Dobrich, long-term planning for a sustainable energy future at community level goes through three stages – planning, implementation and monitoring. All stages are assessed according to economic, social, ecological and cultural aspects.

## Vision

In 2050, Dobrich will be a city which manages its energy resources in an effective and stable way, with a green economic growth. The city will be offering high quality services to the population, a healthy and accessible environment, and significant prospects for business investments.

The motivation of Dobrich municipality to improve sustainability in the long-term was born from the political awareness of untapped energy efficiency and renewable energy potentials and their positive impact on local development.

The overall objective of the vision is to improve quality of life and energy comfort for all at lower costs through achieving of decentralised renewable energy supply and through implementing integrated energy efficiency measures.
Dobrich municipality has the responsibility to reduce $CO_2$ emissions on its territory by improving energy efficiency in residential and

public buildings, street lighting, industry, as well as the energy effectiveness of public and private transport.
The city's ambitious long-term objectives will be reached through substantial energy-efficiency improvements and a switch to local renewable energy sources. The coming years will be dedicated to building strategic relationships with partners focusing on wise climate solutions and to supporting the planned actions.

## Roadmap

In 2020, the first visible objectives of the local strategy "Sustainable Energy Dobrich 2050" should be achieved. Active involvement of citizens, businesses and close cooperation with utility companies are expected to lead to a reduction of carbon emissions by 25% compared with the baseline year of 2000.
Bearing this objective in mind, experts have identified the key actions that - in the short term - should result in the greatest reduction of carbon emissions. The roadmap for 2050 is mainly based on the Sustainable Energy Action Plan (SEAP)[1].
The four main priorities included in the roadmap are:

1) Improving energy efficiency in public buildings through implementation of integrated energy efficiency and renewable energy measures;
2) Increasing energy effectiveness of houses in Dobrich's area;
3) Increasing energy effectiveness in local businesses;
4) Setting up an energy management system in Dobrich's area.

Dobrich municipality has control over the local sustainable energy policy, sets priorities in its development and creates conditions for the implementation of local energy initiatives as:

- Consumer and service provider,
- Key player for taking local strategic decisions and establishing energy efficiency standards,
- Role model as regards energy use behaviour,
- Beneficiary and contractor of sustainable energy projects.

## Partnership

Dobrich is one of the most active Bulgarian local authorities in the field of sustainable energy. A large number of stakeholders are involved in the energy transition process, such as decision makers, youngsters, citizens and the local business community.
These people were actively involved in the development of the local roadmap. This is very important for acceptance and common understanding of the objectives, for general involvement in the implementation and for monitoring future actions.  Different methods were used to involve local stakeholders and citizens, such as public discussions, brainstorming among municipal experts, Sustainable Energy Days, an online questionnaire, etc.

## Budget

The budget for the aforementioned actions is approximately €100,000 per year, including energy- efficient refurbishment of municipal buildings and public lighting.

1-Prepared in the framework of the Covenant of Mayors – www.eumayors.eu

## Next steps

The major next step for Dobrich is to find suitable financial instruments that would allow for successfully implementing the objectives set in the local roadmap.
It was decided to continue working on the Action Plan "Sustainable Energy Dobrich 2020" in order to monitor the implementation of planned projects and to regularly update the action plan.

# Dobrich's approach to the energy transition

*by HafenCity University - Hamburg*

## Increasing energy efficiency of buildings and infrastructure

The energy transition process of Dobrich focuses more on increasing the energy efficiency of buildings and infrastructures than on promoting renewable energy. Reasons for that can be found in the framework set by the Bulgarian government (provision of financial resources, capacity of the national energy grid). Thus, the local energy transition is closely related to renewing local infrastructure and improving indoor climate conditions of buildings. Energy transition activities rely on the municipality's ability to allocate financial resources to such measures. The City of Dobrich, as other Bulgarian municipalities, strongly depends on external funding sources (such as the European Union).

## Improving municipal capacity

Improving local authorities' capacity for acting in favour of the energy transition is crucial for all Bulgarian municipalities. Therefore, informing and training administration staff and creating new administrative structures and processes plays an important role. Dobrich is considered as one of the front-runners in Bulgaria. For example, the municipality was one of the first to establish a baseline inventory of local $CO_2$ emissions and to set up a local energy agency.

These capacity-building measures are expected to have long-term positive effects. They allow Dobrich to develop and implement technical demonstration projects, which help show the feasibility of the measures to citizens and other Bulgarian municipalities. Furthermore, these projects are implemented under innovative forms of cooperation with public and private actors.

## City networks

Regional and national city networks of municipalities play an important part in capacity-building activities for local authorities. Within these networks, Bulgarian municipalities share information and cooperate for mutual benefits. The Union of Bulgarian Black Sea Local Authorities[2] notably played an important role in establishing Dobrich's energy agency. This network and the energy agency are institutionally connected to each other. These processes and self-organised structures can be seen as a response to the lack of structures and resources provided by the national government.

## Strategic framework of the energy transition

*Sustainable Energy Action Plan*

The Sustainable Energy Action Plan (SEAP) of Dobrich sets the goal of reducing $CO_2$ emissions by at least 25 % by 2020 (compared to 2000) while achieving a share of 20% of renewable energy sources in the overall energy consumption. In addition to this plan, the national law requires that the local authority prepare an energy plan, which is currently being developed in Dobrich.

## Planning the energy transition

*Local energy agency*

The local energy agency and the municipal energy office of Dobrich are crucial institutions for strengthening the city's capacity to act in favour of the energy transition as they lead to the bundling of knowledge, experiences, local data and other relevant information.

## Project development and implementation

*Financing projects through Public-Private Partnerships*

The prioritisation of projects to be implemented is based on different municipal strategic plans such as the Sustainable Energy Action Plan and the urban development strategy of the city. Increasing the energy efficiency of municipal buildings plays an important role in Dobrich's energy transition process. Projects are often financed through ESCO[3] schemes. These Public-Private Partnerships are used

2-www.ubbsla.org
3-Energy service company

to finance the energy-efficient renovation of municipal buildings. The local authority closes a contract with a private company to implement specific energy efficiency measures and to achieve a defined level of energy savings. The money saved finances in return the private company's services.

## Evaluation and learning

The City of Dobrich established a baseline emission inventory which includes the energy consumption of all municipal buildings. The data is used to simulate the effects of foreseen energy efficiency measures. The results help select measures to be implemented and to estimate their costs (often financed by ESCO schemes). The Sustainable Energy Action Plan is updated every two years while most other municipal plans are updated every seven years following the EU programming periods.

The monitoring and evaluation approach of Dobrich focuses on technical measures in the building sector. This is valid as it reflects the focus of Dobrich's energy transition activities, however mid- and long-term challenges cannot be tackled by this approach.

| OPPORTUNITIES: Dobrich. | | OPPORTUNITY: promoting communication and exchange | | |
|---|---|---|---|---|
| | | Activity | Opportunity | Recommendation |
| STRATEGIC ACTIVITIES | Problem structuring | | | Extend the established communication with local stakeholders to more general discussions on energy transition, related problems and possible solutions |
| | Envisioning | – | | Develop abstract long-term goals to guide energy transition and communicate goals to stakeholders and citizens |
| | Exchange of perspectives | | | Discussions of problems, possible solutions and long-term goals will slowly increase the exchange of perspectives between public and private actors |
| TACTICAL ACTIVITIES | Thematic visions | – | | Orient and integrate sectoral goals and strategies towards long-term goals. Specify and adapt EU mid-term targets for the local situation of Dobrich |
| | Agenda | | | Integrate SEAP and local energy plan to avoid parallel structures |
| | Networks | | | Keep up and slowly extend communication and cooperation with local stakeholders |
| OPERATIONAL ACTIVITIES | Experiments | | | Keep up and lowly extend the participatory development and implementation of experimental projects to learn about and demonstrate innovative solutions |
| | Implementation | | | Exploit international and national funding opportunities and co-financing of measures with private actors to promote implementation |
| REFLEXIVE ACTIVITIES | Monitoring / Evaluating | | | Broaden the scope of monitoring beyond the building level to identify possible fields of future intervention |
| | Adaptation / Adjustment | | | Reflect on and adapt not only projects but also long-term goals and strategies |

*Legend*

*Action of a plan* · *Goal* · *Group or network* · *Law* · *Plan* · *Project* · *Study or report* · *Vision* · *No activities* · *Opportunities*

# Odense on its way to becoming Denmark's most sustainable city

**Odense, Denmark I 195,000 inhabitants**

## Context

The goal of the Danish energy strategy is to become independent regarding coal, oil and gas by 2050. The heat supply should be based on renewable energy by 2035 and by 2050 for the energy sector, including transportation. The first step was taken in 2012 with the energy agreement setting the goal for 2020. One of the initiatives within this agreement is to set stronger requirements for energy distribution companies to achieve end-use energy savings.

At local level, the goal of Odense is to become fossil-fuel free and to have a sustainable energy supply (for both heat and electricity) by 2030. This will be done by saving 1% of heat and electricity per year until 2030. By 2015, 40% of electricity and heat consumption in Odense will be covered by renewable energy.

The municipality is supporting utilities, businesses and citizens in achieving these objectives.

As part of the strategic energy plan, 30 projects were selected in the fields of energy production, supply and planning. The municipality acts as coordinator and will challenge the national legislation whenever it is a barrier to the green transition.

## Vision

"To play is to live" is the vision of Odense for 2017. It aims at developing a sustainable and healthy city that would be Denmark's most sustainable city. Ensuring a healthier environment implies reducing polluting emissions, improving social justice and economic growth to create jobs and hopeful prospects for the current and future generations in Odense. Regarding the environmental policy, the vision of Odense is to "create sustainable development together and make it a part of the city's growth."

To reach its objectives, the city council approved three inter-sectorial pillars of sustainability:

- The business and growth policy (economic sustainability);
- The health policy (social sustainability);
- The environmental policy (environmental sustainability).

The overall aim of these policies is to get local citizens and businesses to create sustainable and innovative solutions together with the municipality.

## Roadmap

The Roadmap 2050 unites Odense's vision, policies and plans in a document that provides goals and directions for the development of the city. It draws a picture of the city and city life, rather than looking at technical solutions.
The municipality wishes to achieve this with the citizens, the business community and all other local stakeholders. The roadmap should be completed through active involvement so that everyone has a role and can influence their common future. The environmental policy, the energy plan and the climate change adaptation plan were all developed in a participatory approach.
Based on an overall vision of Odense and the three cross-cutting policies, different sectorial plans were developed in key areas such as climate change adaptation, mobility, energy, health and growth. All of them contribute - in their own specific focus areas - to pushing the city's development in the direction of a sustainable city with low energy consumption and a high quality of life.

## Partnership

In the process of preparing the roadmap, the IMAGINE Assessment Grid helped involve different municipal departments, leading to good inter-departmental communication and a better understanding of the internal collaboration on aspects related to energy optimisation, waste management and quality of life. Interdisciplinary meetings are a good way to get a better view of the different conflict areas regarding assignments.
The network "Energy Plan Funen" gathers stakeholders from most municipalities on Funen Island, most of the district heating companies, the natural gas company and energy companies on Funen. Within Energy Plan Funen, plans for collaboration on initiatives at a broader regional level will be developed and will contribute to achieving the vision of low energy cities.

## Budget

No special budget has been allocated to this roadmap. However, in each sector, strategy and action plan money is allocated for the suggested actions.
New sectorial plans will be developed during the period from now until 2050. In these plans new technical, environmental and economic solutions will emerge with a dedicated budget.

## Next steps

There will be an increased focus on 30 projects identified for the energy strategy by the stakeholder groups, in order to decide if they can be implemented. Some ideas are already implemented at local level. Others have been investigated and turned out to lack cost-effectiveness or relevance.
The calculations will be continuously done regarding different types of renewable energy sources. As the fossil energy prices are very unstable, the objective is to reduce the impact of the rise in prices and to improve the security of the energy supply by increasing the amount of renewable energy.

- Provide a better service for energy renovation of the building stock in Odense.
- The regional energy plan for Funen started in 2014 and aims at providing a common energy strategy for Funen.
- Renovate the district heating networks to make the pipes more efficient and reduce heat loss in the pipes.
- Expand further the current district heating system.
- Add solar cells and wind turbines to the electricity system. There are plans to find more places to install solar panels.
- Increase the use of surplus heat from local industries.
- Establish and make the best of local partnerships such as Green Business Growth (private companies, craftsmen and municipalities), Klimaværket (climate network of SMEs) and Environmental Forum Funen (private and public stakeholders).
- Increase the use of electric cars.
- Take other towns and cities as source of inspiration to better integrate renewable energy.

# Odense's approach to the energy transition

*by HafenCity University - Hamburg*

## Promoting green growth

The approach of Odense to the energy transition is characterised by a focus on promoting economic growth in "green" industries at the local level. The local administration cooperates with local businesses and networks such as *Grøn Erhvervsvækst* ("Green Business Growth") to enable local businesses to exploit the economic opportunities linked to the energy transition. The City of Odense cooperate with *Grøn Erhvervsvækst* and *Fjernvarme Fyn* (operating the local district heating system), to improve the training of local craftsmen in the fields of energy consulting, marketing and business development. Thus, the craftsmen are enabled to work for the energy modernisation of buildings and create jobs in a growing sector.

## Facilitating local networks and cooperation

The municipality sees the energy transition as one component of sustainable development. Pursuing sustainability is considered a common task which can only be managed in cooperation with public, private and other societal players. Members of the local administration see the local authority as a facilitator which should bring different players together, enabling and promoting cooperation and innovation. Different local and regional networks of stakeholders play important parts in Odense's transition process. Some of these networks were initiated by the local authority; in others, the city is only a member among others. The institutionalised networks act as independent players developing and implementing projects and thus influencing the local transition process.
Overall, the local authority considers the work of these networks and its membership in these as highly relevant and valuable.

## Open processes of project development and implementation

The City of Odense considers the energy transition as an open step-by-step process which is characterised by constant learning. Consequently, the local authority did not define a set of measures as part of their transition agenda but only developed the first 30 projects when drafting the Strategic Energy Plan *(Strategisk energiplan)*. These projects shall only constitute the first step with further projects being jointly developed along the process. This iterative process is guided by the long-term goals and the framework set by the overall environmental policy of the city *(Bæredygtige sammen)*.

## Strategic framework of the energy transition

*Bæredygtige sammen*
The environmental policy of Odense, the *Bæredygtige sammen*, sets long-term goals to fulfil Odense's vision of future city development. Together with the business and growth policy and the health policy, the *Bæredygtige sammen* sets the overall framework to sustainable development by addressing the economic, social and environmental aspects of sustainability. Within this set of policies, this policy acts as an umbrella for all environmental issues and defines overall goals. It guides different players and integrates their strategies, plans and actions towards a common long-term goal.

## Planning the energy transition

*Strategisk energiplan*

The *Strategisk energiplan* of the City of Odense is a sectorial, mid-term oriented plan focusing on the energy sector. It defines goals for renewable energy generation, increasing energy efficiency and energy savings and the implementation of "smart grid" technologies. Furthermore, it refers to the national long-term goals in the energy sector and thus aims to contribute to those. The *Strategisk energiplan* was developed in a participatory process within which selected participants (members of local utilities, large local industries, municipal administration, local elected representatives) jointly developed goals and measures. It includes specific actions under the form of 30 projects.

## Evaluation and learning

Odense applies an approach that is characterised by the constant development of new projects rather than defining a set of measures to be implemented. The evaluation of each project becomes crucial to ensure that these contribute to the overall goals defined in the *Energiplan* and the *Bæredygtige sammen*. The municipality evaluates each project to allow for improving future projects and to run a process which is characterised by a learning-by-doing approach. The *Strategisk energiplan* is evaluated every four years.

| OPPORTUNITIES: Odense. | | OPPORTUNITY: promoting learning about innovative projects and practices | | |
|---|---|---|---|---|
| | | Activity | Opportunity | Recommendation |
| STRATEGIC ACTIVITIES | Problem structuring | | – | Keep up discussion of problems and possible solutions with stakeholders and citizens using well established participatory processes |
| | Envisioning | | | Develop the vision of Odense as Denmark's most sustainable city into a more specific and illustrative vision of the city's future state |
| | Exchange of perspectives | | | Systematically identify and involve frontronners with innovative and creative ideas into the discussion of problems, goals and possible solutions |
| TACTICAL ACTIVITIES | Thematic visions | | – | Effective and well integrated policies, strategies and plans in place to guide local action |
| | Agenda | | – | Keep up facilitating new ideas and innovations through open, iterative processes of project development and implementation |
| | Networks | | – | Keep up promoting and cooperating with actor networks at local and regional levels in participatory processes of goal, strategy, plan and project development |
| OPERATIONAL ACTIVITIES | Experiments | | | Design experiments for learning purposes. All experimental projects should be systematically monitored and evaluated to promote learning about innovative projects and practices |
| | Implementation | | – | Keep up high level of participation in development and implementation of measures and projects |
| REFLEXIVE ACTIVITIES | Monitoring / Evaluating | | | Broaden the scope of monitoring and evaluation to capture long-term changes of framework conditions as well as the development of innovations and actor networks |
| | Adaptation / Adjustment | | | Regularly reflect on political goals and priorities and discuss and restructure the problem |

*Legend*

*Action of a plan* · *Goal* · *Group or network* · *Law* · *Plan* · *Project* · *Study or report* · *Vision* · *No activities* · *Opportunities*

# Lille's Energy and Climate Roadmap 2050

**Lille, France I 233,000 inhabitants**

## Background

In 2004, the City of Lille adopted an approach aimed at making the energy transition in its territory a success and involving both in-house competencies and external partners committed to improving energy management. The city's commitment was reaffirmed in 2009 with the signing of the Covenant of Mayors[1]. Energy transition in Lille is a response to a number of issues: social (in particular the fight against energy poverty), economic (energy expenditure reduction) and environmental (resources, climate change and biodiversity).
In 2012 Lille adopted Cit'ergie[2] (European Energy Award eea®), an energy management tool. This accredited process recognised at both national and European levels enhances the visibility of a local authority's efforts through a set of criteria.

## Vision

### *1. Territorial development and planning*

Integrating factor 4[3] in all strategic guidance documents produced by the municipality and the Urban Community; foresight scenarios about how to achieve factor 4 in town planning, buildings and transport; adaptation to climate change; promoting the circular economy for waste, eco-conditionality of financial aid to builders...

### *2. Municipal buildings and facilities*

Strict technical specifications and training of local authority staff in charge of building construction and maintenance; 60% energy savings and a 50% GHG emission reduction in municipal buildings; 70% of heating, cooling and electricity requirements covered by renewable energy...

### *3. Supply and networks, sewerage and waste*

Implementing the third industrial revolution (Jeremy Rifkin): decentralised renewable energy grids, smart grids, new governance for energy and water distribution networks, permanent monitoring of energy and water consumption in all buildings, harnessing of hidden energy resources, extension of biomass-converted heat networks, 70% of electricity requirements covered by RES, rainwater collection and management plan...

### *4. Transport and mobility*

Administrative Travel Plan for local authority's employees, reduced parking in the city-centre, doubling of pedestrian modal share, tripling of cycling modal share, tripling of public transport modal share, car-pooling platforms, Park&Ride facilities and train/underground/bus/shared cars/self-service bikes intermodality in the conurbation and cross-border territory...

### *5. Internal organisation*

Pooling of means and resources of the City of Lille and the Urban Community, staff involvement and training, generalisation of green procurement procedures and energy/climate clauses in public contracts, integration of factor 4 targets in the authority's budgetary choices...

1-www.eumayors.eu
2-www.citergie.ademe.fr
3-In France, factor 4 refers to the national target of dividing greenhouse gas emissions by 4 by 2050 (reference year: 1990).

### *6. Communication and co-operation*

Ambitious communication strategy on the city's Territorial Energy and Climate Plan (TECP), discussion and uniformisation of policies and financial aid between the various territorial levels, support for the circular economy for the production and consumption of goods and services, development of green and blue metropolitan corridors, mobilisation of opinion leaders, support for citizens' initiatives,...

## Roadmap

The preparation of the Energy and Climate roadmap was based on:

- The method and analytical grid of the Energy and Climate strategies developed as part of the Cit'ergie approach;
- An in-house reflection on the six areas in question delivering a foresight vision beyond the current 2020 political targets;
- The integration of proposals resulting from events, meetings and discussions with civil society (especially the climate "Estaminet"[4] meetings).

The Energy and Climate roadmap presented as part of the IMAGINE project has not yet been politically approved.

## Partnership

Partnerships within the local authority (City of Lille):
Sustainable development department, Town planning department, Building maintenance department, Housing department, Public procurement department.

External partnerships:
Residents from two neighbourhoods – Moulins and St Maurice – who took part in the Climate Estaminet meetings[4]:


©Shutterstock

- The inhabitants associated with the Energy Day and the Sustainable Development Week organised by the Sustainable Housing Centre,
- Environmental associations,
- Public service concession holders,
- Universities,
- Other authorities: Lille Métropole Urban Community (LMCU), Regional Council.

## Next steps

We may envisage the following steps, subject to their approval by the elected representatives concerned:

- Discussions and debates within the municipality's technical departments on the Vision for 2050 (autumn 2014 and early 2015);
- Submission of a technically finalised version to the elected representatives and implementation of a political validation process by the City of Lille (2015);
- Implementation and facilitation of one or several work groups (within the municipal technical departments and with the elected representatives concerned) between the City of Lille and Lille Métropole Urban Community (2014 to 2016);
- Integration of a 2050 vision into the City and Urban Community TECPs.

4-See Part B page 4

# Imagine MK2050

**Milton Keynes, United Kingdom I 230,000 inhabitants**

## Context

The city of Milton Keynes (MK) has a history of innovation and long-term civic planning. The city has reached many original targets for growth and economic development, set in the late 1960s. The city council has existing strategies and policies for the near term, up to 2020 and the sustainability section saw a need for a formal long-term vision for the city to match that of the city founders.

Currently there are five core themes which are used as a framework for the creation of any new policies or strategies:

- **Cleaner, greener, safer, healthier MK**: Low Carbon Living meets these ambitions by reducing pollution from transport and energy production. Warmer homes lead to healthier living.
- **Visiting MK**: Integrated, low carbon transport in the future will make MK a popular regional hub for commerce and leisure, without adversely affecting local citizens.
- **Working in MK**: Novel solutions to local energy supply and production will shift MK being a consumer of fossil fuels to being a local producer of energy in a variety of forms. This will bring local employment and economic independence from uncertain world energy prices.
- **Living in MK**: A clean, Low Carbon city will be a pleasant place to live in, with additional employment opportunities provided by the local energy infrastructure.
- **World Class MK**: The technologies and techniques used to create the Low Carbon city will maintain the reputation of MK both nationally and internationally as a centre of innovation and excellence for planning, energy and environmental initiatives.
- Linking new or updated strategies to these themes is essential to ensure that they conform to the corporate vision for the city.

## Vision

"Milton Keynes will be a near zero carbon city with a high quality of life for all by 2050".
This simple statement is further refined into series of five sub-themes and associated outcomes, each linked to separate strategies:

1) **Buildings & Energy Generation** - All new buildings will be built to zero carbon standard, most existing buildings will be upgraded to zero carbon standard, maximum use of district heating and CHP …

2) **Travel** - All use of fossil fuels in MK will be replaced by low carbon energy, maximum use of low carbon vehicles…
3) **Waste & Water** - Maximum production of energy from waste, maximum recycling by businesses, 70% of waste collected by the Council will be recycled…
4) **Smart City & Community** - Smart grid network data collection and public use of data will be enabled, integration of services/ networks e.g. public transport & energy…
5) **Green Space & Food** - Maximum local food production, community initiatives will be supported; e.g. energy reduction and food growing, urban and rural green space will be used more efficiently for leisure, food growing, biomass fuel and carbon fixing.

## Roadmap

MK council has existing procedures and methodology for the creation, consultation and approval of all official strategies and policies. Key to the acceptance of the roadmap was the justification of the need for such a document. This was achieved by linking existing corporate priorities to the initial ideas for the roadmap.

Early reasoning behind the local version of the roadmap was that it should reflect, as far as reasonable, the contributions of a group of stakeholders, chosen from the community. 50 stakeholders were invited, representing local businesses, academics, citizens including the local youth council, and other interested people. The project called for three engagement events over three years broadly asking the groups "What?", "When?" and "How?". The intention was for the stakeholder group to be made up of the same group of people for the whole project for consistency, but in practice there was variation from event to event. This was good for the group as each event combined fresh thought with existing experience as the stakeholder group matured over the engagement period. The last engagement event was carried out during the EU Sustainable Energy Week 2014 and was part of a series of events including launching the draft roadmap on the council's website together with a short on-line survey for general comment.

Production of the roadmap was carried out in consultation with local politicians of all parties which is crucial to the success of the process. Initially, the long timescale for the local roadmap 2050 was a problem, but the clear intention that this would be for guidance - and not a strict strategy - ensured acceptance within the administration.

The MK Roadmap will be an approved strategy document, but with a very long-term frame of reference, unusual in most other council documents. As such it is not intended to be a strict strategic framework and will be refreshed regularly.

## Partnership

Stakeholders for this project can be broadly grouped into three types:

- Local citizens – including elected members and representatives from a broad range of ages and motivations.
- Business interests – comprising representatives from local industries, utility and other technology companies.
- Academic groups, health and non-governmental agencies with relevant interests (including national and local energy agencies).

MK Council conducts stakeholder engagement with most policy/strategy development. As a result, there is a channel of communication with many of these stakeholder groups. For the definition of the local vision and roadmap, representatives from these existing groups were invited and any others that were considered appropriate. There is a degree of self-selection in this process, but the final stage of broad consultation process (direct public input via a web based questionnaire) helps address this.

## Budget

2,000 staff hours
€12,000 for professional facilitation and event management for the three engagement events.
Approximately €4,000 for venue costs (including catering).
This does not include the cost of the time contributed by stakeholders, politicians, normal council procedural administration for strategy formation or the time of senior council directors.

## Next steps

The roadmap has provided the organisation with a strategy baseline, in terms of which section of the council is responsible for each theme identified. The next stage is a scoping exercise to create a strategy document to develop these themes.
The council has already set up a Low Carbon Living programme which monitors and facilitates low carbon related activity in the region and provides a focal point for businesses, utilities and NGOs to meet and share experience and common activities in the area of Low Carbon Living and Smart Cities. This is proving highly successful, with economic partnerships developing between partners with little input from the council, other than direction and acting as facilitators.

# EASY City Bistrița 2050

**Bistrița, Romania I 70,500 inhabitants**

## Context

Compared to cities in Western Europe, Bistrița has low energy consumption - below 1,500 Watt per capita. On the one hand, energy is wasted because building insulation is not sufficient. On the other hand, energy expenditure, the number of public buildings, street lighting and equipment with cultural and sport infrastructure are low too.

However, the city has a significant backlog regarding equipment, quality of housing and cultural, sport and economic infrastructure. Therefore, an increase in energy consumption is expected to happen in the coming years.

Bistrița joined the Covenant of Mayors[1] and set itself the objective to reduce $CO_2$ emissions by 20% by 2020 (reference year: 1998). This goal can be reached primarily by producing and using renewable energies to meet the increasing energy demand of the city.

In Bistrița, unexploited agricultural areas represent a great potential for biomass production; so is the case in the wood industry. In addition, solar and wind power plants can contribute to bridging the expected gap in supplying.

A system of quality management will be established and all the measures in the local development strategy 2010-2030 will be optimised. Indeed, some of the initial measures shall be cancelled as they are no longer appropriate.

The energy policy is based on the principle of sustainability applied to economy, environment and society. The municipality is aware that "rebuilding" the city and society may cause conflicts. The process of change and development will create short and medium term "winners" and "losers". Decisions have to be made in a long-term perspective and have to be clearly and transparently reasoned.

## Vision

Bistrița is working towards "EASY City Bistrița" vision. This involves supporting sustainable development, limiting the increase in energy consumption to 15 MWh/inhab./year, promoting renewable energies (with a target of producing 50% of the energy need from local renewable sources) and energy efficiency, and promoting an energy-saving label in Bistrița. With this strategy, Bistrița will improve its development and will be better equipped to face times of scarce and expensive energy.

There will be three periods in the implementation of the EASY City vision:

- Phase 1: 2014-2020
  Reduction of carbon-based energy consumption, with a focus on heating and mobility. The essential measures for urban development need to be accompanied by approaches to minimise the additional energy demand. Bistrița will promote innovation and local energy production.

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- Phase 2: 2020-2030
  Stabilisation of development through completion of the measures of the urban development programme 2030, monitoring of the measures implemented, extension of the local energy production from renewable energy sources, promoting energy innovation.

- Phase 3: 2030-2050
  The EASY City Bistrița locally produces over 50% of the energy needed from renewable energy sources.

## Roadmap

The Roadmap, titled "The Annual Energy Book", includes all the measures planned until 2050. They are updated, debated, monitored and adjusted to changing conditions. The city's target requires a high level of engagement from all citizens and stakeholders.
The municipality hired a consultant to facilitate three Local Energy Forums involving stakeholders and citizens. However it turned out that it was hard for participants to be responsive to actions of which the results would be seen in 36 years.
The Roadmap is a written document, with specific actions and responsibilities, focusing on eight different fields that are of highest importance to the local community.
Bistrița's priorities:

- Revising the zoning plan, the Traffic Study and the Urban Development Strategy 2010-2030 according to the objectives of the EASY City Concept;
- Limiting the increase in demand for energy-related goods and services in the next 6 years, improving energy efficiency, encouraging the use of renewables and reducing primary energy consumption;
- Significantly reducing energy consumption in public buildings. The use of renewables in city-owned buildings should reach 100% in 2050.

***1. Urban development***

Bistrița aims to reduce greenhouse gas emissions and energy consumption with urban planning measures, building code regulations and financial incentives, and by providing advice and information.
The energy-efficient use of space (building density, use, distribution, mix of uses) is integrated in land use plans and is considered in planning projects.

***2. Mobility***

Bistrița will develop a mobility strategy, set up an efficiency bonus and energy saving label and a municipal parking regulation to reduce individual car use and promote soft mobility.

***3. Energy Supply***

A Heat Supply and Power Supply Concepts will be developed for 2050.

***4. Public procurement***

Besides the price criteria, special attention is paid to energy efficiency, energy source and ecology. An appropriate procurement model and a procurement strategy will be developed.

***5. Buildings and facilities***

The city is showing example with its own buildings. Energy efficiency is improved in operating city-owned buildings and facilities.

***6. Infrastructure***

The power supply, public lighting, the infrastructure for information and communication technologies, water supply, waste services, urban drainage and road infrastructure are to be optimised in terms of energy use, greenhouse gas emissions and consumption of resources.

***7. Employees***

Representatives from the departments of energy and sustainability, mobility and planning, stakeholders of the sustainable construction sector and experts in environmental management processes will steer the implementation of the roadmap.

***8. Instruments***

Some measures are already implemented by the Urban Development Strategy 2010-2030. The administration is developing some new concepts like the Energy Communication Concept, the Accounting Model for a Low Energy Society and the Procurement Strategy.

## Partnership

The municipality, the local Youth Council, the Environmental Protection Agency, the County Health Department, the County Construction Department, the Chamber of Commerce, several schools and high schools, NGOs, a dozen of the biggest local companies and the transport company were involved in the IMAGINE process.

## Next steps

The results of the measures implemented are compared to the objectives and tasks foreseen in the Roadmap. To achieve the objectives, milestones for 2020 and 2030 were defined. These guidelines are periodically reviewed and adjusted.

The departments regularly collect indicators to monitor the progress made. The figures for gas and oil consumption are compiled each year. Every two years, a review of the final and primary energy consumption and greenhouse gas emissions is published.

The Roadmap is to be reviewed, updated and approved by the city council every five years.

# A citizen vision of Figueres' energy future

**Figueres, Spain I 44,800 inhabitants**

## Context

Figueres is a city with a compact urban structure having a high population density (2,368 inhabitants/km$^2$). Its Mediterranean weather has an impact on the energy demand: winters are moderate, but summers are hot, thus increasing the use of air conditioning. Figueres has a high potential to use the sun, wind, biomass, and urban and agricultural waste to produce renewable and local energy.

In Spain, due to the centralised energy production and distribution system, cities have only been energy consumers. In 2009, the first local energy audit was conducted in Figueres, as the first step to prepare a Sustainable Energy Action Plan[1] (SEAP). From 2005 to 2009, energy consumption was reduced by 3.3% (from 884.63 to 817.42 Gwh/year), mostly due to the economic crisis. In 2005, the average daily consumption was 59 kWh/inhabitant and in 2009 it lowered to 50 kWh/inhabitant. $CO_2$ emissions were reduced by 8% between 2005 and 2009, from 284,448 to 262,707 tonnes.

The main energy sources are the oil-derived products, which in 2009 represented 52.6% of the global energy consumption, followed by electricity with 27.1% and natural gas with 20.3%.

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The most energy-intensive sector is mobility, which represents 44.8% of the city's overall energy consumption, followed by the domestic one (29.4%) which includes the energy consumption of buildings and third, the tertiary sector with 12.9%.

Local energy consumption (public lighting, municipal buildings and car fleet) represents only 1.2% of the total at the city level.

The local energy production only covers for 0.5% of the city's consumption. The municipality realised the importance of energy independence and started to plan and manage energy better. An important step is the approval of the SEAP and of the Sustainable Urban Mobility Plan with specific targets and actions to reduce the energy demand, promote efficiency and produce local and renewable energy. For the first time, the preparation of the new urban plan considered the energy sector as part of urban ecology.

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## Vision

Figueres will be self-sufficient by 2050 with a public decentralised energy model managed by the local administration and the civil society.
Quality of life will be improved thanks to a great offer of public transport and sustainable alternatives such as electrical vehicles and car sharing. The city will be mainly structured for cyclists and pedestrians. Trams and trains will connect the urban and rural areas. A park and ride system will be established at city entries with efficient connections to the city centre through public transport. Neighbourhoods would be self-sufficient with local schools, shops, services, etc. The citizens of Figueres will be aware of the energy costs and supply difficulties. They will have direct access to their energy consumption data - costs, sources and sustainability.

## Roadmap

**Awareness-raising and education**

- Introduce topics focusing on energy in schools
- Organise citizen training on energy
- Launch energy campaigns with public service awareness and social aspects of energy
- Raise awareness amongst politicians
- Develop media campaigns with energy companies covering partly or totally for the costs
- Create clubs of opinion-sharing as more pressure from the citizens is necessary to change the current situation (collusion of factual powers with important players such as multinationals, oil companies, shipping companies, etc.)

**Energy Management**

- Regulations to promote good practices and penalise energy waste. Invest the money collected from penalties to improve insulation of low-income households.
- Introduction of energy management for awareness of energy consumption in the daily tasks.
- Creation of a local public entity, acting in a proactive way in order to promote an efficient energy consumption at home:
  - » Offering courses and promoting training on energy savings in the public and private sphere;
  - » Organising institutional campaigns and meetings in person to inform and offer guidance for consumers;
  - » Creating a socially recognized and valued seal of quality;
  - » Managing grants and subsidies for new technologies, to promote energy savings at home, to invest in retrofitting and renewable energies;
  - » Elaborating tailored made solutions for Figueres involving local stakeholders (administration, users, organised groups, companies and specialised technicians), and triggering public and private partnerships;
  - » Presenting pilot projects.

**Mobility**

- Electric fast charging buses and buses working with non-contaminating renewable energies with a fast and high frequency service for an affordable price.
- Proximity awareness campaign (meeting with neighbours, for example) to promote the use of public transport and soft mobility.
- Promotion of the urban public transport lines and frequencies with the aim to make it attractive, efficient and effective.
- Micro-distribution platforms of goods.
- Ring roads plan to reduce traffic in the city.

**Energy production**

- Generation of renewable energy at three levels as a model of territorial equity: 1) Individual/family (self-consumption), 2) Neighbourhood (district heating), 3) City (nearby plants).
- Use of local sources: biomass, solar, wind, urban waste.
- Energy park in the "Castell de Sant Ferran" as a landmark of a city which uses auto-generation and renewable energy.

**Economy**

- Proximity production and Km0 in nearly everything (food, goods, services, etc).
- Production of local and sustainable food and urban gardens.

## Partnership

The local vision and roadmap were elaborated through a participatory process. Three local forums were organised to allow citizens and energy experts to contribute to elaborating the new urban plan and energy model of the city. An online survey was also elaborated on the local authority's webpage.
Schools were widely involved through specific workshops on energy and climate change and a competition on the energy future of the city.
Finally, a photography competition was also organised to show positive and negative aspects of energy in the city.

## Next Steps

The public administration will focus on four main issues:

- Raising awareness amongst citizens and promoting change in the energy consumption behaviours;
- Promoting a sustainable urban mobility model based on walking, cycling and using public transport;
- Integrating energy efficiency in buildings and local energy production in the Local Urban Plan;
- Promoting projects on local energy production using local and renewable resources.

Figueres' energy roadmap will have a real impact on the future local strategies. Energy has become an essential aspect to be taken into account in all areas of city planning and management.