Intelligent Energy Europe

CITY INSTRUMENTS

Monitoring, Evaluating and Transferring Instruments to address Climate Change in Metropolitan Regions

Publishable result - orientated report

City Instruments - Publishable Report

1. Introduction 4
2. Basic Project Data 5
   2.1. Project 5
3. Executive Summary 8
   3.1. Idea 8
   3.2. Objective 8
   3.3. Project phases 9
   3.4. Three key results 10
4. Summarising interesting results 14
   4.1. Field of activities 14
   4.2. Framework Conditions of Cities 17
   4.3. Best Practice Catalogue - Types of instruments 25
   4.4. Energy Master Plan 45
   4.5. Adaptation of instruments from partners by project partners 46
   4.5.1. Berlin 47
   4.5.2. Province of Milan 48
   4.5.3. Naples 48
   4.5.4. Paris 49
   4.5.5. Rotterdam 50
   4.5.6. Sofia 51
   4.5.7. Tallinn 52
   4.6. Ideas for new instruments 52
   4.6.1. Transport planning incorporating demands of pedestrians and cyclists for local sustainable mobility 53
   4.6.2. Low Interest Bank Loans for Procurement of Solar Systems for Private House Owners 53
   4.6.3. Energy Monitoring and Benchmarking for Public Buildings 54
   4.7. Lessons learnt 55
   4.8. Impacts achieved 55
5. Conclusions & Recommendations 57
6. Contact details of partners 59

1. Introduction

The European project “City Instruments” is part of the Intelligent Energy Europe Programme and focuses mainly on climate change in metropolitan regions, and on the exchange and joint development of ways of dealing with the problem.

Not only climate change but also increasing urbanisation represents a huge challenge to cities, especially because of problems of space, increasing traffic and the safety of energy supply. The project shows that, although cities face special problems, they have proved to be extremely innovative laboratories: they develop instruments and policies to promote energy efficiency and the use of renewable energy sources.

Eight European metropolitan areas, Berlin, Milan, Naples, Paris, Rotterdam, Sofia, Tallinn and Zurich, have joined forces to share their experience in the following fields:

- Information, Communication and Co-operation
- Financial instruments including Joint Implementation and emission trading
- Sustainable transport and mobility
- Energy renovation of existing buildings
- Administrative structures: internal organisation and processes
- Municipal energy management, decentralised energy supply, integration of renewable energies
- Methods for calculation, indicators, monitoring.

The most successful instruments, collected from cities around Europe, can be found in the Best Practice Catalogue that offers the opportunity to other metropolitan areas to get new ideas and look at what is going on elsewhere.

The blueprint of the Energy Master Plan was developed for Metropolitan regions based on the experience of the City of Zurich. Detailed guidelines for Implementation of an Energy Master Plan have been prepared.

The Best Practice Catalogue, the blueprint of the Energy Master Plan, the presentations of the workshops, the final European conference and the description of the instruments newly developed by the participating Cities, based on the information exchange during the project working phase, are all available on the project website www.city-instruments.eu.

2. Basic Project Data

2.1. Project

Project title:	**Monitoring, Evaluating and Transferring Instruments to address Climate Change in Metropolitan Regions**
Project acronym:	City Instruments
Contract number:	EIE/05/152/SI2.419660
Project duration:	from 2005-12-21 to 2007-12-20, i.e. 24 months

Involved partners:

- B.&S.U. mbH, Co-ordinator, Berlin, Germany
- Sofia Energy Agency – SOFENA, Sofia, Bulgaria
- City of Rotterdam, Rotterdam City Development Corporation, Rotterdam, Netherlands
- Agenzia Napoletana Energia e Ambiente, Naples, Italy
- ARENE, Agence Régionale de l'Environnement et des Nouvelles Énergies d'Ile de France, Paris, France
- Tallinn City Government, Tallinn, Estonia
- Energy Department of the Province of Milan, Milan, Italy
- Associate partner: Departement der Industriellen Betriebe Zurich, Zurich, Switzerland

Purpose of the project:

Purpose of the project was to compare the instruments for climate protection and energy saving and increase the use of renewable energy sources developed by the participating Cities in the last ten years. Best practice instruments should be described on the basis of the exchange of experiences among the project partners and further European Cities that were involved in this process.

Key target group (stakeholder):

The key target group of this project are:

- European Cities with more than 500,000 inhabitants
- Energy Agencies of Cities with more than 500,000 inhabitants
- European Cities Networks

Value:

Total eligible cost: 578,520 €
Funding from IEE Programme: 289,260 €

Key results achieved at the end of the project:

- Best-Practice-Catalogue available
- Blueprint of Energy Master Plan available
- Project Partner Cities developed concept papers on the adaptation of an instrument presented by a fellow partner
- Project website implemented
- 7 workshops successfully implemented
- 74 instruments from different Cities presented and discussed
- More than 500 Cities, Energy Agencies and City networks informed about the project results
- European conference with more than200 registrations about the project results successfully performed

This report is prepared by for the IEE City Instruments Project:

Mr. Dr. Armand Dütz
Managing Director
B.&S.U. Beratungs- und Service-Gesellschaft Umwelt mbH
Büro: Saarbrücker Str. 38 A, D-10405 Berlin, Germany
E-Mail: aduetz@bsu-berlin.de

Mr. Leonard Meyer
B.&S.U. Beratungs- und Service-Gesellschaft Umwelt mbH
Büro: Saarbrücker Str. 38 A, D-10405 Berlin, Germany
E-Mail: lmeyer@bsu-berlin.de

Mr. Sergio ZABOT
Director of Energy Sector, Province of Milan, Italy
Ms. Paola Fragnito
Address: Corso di Porta Vittoria, 27, - 20122 Milano, Italy
E-Mail: g.bono@provincia.milano.it
Web: www.provincia.milano.it/ambiente/energia/tavoloenergia.shtml

Mr. Michele Macaluso
Mr. Mauro Simeone
Agenzia Napoletana Energia e Ambiente - ANEA
Address: Via Toledo 317 80132 Napoli, Italy
E-Mail: aneainfo@tin.it
Web: www.anea.eu

Ms. Marie-Laure Falque-Masset
Ms. Judith Cazas
ARENE Ile-de-France
Address: 94 bis avenue de Suffren - 75015 Paris, France
E-Mail: ml.falquemasset@areneidf.org
Web: www.areneidf.org

Mr. Zdravko Georgiev
Project Engineer,
Sofia Energy Agency - SOFENA
Address: 44 Oborishte Str., Sofia-1505, Bulgaria
E-Mails: zgeorgiev@sofena.com; issofena@techno-link.com
Web: www.sofena.com

Ms. Cleo Pouw
Address: City of Rotterdam, OBR - Rotterdam City Development Corporation
P.O. Box 6575 - 3002 AN Rotterdam - The Netherlands
E-Mail: C.Pouw@obr.rotterdam.nl
Web: www.obr.rotterdam.nl/

Ms. Meeli Laane
Head of Development Sector
Tallinn City Government Environment Department
Address: Harju 13, 10130 Tallinn
E-Mail: Meeli.Laane@tallinnlv.ee
Web: www.tallinn.ee/est/g2254

Mr. Bruno Bébié
Stadt Zürich - Departement der Industriellen Betriebe
Address: Stadthaus, Postfach, 8022 Zürich, Switzerland
E-Mail: bruno.bebie@zuerich.ch
Web: www.stadt-zuerich.ch/internet/dib/home.html

For further information please visit the project website: www.city-instruments.eu

3. Executive Summary

3.1. Idea

This project aims to monitor, evaluate and further develop innovative and successful instruments to promote the Rational Use of Energy (RUE) and the use of Renewable Energy Sources (RES) in metropolitan regions in Europe.

3.2. Objective

The overall objective of the project is to promote sustainable energy practices in the participating cities and beyond through the structured exchange of experience and transfer of best-practice instruments.

Metropolitan regions are defined as cities with adjacent urban environments with more than 500,000 inhabitants. In the wider Europe (i.e. EU 27 plus candidate countries), there are 120 metropolitan regions, representing about 60% of Europe's population. Inhabitants of urban areas are exposed to a multitude of environmental problems: Noise, poor air quality, heavy traffic, neglect of the built environment, poor environmental management and often a lack of strategic planning which together lead to health problems and a lower quality of life. Compared to small and medium-sized cities, metropolitan regions have to make a special effort to address these environmental problems. On the other hand, large cities also have unique possibilities to address the challenges presented to them e.g. in terms of human and financial resources, administrative clout etc.

In the field of energy, each metropolitan region has to find ways to fulfil the simultaneous demand for reliable energy supply on one hand and environmental protection and affordable energy prices on the other. Therefore, solutions have to be found which take due account of the economic, social and environmental considerations. Some of the most innovative approaches currently available in the area of RUE and RES policies are being tested and/or implemented by metropolitan regions.

The long-term objective of this action is to make a significant contribution in each of the metropolitan regions to the attainment of the respective political goals of improving energy efficiency, reducing CO_2 emissions, alleviating the public budget through the cost savings achieved, promoting renewable energy technologies, safeguarding jobs, reducing local air pollution and fostering regional economic growth. In the long term, the project also aims to changing citizens' awareness and behaviour with regards to energy.

The "City Instruments" project will contribute to two central Community initiatives in the area of energy: increasing the energy efficiency of the Community by 1% annually until 2010 and increasing the contribution of RES to the EU's gross inland energy consumption to 12% by 2010.

Europe's large cities play a major role in attracting and supporting knowledge growth, innovation and economic development not only in their direct urban vicinities but also in the hinterland. Their government (i.e. the city councils, mayors etc.) have a direct influence on whether or not their city is a centre for progressive policies and initiatives, for example in the areas of energy efficiency and use of renewable energy sources, acting as a role model for other regions and is perceived as an attractive location for investors. By identifying particularly successful instruments to promote RUE and RES in urban areas and by fostering a structured exchange of experience on specific instruments, this project contributes to the spread of best-practice instruments in Europe's cities and, linked to this, the achievement of Kyoto and the European Union targets, the alleviation of public households, the creation of jobs, the protection of the environment and the attractiveness of the city for investors.

Sustainable urban development is at the centre of a number of Community Policy Initiatives (e.g. thematic action "Urban Environment" in the Sixth Environment Action Programme, Green Paper on Urban Environment etc.).

In addition, the action will support the Community policies in the area of regional development as the majority of the participating cities are target areas under different programmes here: Berlin: Objective 1+2 areas (phasing out); Naples: Objective 1 area; Rotterdam: URBAN I and II, Sofia: Objective 1 area; Tallinn: Objective 1 area.

Finally, as the results of the project are highly replicable (i.e. dissemination of the Best Practice Catalogue and Energy Master Plan) this project contributes to the EU's global strategy for sustainable development.

3.3. Project phases

The partner cities monitored and evaluated existing RUE and RES instruments in metropolitan regions in Europe – and worldwide - with reference to previously defined energy, environment, economic and social impacts.

The work was carried out in the following steps:

- joint monitoring and evaluation of the existing instruments to promote RUE and RES in urban areas (participating cities and beyond), elaboration of a best-practice catalogue of particularly effective instruments
- implementation of a series of seven workshops on instruments around a specific topic (e.g. energy management in buildings)
- gap analysis within each partner city and subsequent adaptation and preparations for the transfer of at least one new instrument to each participating city
- development of a blueprint for an Energy Master Plan for metropolitan regions (based on Zurich's example)
- widespread dissemination of the best-practice catalogue of successful instruments and other deliverables notably through the partners networks but also thanks to the final conference that gathered more than 150 participants from all over Europe
- Institutionalisation of the practiced exchange of experience as a forum or working group within one of the existing networks

The results of the monitoring and evaluation process are presented in the Best-practice catalogue. The analysis is structured according to the main themes of the City Instruments forum:

- Information, communication and co-operation
- Financing instruments including joint implementation and emission trading
- Sustainable transport and mobility
- Energy renovation of existing buildings (e.g. Energy Pass)
- Municipal energy management, decentralised energy supply, integration of renewable energies
- Administrative organisation: internal structures and processes
- Methods for calculation, indicators, monitoring

A Series of Workshops on the above mentioned topics was held during the project. These focussed on the in-depth exchange of experience and constructive discussion among the metropolitan partner regions concerning the instruments available to promote RUE and RES.

3.4. Three key results

Project Webpage:

The project website can be reached under: www.city-instruments.eu. It offers the latest news on the progress of the project and is therefore the most important tool in promoting and disseminating results.

In order to guide and offer a complete understanding of the project approach to the visitor, the website proposes a presentation of the project and its goal, a description of each city or region and the related partner. It of course includes the results of the work like the folders of all the presented instruments; the power point presentations used during the workshops to offer a complementary approach. The Energy Master Plan blueprint and the Best Practice catalogue are also of course available on the website. To ease the access and finding of these documents, they were made reachable from numerous web pages through different ways: each page hosts a link towards the best practice instruments. Furthermore the section presenting Best Practice instruments of cities has been reviewed and modified. Individual agendas and minutes can also be found together with photos of these sessions that have been inserted. The web site was also an essential platform for the final conference as it was used for the promotion and the registration of participants; and now hosts all the presentations made as well as pictures.

Thanks to the reactivity allowed by the website and the frequent updates; the website became an essential tool for dissemination.

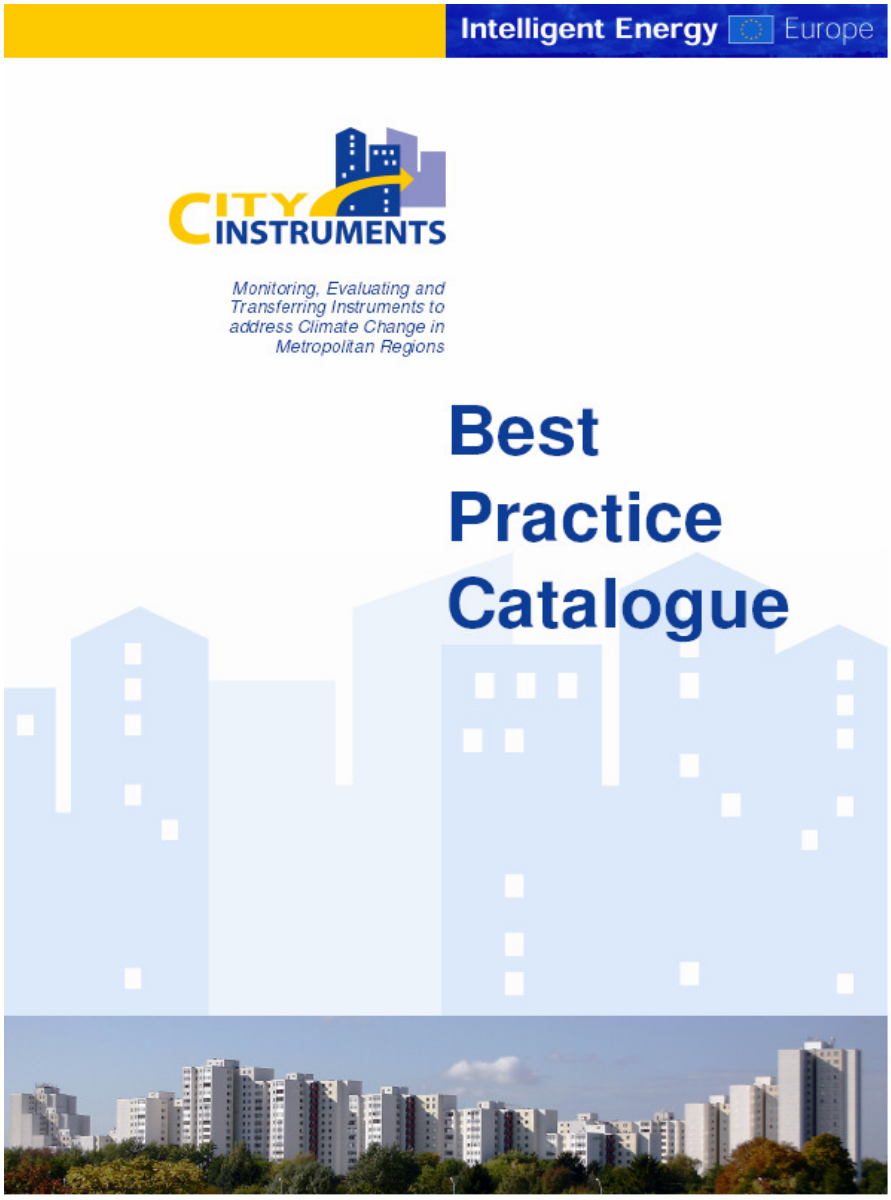
The website has subsequently been translated by the partners into further project languages and is now available in English, German, French, Estonian, Bulgarian and Italian.

Best Practice Catalogue

This Best Practice Catalogue can help other interested city administrations, energy agencies and other actors to pinpoint the most suitable instruments available at this time to mitigate climate change, by addressing the specific problems and realising the particular potentials inherent to metropolitan regions. The Best Practice Catalogue is user-friendly: it provides sufficient information per instrument to evaluate effectiveness, but also to explain how the instruments can be implemented on an everyday basis.

The Best Practice catalogue offers a description of the instrument considered but moreover concrete details of implementation in terms of time spent, built partnership, human resources, cost and financing. Each partners also detailed the tricks and obstacles to overcome and how to avoid them so that people can address the issue upstream. It aims at offering the potential reader an overview as well as a methodology for a successful transfer of the instrument. A description of the context of the city that implemented the instrument considered is always provided for each city interested to assess its similarities and differences so that it can adapt its strategy.

The Best Practice Catalogue describes the activities of the project partners with respect to energy policy during the last decade and gives some figures about energy consumption structures of the cities.



Blueprint of Energy Master Plan

Starting from Zurich's "Masterplan Energie" the project partners pooled their experiences, which stem from local circumstances and needs, to prepare a detailed blueprint for an Energy Master Plan.

This Energy Master Plan can act as a basic policy-making document for metropolitan regions and set out overall policy goals in the area of energy, and should also enable these City administrations to prepare detailed strategic measures and aims. It spell out, for each instrument identified, the concrete methods and benchmarks adopted to achieve results, and the methods for monitoring and evaluating them, just as Zurich's Master Plan does.

Blueprint of Energy Master Plan for Metropolitan Areas

CONTENTS:

I. INTRODUCTION 3

II. MAIN GOALS 3

III. QUANTITATIVE GOALS 3

IV. GENERAL PRINCIPLES 3

V. GOALS AND MEASURES 4

a) Energy supply 5

b) Rational use of energy 8

c) Utilisation of renewable energy sources 14

VI. ORGANISATION AND CONTROLLING 15

4. Summarising interesting results

4.1. Field of activities

The partner cities have monitored and evaluated existing RUE and RES instruments in metropolitan regions in Europe with reference to previously defined energy, environment, economic and social impacts.

The results of the monitoring and evaluation process are published in the Best Practice Catalogue.

The analysis is structured according to the main themes of the City Instruments forum:

- Information, communication and co-operation
- Financing instruments including joint implementation and emission trading
- Sustainable transport and mobility
- Energy renovation of existing buildings
- Administrative organisation: internal structures and processes
- Municipal energy management, decentralised energy supply, integration of renewable energies
- Methods for calculation, indicators, monitoring

Why did the project partners choose these 7 fields of activity?

- Information, communication and co-operation

  Information, communication and co-operation are the cornerstones to raise awareness on environmental issues and help changing behaviour towards a more sustainable way of life. Communication is essential to fight against generally accepted ideas about renewable energies and rational use of energy often seen as a constraint or inefficient. Showing best practice projects is in that respect essential to give proof of the potential that can be mobilised. Rational use of energy and sobriety are of high importance and communication and information are the main tools to have citizens understand it and get a more sustainable way of life.
  The communication era we are living in offers a large number of media supports, earning how to use them is essential to defend environmental issues concerning all citizens from children to adults. Still it is essential to find the right way to communicate to people so that the message is understood and action is taken, while understanding that there is not one way to communicate and not only one public but several.

- Financing instruments including joint implementation and emission trading

  The European Commission supports an integrated approach to environmental and economic objectives, in which local and national governments set the general framework within which policy is to be implemented and goals are to be attained. Such a framework should ideally combine regulation with market-based instruments and must be supported by financial instruments capable of promoting and establishment of a good environment for Public Private Partnership, local and national funds, low-interest loans, international and European programmes and initiatives.

- Sustainable transport and mobility

  Strategies on sustainable transport in urban regions aim to promote sustainable transport, especially those focusing on cleaner vehicles. The current regime of fossil fuelled individual car use is under pressure because of the increasing attention for the quality of the environment, air pollution, congestion, lack of space etc. At the same time we are seeing innovation in the areas of cleaner fuels and vehicles, new mobility concepts and technologies etc. At this time no one yet knows which solutions will work and which won't, or how the best solution can be found in a specific local situation.
  In many areas success is reported (technology, communication, stimulation, market and behaviour) and much good work is being done. Second, all cities seem to be struggling to reach a break-through and often are not able to develop their innovation beyond a project or small-scale experiment. Third, all cities seem to struggle with similar problems related to lack of clear and strict regulation at national and EU-level, a shared definition of clean vehicle and fuels and a slowly emerging market.

- Energy renovation of existing buildings

  The European building stock is a major contributor to energy waste and CO_2 emission. The residential and tertiary sector accounts for more than 40 % of final energy consumption in the Community and is expanding, a trend which is bound to increase its energy consumption and hence also its carbon dioxide emissions.
  A significant proportion of building stock is covered by multi-storey buildings - 13% in the old EU member states and more than one third in the new member states. Here, the prefabricated housing stock is predominant, characterized by maintenance backlog and very low structural and thermal quality. At the same time the saving potential is significant – savings in heat up to 30-35% can be reached in many cases. In average new built concerns only 1% of the stock, which pinpoints the priority to put on existing buildings.
  Another important point is the social aspect linked to the quality of the building stock. Old and inefficient buildings with low levels of insulation are often inhabited by population with low income. Because of the poor state of their house they tend to spend a high percentage of their income in their energy bills; therefore rising the phenomenon of fuel poverty. This problem is accentuated by the current rising prices of energy and many dwellings prefer to stop their heating systems rather than getting in debts; and therefore putting their health at risk.

- Administrative organisation: internal structures and processes

  There has been, through the past few years in the different organizational structures of the public administration of the various European countries involved in the City Instruments project, a diffused trend towards the decentralisation of both the legislative power and the decision making processes on energy matters. In particular, within a general national framework set by the State, European Regions have gained significant strategic, legislative and planning competences when defining the energy policies of their territory. Municipalities, the administrative entity nearest to the citizens, in compliance with a subsidiary principle, can also deliberate on legislative, financial and economic issues and carry out many operational and controlling tasks. Urban planning and building regulations are a major competence of Municipalities, together with the transport and mobility plan and the energy master plan.
  But well beyond the specificities of the different administrative contexts, it is important to outline how the organisational structure and the internal processes of the public administration can influence quite significantly the definition of an energy policy programme at city-wide or metropolitan scale and its implementation.

A common denominator to all city or provincial administrations is the need for political commitment, strategic stability and operational flexibility. All administrations are grouped into a number of departments and these in turn are made up of several divisions. There is a lot of talking about “simplifying”, “slimming” and “modernizing” the administrative machine to speed up procedures, facilitate transfer of know-how, increase synergies and create a collaborative bridge between citizens and public institutions.

- Municipal energy management, decentralised energy supply, integration of renewable energies

  Many recent studies indicate that, in order to safeguard the environment and reduce the risk of climate change, it is imperative for us to take a different direction, cutting the emissions of carbon dioxide (CO_2) and other green house gases. To do this we need to use highly efficient systems which exploit renewable energies more and more, and reduce the use of fossil fuels to a minimum or zero. Numerous European Directives (e. g. 2002/91/CE, 2001/77/CE) influence Local Authorities (both Municipal and Provincial Administrations) which assume various roles - as energy consumers (buildings, car fleets etc.), energy producers (agreements with/participation in local utility companies), animators and catalysts (sponsorship of events, grants, etc.) and regulators (Master Plan, traffic limitations, etc.). Moreover Local Authorities can play an important role in implementing pilot schemes and projects that may be reproduced in other areas, and also in the private sector.
  Municipalities also have a key role of exemplarity to play towards their citizens. Requiring inhabitants to adopt sustainable behaviours of technologies is hard to achieve when the municipality itself does not do so. They put at risk their credibility and the one of RUE and RES solutions by not implementing them.

- Methods for calculation, indicators, monitoring

  On federal and local level, stakeholders of cities as well as leaders of administrations and politicians have set compulsory goals to save energy and to reduce CO_2 emissions of the city. The Kyoto protocol and the IPPC assessment reports, published in the last years, deeply influenced this process. Different climate alliances of cities and towns set up concrete CO_2 emissions’ reduction goals to be achieved for example in different time periods such as 2012, 2020 or 2050. On national and international level, there are also needs to measure the results of Emission Trading, Clean Development Mechanism and Joint Implementation Projects.

  International agreements and voluntary self-commitments lead to a common goal: to monitor and measure or calculate the savings achieved over the years by cities and municipalities (as well as by countries) to compare the results between different cities.

  Some cities already started to measure the achievement of concrete projects in the nineties of the last century. Other cities set up an energy balance and adjusted it after some years.

  In the last years, a discussion was started on ways of measuring the development of energy savings of the city in total. Methods should be detailed enough to obtain a good picture about the situation of the city and a reliable account of the achieved results. On the other hand, the effort to achieve these results should be efficient so that the cities could manage the expenses and expenditures. Likewise, indicator systems for Cities and municipalities or regions exist too.

Showing best practice projects is in that respect essential to give proof of the potential that can be mobilised. Rational use of energy and air pollution prevention are of high importance and instruments to track the developments are important tools to have citizens accept it and step by step move toward a more sustainable way of life.

The Workshops series was focussed on the in-depth exchange of experience and constructive discussions among the metropolitan partner regions concerning the instruments available to promote RUE and RES.

On the basis of the workshop series each partner city was invited to choose one or more RUE/RES instruments for implementation.

4.2. Framework Conditions of Cities

Every participating City developed in the last decade instruments for energy savings, increasing energy efficiency, increasing the use of renewable energies and environment protection. To understand why they developed their specific instruments it is necessary to get some main information about the situation of the City, the special framework conditions of the City.

The project partners developed a set of common indicators to describe the situation of the City and the energy, climate protection and environmental protection policy.

The 4 indicators are as follows:

- Short description of the City itself:
  This indicator comprises beside geographic information also information about the number of inhabitants, number of workplaces and a description of the main problems of the City with a view on climate protection.
- Short description of energy related facts:
  This indicator covers information about the structure of the energy consumption, information whether the City is owner of the utilities and whether the City itself is owner of different types of buildings inside the City area.
- Description of climate protection policy / energy policy:
  This indicator gives information about the energy and environment protection policy, energy goals and responsibilities within the City administration.
- Description of the national and local policy and legal framework:
  This indicator describes the legal framework on national and regional or local level.

The Cities had to fill in the questionnaire together with the description of the instruments they developed in the last years according to the field of activities as described in the previous chapter.

Two examples are given below as an example of the information provided by the Cities.

Rotterdam

Short description of the City

Name of City:	Rotterdam
Country:	The Netherlands
Region:	Rijnmond region; or larger: Randstad region
No of inhabitants:	596 000 (2006); 1 200 000 (Rijnmond region); 6 000 000 (Randstad region)
Area km^2:	319.35 km²
No of work places (jobs):	297 400 (2005)

Main problems of the city with view on climate protection

Rotterdam is especially vulnerable to climate change. This is because Rotterdam is one of the regions of the Netherlands which lies below sea level (lowest point of Rotterdam region is 6.76 meters below sea level). Also Rotterdam is the chief outlet to the North Sea for the Rhine River. Both flooding, because of too much rain and melting snow, and restrictions to river bound traffic are causing problems.

These are important reasons for Rotterdam and the province of South Holland to be concerned about climate change. In addition the Rotterdam Port and Industrial Complex hosts a lot of fossil-fuel based industrial sites (oil refineries, chemical plants, electricity plants, oil and coal terminals, etc.) and is an important hub for deep sea and inland shipping. This means that international and national attempts to put a price on the usage of fossil carbon have a great impact to the Rotterdam economy. Finally, rising energy prices affect both businesses and households in Rotterdam.

The Port and Industrial Complex also generates large traffic flows, by water, road and rail, with negative external effects. One of the main challenges is to guarantee sufficient accessibility, without adversely affecting the quality of the living environment. Moreover, through the region there are several highly utilised highways and a regional business airport which also generate external effects.

However, the transition away from the use of fossil fuels to more sustainable and cleaner sources of energy greatly benefits the local air quality in Rotterdam, which is one of the worst in Europe. Climate and energy policy therefore are also an opportunity for Rotterdam. Innovations and experiments are welcomed by the city. They must however be positive for businesses and households in Rotterdam.

For the near future this means that instruments and actions which promote the use of RUE and RES in Rotterdam focus on industry, for building environment and sustainable mobility.

Short description of energy related facts

Information based on year 2003 (in MWh):

Consumption of electricity:	MWh (final energy consumption)	TJ (primary energy)
- Total		379 500
- Gas		107 125
- Oil		185 375
- Coal		78 250
- Garbage incineration	129	
Share CHP		
Share of RES-e on total electricity consumption	8%	
Comments:	Estimation based on ECN-C, 2003, Ontwikkelingen energiegebruik HIC Rijnmond 2002-2020 bij lopend beleid	

Final energy consumption	MWh (final energy consumption)	TJ (primary energy)
Total		322 000
- Transport		100 000
- Industry		190 000
- Household, small consumers		32 000
Share of RES on total primary energy consumption		
Comments:	Source: hetmilieuinderegiorotterdam.nl (estimation of data) Energy data at regional and municipal level is not available in The Netherlands. This means that both final energy consumption and primary energy for Rotterdam are unknown. We do have some numbers which are indicative: • imported crude oil: 100 million tonnes/year • imported coal: 26 million tonnes/year • imported oil products: 27 million tonnes/year • total amount of CO_2-credits needed for Rotterdam industry: 30 million tonnes/year. Energy production: Coal and gas: 2.050 MWe CHP: 710 MWe Wind: 74 MWe Waste incineration: 108 MWe 2013 Energy plants (coal and gas): 7.098 MWe LNG-terminals: 2 or 3 many biodiesel/bio-ethanol initiatives	

Is the city owner of utilities?

Electricity:		
Production	☐ yes	☒ no
Distribution	☐ yes	☒ no
Heat:		
Production	☐ yes	☒ no
Distribution	☐ yes	☒ no
public transport	☒ yes	☐ no

Ratio in % of sqm for

Owned dwellings	25.9%
Rented space for living	73.6%
Owned industrial and office space	unknown
Rented industrial and office space	unknown
Comments:	Total stock of residences: 285 982 (0.5% unknown whether owned or rented)

Is the city owner of buildings?

☒ yes	If yes please indicate the total number or sqm:	total number (approx. 1 000) and sqm is unknown
☐	Dwellings	
☐	Administration offices	
☐	Schools	
☐	Kindergartens	
☐	Hospitals	
☐	Others:	
☐ no		

Climate protection policy / energy policy

Description of the goals of the policy and the strategy to promote RUE and RES of the city

In 2006, the City of Rotterdam set up a Rotterdam Energy Programme. The City and Port of Rotterdam want to profile the region as one in which many innovations in energy take place. The City set up a company that uses the spare heat of industries to warm a large number of houses. Moreover, a new urban department on energy has been set up to coordinate and catalyse a large number of energy issues. This department is part of the Rotterdam Development Corporation (OBR).

RES: The City and Port of Rotterdam aims to double the regional product while halving the environmental problems related with use of energy. The aim is to create an innovative milieu for energy production. Investments will be done in spare heat, bio energy, wind energy and solar energy but also in LNG terminals and coal gasification plants. Furthermore, Rotterdam wants to investigate the possibilities of storage of CO_2.

RUE: Rotterdam supports a variety of measures contributing to reduce energy use in city and port. It set up a project on industrial ecology (a loop of plants using each others output). Furthermore, the city sets up an energy management programme for those buildings and facilities owned by the city.

National & Local framework

Description of the general conditions: policy framework, legal framework

National framework: Energy

Dutch energy policy aims to realize a sustainable energy economy. The need for this is simple. The Netherlands depends almost entirely on oil that is supplied by countries outside the EU. This makes us vulnerable. Even if we disregard the hazardous emissions from fossil fuel, we still spend billions of euros extra on oil price increases. This forces us to think about our energy economy. Realizing a sustainable energy economy is, however, far from simple. It requires a new way of thinking and acting in a economical, technological, socio-cultural and innovative way.
The Netherlands chooses to use a transition approach. In this approach, we take into account that changes are not only necessary but also create opportunities for innovation and economic growth.

Where can benefits for society be attained and where are the concrete economic opportunities? The participants in Energy Transition have established six themes-six realistic possibilities for achieving a sustainable energy economy within 50 years. We conduct experiments based on these themes, experiments that ensure that the final aims become clearer and feasible.

Market participants, scientific and civil organizations and government agencies are taking the lead in each of the six themes:

1. Green raw materials
2. Sustainable Mobility
3. Chain Efficiency
4. New Gas
5. Sustainable Electricity
6. Energy in the built environment

National framework: Climate:

Domestic climate policy is focused on achieving the domestic part of the Kyoto commitment. The domestic target is:
Emissions of greenhouse gases must not exceed 220 million tonnes CO_2-equivalent on average in the period 2008 to 2012. This concerns emissions produced in The Netherlands that are covered by the Kyoto Protocol, i.e. carbon dioxide, methane, nitrous oxide and three fluoride compounds. Efforts by Dutch companies participating in European CO_2 emissions trading are also included in the domestic target. With the implementation of the EU Linking Directive, these companies can use (a limited number of) JI and CDM allowances within the CO_2 emissions trading scheme. These allowances are also included in the domestic target.

Local framework: Rotterdam Energy and Climate Programme

THE ROTTERDAM CLIMATE INITIATIVE: Sustainability as a driver: strong economy and an attractive city to live in Rotterdam has substantial ambitions in the areas of economy, space and society. Ambitions

for the coming decennia are spelled out in 'City Vision Rotterdam 2030'. The primary focus is on a strong economy and an attractive city for living. In order to realise these ambitions, a new direction must be found. A healthy and attractive living environment is no longer a fringe requirement for our future, but a key demand. Therefore, significant effort will be required in the areas of environment, energy and health to strengthen the city's position nationally as well as internationally. After all, Rotterdam is set on becoming even more attractive to residents, businesses and visitors.

Flying start

Rotterdam is already dealing with this through concrete, short term measures. An important component of this is the 'Rotterdamse Aanpak Luchtkwaliteit' (RAL , Rotterdam's approach to air quality). The framework of the RAL targets a clean city vehicle fleet (consisting of 1600 vehicles), prohibiting polluting lorries from entering the inner city (environmental zoning), dealing with pollution from shipping (shore power) and stimulating the use of bicycles. The 2006 'Rotterdamse Energy-Programma' (REP, Rotterdam Energy Programme) and the ROM -Rijnmond/R3 programme give Rotterdam a head start in the management of energy and climate concerns. Utilisation of industrial excess heat for residences (Warmtebedrijf - Heat Distribution company), the large-scale approach to energy-saving measures in for example, the restructuring neighbourhoods in Rotterdam South (Pact op Zuid -South Accord), the energy savings in street lighting, bio-ethanol filling stations, the 'sustainable dance club' and the energy innovations on the site of the former RDM (Rotterdam Drydock Company) are examples of projects that have already been implemented. We will continue this approach with undiminished ambition in the coming years.

The World Capital of CO_2-free energy

Rotterdam, with its port and established industries, is a world player in the field of energy and has already accepted its responsibilities in many different ways. But that is not yet enough. In view of its economic position and quality of the living environment, a faster realisation of a cleaner future is of essential importance to the city and its residents. This is the perfect time to raise many activities to a higher level and to launch new initiatives. We are consciously forging ahead. In the coming years, Rotterdam has the ambition to further develop into a CO_2-free city and first-rate Energy port: 'the world capital of CO_2 free energy'. This ambition is expressed in the target of a 50% reduction in CO_2 by 2025, relative to 1990, for the city as well as for the port. And this coincides with a period of enormous expansion in both parts of the city, for example in the enormous renovations and new building construction, large-scale area developments such as near the Central Station (CS), Stadshavens (City ports), Pact op Zuid and the downtown area. Notable for the port are the development of the second Maasvlakte, the construction of new power generating stations, LN G terminals and bio-ethanol installations.

Re-inventing the city: a community effort

The energy and climate issue is urgent and complex. It requires alternative ways of managing our energy as well as an awareness of the impact of our way of life on the quality of our environment. For Rotterdam, as a city located on the delta, the effect of climate change is also in a physical sense (due to rising sea levels) of utmost importance. This effort requires a re-invention' of the city in all its aspects: transportation and mobility, living, working, producing and behaviour. An extraordinary effort is needed from all the residents and businesses in the city and the port. Affordability and availability of energy, the quality of the city and a better climate affect all Rotterdam residents. Only when producers as well as consumers change their belief and their attitude, when the City, Port Authority, DCM R and Deltalinqs collectively facilitate and stimulate this, only then is our ambition attainable. For that reason we explicitly connect the city and the port. We will face this challenge head on. We are prepared to invest money, organisation, network, knowledge and expertise, with conviction and behaviour. The result will be beneficial for man, climate, air and economy: four targets in one.

Rotterdam has the critical mass for a transition

Efficient development of Mainport Rotterdam is of national and international importance. On the one hand because of its contribution to the gross regional and national product, on the other hand because of Mainport Rotterdam's social significance as a continuous and reliable service with clean and affordable energy for the region, The Netherlands, and Europe. Because of its large scale and international connections, Mainport Rotterdam offers concrete starting points for transition and renewal. This ambition provides economic opportunities for the port and industrial complexes, for the city and for the country. To collectively seize these opportunities is therefore part of the mandate, with mutual strengthening as the objective.

Rotterdam contributes to climate change at an international level

Rotterdam is a member of the Large Cities Climate Leadership Group (the C40) and of the Clinton Climate Initiative, a partnership of world cities that are committed to an active approach to climate change. This obliges Rotterdam to take action and it provides opportunities for an effective global effort. So Rotterdam also faces the challenge internationally.
The Rotterdam approach
In other words, Rotterdam accepts its responsibility in a way fitting its reputation: enterprising, visionary, actions instead of words. Rotterdam wants to be an instigator and a leader. This is developed in the 'Rotterdam Climate Initiative', Rotterdam's view of a good climate and energy policy.
Ambitions for the city and the port are discussed in more detail under the heading 'programme spearheads'. Further topic development will take place in the coming weeks, in cooperation with relevant public and private parties.

Programme spearheads

The central ambition of a 50% CO_2 reduction by 2025 relative to 1990 is a challenging tactic, stimulating innovation and investment in energy savings and sustainable energy, in both, the city and the port. Actions and measures are formulated and gather substance under a number of spearheads. These will be completed together with the respective public and private stakeholders, such as building corporations, the business community and knowledge institutions.

a. Rotterdam Sustainable City
Rotterdam wants to cut its climatic footprint in half. The ambition is to achieve energy-neutral developed surroundings, where residences and buildings are combined; on balance have an adequate supply of sustainable energy, through a drastic reduction of energy consumption for heating, cooling and equipment.

b. Rotterdam Energizing City
Commitment of governments, businesses and residents is essential for the success of the Rotterdam Climate Initiative. They are actively involved in plan formulation and implementation. It is essential that government, business management and employees of the city, port authority and other partners act as role models. A system of incentives and penalties is also required: good behaviour is publicly rewarded.

c. Rotterdam Sustainable Mobility
In 2025, emissions of CO_2 and other toxic substances will be cut in half through the use of alternative fuels, engines and radical optimisation of traffic behaviour. Rotterdam is also making efforts to reduce toxic emissions from inland and sea navigation. Rotterdam is making efforts to clean up transportation, reduce local air pollution and CO_2 emissions, with a healthier climate as a result. The transition in transportation will therefore involve far-reaching system modifications in the vehicles themselves as well as in the fuels used, and in the use of transportation systems and the way mobility fits into the spatial environment.

d. Rotterdam Innovation Lab
Rotterdam is working on a concentration and bundling of energy expertise and sustainable energy developments. Rotterdam wants to become the foremost European (port) city in knowledge and innovation. The innovation to be realised in Rotterdam will also enable the export of technologies - by research institutions and businesses - from The Netherlands and from the European Union.
e. Rotterdam Sustainable Energy Port
Rotterdam and its partners chose a futuristic and energy-efficient energy port of global scale.

The targets are:

- Development of Rotterdam as the CO_2 hub van of NW Europe;
- Develop into the exclusive Energy Port for CO_2-free energy sources and products in NW Europe;
- Develop into the most energy efficient energy and industrial cluster in the world.

Websites:
http://www.rotterdamclimateinitiative.nl
http://www.senternovem.nl/EnergyTransition/Index.asp
http://international.vrom.nl/docs/internationaal/On%20the%20way%20to%20Kyoto.pdf

Sofia

Short description of the city

Name of City:	Sofia
Country:	Bulgaria
Region:	South Eastern Europe
No of inhabitants:	1 250 000
Area km^2:	1 310
No of work places (jobs):	450 935 (in 2003)

Main problems of the city with view on climate protection

According to the recent researches (Air Quality Programme for the city of Sofia and others) the main problems of Sofia which have environmental impact and effect on the climate change are:

- Transportation: old and in poor condition infrastructure, lack of parking places, lack of cycling routes, increasing number of cars and their use, old vehicles
- Building sector: low energy efficiency of the buildings and heating installations
- Industry: presence of a big metallurgical factory in Sofia surroundings and other industrial enterprises.

Short description of energy related facts

Information based on year 2001 (in MWh):

Consumption of electricity:	MWh (final energy consumption)	TJ (primary energy)
-Total		
- Gas	n.a.	n.a.
- Oil	n.a.	n.a.
- Coal	n.a.	n.a.
- Garbage incineration	0	0
Share CHP	n.a.	n.a.
Share of RES-e on total electricity consumption	n.a.	n.a.
Comments:		
Final energy consumption	**MWh (final energy consumption)**	**TJ (primary energy)**
Total	1 102 334	n.a.
- Transport	151 876	n.a.
- Industry	636 050	n.a.
- Household, small consumers	313 209	n.a.
Share of RES on total primary energy consumption	n.a.	n.a.
Comments:		

Is the city owner of utilities?

Electricity:		
Production	☐ yes	☒ no
Distribution	☐ yes	☒ no
Heat:		
Production	☒ yes	☐ no
Distribution	☒ yes	☐ no
public transport	☒ yes	☐ no

Ratio in % of sqm for

Owned dwellings	n.a.
Rented space for living	n.a.
Owned industrial and office space	n.a.
Rented industrial and office space	n.a.
Comments:	In Bulgaria the ratio of the owned dwellings is very high

Is the city owner of buildings?

☒ yes	If yes please indicate the total number or sqm:	1 300 000
☒	Dwellings	
☒	Administration offices	
☒	Schools	
☒	Kindergartens	
☒	Hospitals	
☐	Others: Sport centres	
☐ no		

Climate protection policy / energy policy

Description of the goals of the policy and the strategy to promote RUE and RES of the city

Recently a Short-term Programme on Energy Efficiency for the period 2006-2008 has been developed and adopted by the City Council. The Programme defines the main directions of the municipal energy policy:

- Energy efficiency measures in municipal buildings
- Gasification of some city districts and the municipal buildings situated there (expected savings resulted from the fuel change - approx. 1.5 mln. EUR for the period 2006-2008)
- Financial, legislative and other issues.

The mayor is assigned to organise and control the implementation of the adopted Programme.

National & Local framework

General conditions: policy framework, legal framework (related national policy like energy law, spatial planning law, legal settings, partnership)

In 2003 the Energy Law was adopted by the Bulgarian Parliament. The new law builds upon the 2002 Energy Strategy of the Bulgarian Government and provides for the regulation of the electric and natural gas markets in conformity with the requirements of the EU directives. It establishes the overall framework under which all other energy-related legal and regulatory acts must follow, and creates the parameters for sector operation as a whole. The law ensures the necessary preconditions for increased efficiency through market competition, privatisation, stimulus for co-generation, etc.
In 2004 the Energy Efficiency Act entered into force and is based on the Energy Strategy, as well as on the EU requirements and the Kyoto Protocol to the Frame UN convention on climate change. It regulates the rights of the minister of energy and energy resources, the elaboration and implementation of long and short term national, sectoral, regional and municipal programmes and projects for realization of energy efficiency policy and others.

In order to coordinate activities between ministries, state bodies, municipalities and companies on regional level Regional Council on Energy Efficiency was established in 2004.

These two examples show differences and similarities between Cities in Europe.

One main lesson learnt is that it is very important to compare the situation of the City that has already applied an instrument with the City where one intends to adapt the same instrument. It is important to first analyse very clearly the problem that has to be solved. Each City has to know the context in which it is working and whom it wants to influence. Local experiments need to be linked to strategic and tactical processes where societal context factors co-evolve with operational innovations.

What are the factors one should pay attention to?

- What is the problem that has to be solved? Are these the same problem(s) that lead the partner City to develop the instrument?
- Which partners must the city involve in addition to all departments and staff concerned? Does the City have the power to solve this problem on its own or does the City have to co-operate with administrations on regional and national level?
- Does the City or the province have its own legislative competence to adopt an instrument from the partner City?
- Is the structure of the energy consumption in ones own City comparable to the partner City (e.g. Are the main sectors building sector, traffic, or the industry)?
- Is the City owner of utilities (electricity, heat, transportation)?
- Is the City owner of the buildings that are used by the City administration?
- Does the City have sufficient tax revenues (e.g. to finance energy saving investments), to run City based incentive programmes?

4.3. Best Practice Catalogue - Types of instruments

The project partners selected the following fields of activities (see chapter 4.1) and then compare their instruments to choose and the best in each category. It has to be taken into account that instruments are developed to solve concrete problems. The chosen solution is often based on national or European legislation like fine dust protection or building certificates.

The 3 main indicators adopted for choosing the best practice instruments were:

- Results
- Transferability
- Innovation

The fields of activities are:

- Information, communication and co-operation
- Financing instruments including joint implementation and emission trading
- Sustainable transport and mobility
- Energy renovation of existing buildings
- Administrative organisation: internal structures and processes
- Municipal energy management, decentralised energy supply, integration of renewable energies
- Methods for calculation, indicators, monitoring

Below one best practice example as published in the Best Practice Catalogue is given for each field of activity.

Description of instrument: Information, communication and co-operation

Milan: Energy Info Points

1. Instrument Category / responsible institution

	Category	City Adminis-tration	Chamber of Commerce/ Trade/ Crafts	Energy Agency	Housing Society	Other
Methods for calculation, indicators, monitoring	☒	☐	☐	☒	☐	☐
Energy renovation of existing (public or private) buildings	☒	☐	☐	☒	☐	☐
Energy supply, use of RES (technical systems, organisational)	☒	☐	☐	☒	☐	☐
Administrative organisation	☒	☐	☐	☒	☐	☐
Financing instruments	☒	☐	☐	☒	☐	☐
Information, communication and co-operation	☒	☐	☐	☒	☐	☐

2. Instrument

Name of the instrument:	**Energy Info Points** infoenergia

General description of the instrument

Why – Develop positive actions to fulfil the Kyoto commitments by systematically working upon the rise of an energy efficiency culture and the use of renewable energies by encouraging an encompassing concertation action among sector operators of the building arena (not only builders, but also building administrators, decision makers, etc...).
Who – Energy Sector of the Provincia di Milano together with its Municipalities with less than 40 000 inhabitants (presently 14).

Main steps and time needed – 1) Creation of a Public Company for the management of the Network of Energy Info Points (May 2006), 2) Opening of the Infoenergia spaces of Melzo and Carugate (October 2006), 3) Tender to select the partner banks for the project "Aprofitto", 4) Infoenergia front desk of Garbagnate Milanese (February 2007), 5) Opening of Infoenergia of Melegnano (March 31st 2007), 6) Publishing of the tender "Aprofitto" (April 2nd 2007), 7) Opening of Infoenergia of Corbetta (April 13th 2007). The opening of Energy Info Points of Arcore, Pioltello and Rozzano have followed and further will be created in 2008 and 2009.

Involved Stakeholders – Each Energy Point covers an area of approximately 150.000-200.000 inhabitants and addresses: a) Citizens planning to buy or renovate their home, b) Building sector operators (designers, building firms, plant installers and producers of components, trade associations and building administrators), c) Local Authorities and Public Services (Municipalities, Schools, other public companies, and those present at the moment).

Barriers –a) Lack of information; b) Low visibility of the potential savings; c) Insufficient knowledge on the investment advantages; d) Poor communication amongst market actors; e) Difficulty of access to credit; f) Investment risks associated to energy efficiency; g) Frequent mismatch between investors and end users.

Responsible for the implementation – An organisation has been set up within the Company with presently 12 highly empowered people operating on the basis of a structure strongly process oriented [Ref: Mintzberg Adhocracy] (Data related to the beginning of the year 2007)

In use? - Ça va sans dire! The instrument is at its initial stages and is planning to expand over time.

"What" do the Infoenergia Points do?

The activities are grouped under 7 chapters:

1- Listen: to know and comprehend the concrete expectations present on the territory of competence.
2- Inform: disseminate the different fields encompassing its mission: technology, behaviour, incentives.
3- Suggest: new positive actions (agreements with suppliers, with banks, etc.).
4- Study: each day new proposals and technologies appear on the market, permanent education is a must.
5- Meet: on the territory dozens of organisations operate in the energy field, often without knowing of each other, for them the Infoenergia Point offers a meeting point.
6- Associate: the development of a building system oriented towards energy efficiency and renewable energy sources needs instruments such as the creation of new forms of association (consumer associations as well as, and even more so, trade associations) specifically targeted towards energy achievements.
7- Verify: norms that make energy efficiency compulsory exist (building shell and plants) but, without adequate control, they are systematically disregarded; Infoenergia Point does not have an auditing task, and less so acts as a police inspector, it though performs as a facilitator of bureaucratic activities associated to the controls required by law (the creation of a general register of heating plants, statistical data gathering on notified violations ...). The main objective is to map the overall improvements undertaken within its territory of competence.

3. Target group

☒	Public administration	Infoenergia Front Desks address all operators, as long as active within the boundaries of competence of the Info Points (clusters of Municipalities with less than 40 000 inhabitants for a total of 150 000 -200 000 inhabitants in the metropolitan area of Milano).
☒	Schools	
☒	Industry, SME, service industry	
☒	Public utilities	
☒	Private house owners / housing society	
☒	Public housing enterprises (if the case)	
☒	Tenant	
☒	Other:	

4. Main aims

☒	Environmental protection	All integrated in single specific micro realisations: a new house, a new boiler, an educational event for students belonging to a specific school. We mainly aim at the concrete and immediate use of technologies, incentives and products already available on the territory.
☒	Energy savings	
☒	Increasing the energy efficiency	
☒	Increasing the use of RES	
☒	Awareness raising, change of behaviour	

5. Resources

<u>Development:</u> Financial resources Human resources on city level Third party resources	 150 000 € (capital and contributions from members – 90% of which from the Provincia di Milano). 750 hours of the staff from the energy sector of Provincia di Milano
<u>Operating:</u> Financial resources Human resources Third party resources	 500 000 € for the year 2007 (from the Provincia di Milano– 90% – and the rest from the associated Municipalities) 12 staff personnel → 20 000 ore Only specific consultancy required: (business consultant, public notary…)
Other resources:	Co-operation with Politecnico of Milano and other organisations of Provincia di Milano (Sacert)

6. Results, Effects

Improvement of social & living conditions

Even though the project has had a very recent start-off we have supported numerous building renovation projects falling within the boundaries of the first two front desks operating since October 2006. (Other Infoenergia Points have just opened and others in fact are about to be inaugurated).
The new campaign of control and maintenance of heating plants, based on the law 192/2005 implemented in 2006 is, where the Infoenergia Desks are present on the territory, directly managed locally by them.

During special social events (generally the town feast-day) we organise a show dedicated to RUE and RES. In fact, in coincidence with the City Instruments workshop in Tallinn workshop (March 2007), we took part in the Palme di Melzo festivity.
The elementary schools of Melzo (the last grade) have all come to visit our premises last year and this offered the opportunity to present some principles (such as the “passive house”) and best practices such as increased insulation in homes.

Other achievements and results

The social demand for energy efficiency and savings as well as for renewable energy sources is high, thanks also to the attention given by of all media to the climate theme and thus citizens and operators (where Infoenergia Points are in place) know they have a reference point to help them understand, choose and carry out those interventions estimated as most appropriate to respond to their needs and thus ousting the inertia and bad habits of local markets.

7. Evaluation

Success factor – The capacity to catalyze a virtuous circle between supply and demand within the building private sector: when a citizen acknowledges that he/she has well invested its own money (because the energy bill decreases) and that the economic operator (builder, maintenance service, plant installer, building administrator,...) can develop its on activity based on the quality offered (an not only on cost basis) all are pleased. This engenders new practices that imply the set aside of previous dominant behaviours (spend little for construction or renovation works even if that involves higher and uneconomical energy consumption).

The foremost strength lies in a triple advantage (savings for the consumer, development of local productive forces, improvement of the environment). The weakest point is the need to operate on the building system as a whole and not on the single component (it does not make much sense to install an efficient boiler or high performing windows or even free-standing solar panels in a leaking building shell). The measures, even if carried out gradually, must be assembled to form a coherent retrofitting energy project integrating the building system with the plant system. The greatest opportunity is given by the strong media impulse to cover energy themes. The main threat is the outliving of habits disguised under new labels: we have seen condensation-type boilers that do not condense, insulation environmentally dangerous, projects defined “eco” and with “high savings” which offered only one tenth of what one could pretend and obtain... the market requires energy savings and so we offer energy savings (even if, for convenience we continue to propose the usual product under another name)!

8. Contact information

Name	Franco Bontadini, Caterina Magnani
Address	Corso di Porta Vittoria 27 20122 - Milano
Phone	+39 02 7740 6931 (Infoenergia) +30 02 9365 0857 (Infoenergia)
e-mail	info@infoenergia.eu
URL	www.infoenergia.eu/

Description of instrument: Financing instruments including joint implementation and emission trading

Berlin: Energy Saving Partnership

1. Instrument Category / responsible institution

	Category	City Adminis-tration	Chamber of Commerce/ Trade/ Crafts	Energy Agency	Housing Society	Other
Energy renovation of existing (public or private) buildings	☒	☒	☐	☐	☐	☒
Financing instruments	☒	☒	☐	☒	☐	☒

2. Instrument

Name of the instrument:	**Energy Saving Partnership (Energiesparpartnerschaft)**

General description of the instrument

The Energy Saving Partnership was developed and implemented in Berlin with the aim of reaching ambitious objectives for climate protection and reducing energy cost in the face of a tight budgetary position.

Energy Saving Partnership lead to:

- Reductions in energy consumption
- Lower Costs
- Environmental Protection.

The instrument was developed in 1995 in co-operation by the Climate Protection Department of the Senate of Berlin and the Berliner Energieagentur GmbH. The instrument was developed because of the tight budgetary situation of Berlin.
The measures how to reduce energy consumption of public buildings are well known. Some energy saving potential can be realised by changing the behaviour of the people who work in the buildings. But a big part of the energy saving potential can only be realised through capital investment. It makes sense to renew technical equipment within a short period. But caused by the public financing scheme often investment cost ca not be realised within one fiscal period. To solve these problems the idea of financing energy saving measures by private capital investment and private equipment service was born.

So far 60 million euros have been invested by private energy contractors. As a result energy costs have been cut by 25 % in public buildings such as schools, preschools, universities as well as administrative buildings.
Since 1996 nineteen (19) energy saving partnerships were born.
The contracting procedure is handled by the Berliner Energieagentur GmbH.

An Energy Saving Partnership normally runs according to the following method:
The client (for example the local authority) is responsible for the upkeep of various buildings, such as nursery schools or offices. It is bound by contract to energy suppliers who deliver electricity and heating (i.e. gas or oil).
In order to reduce energy consumption, costs and damaging levels of carbon dioxide, the client transfers the financing, planning, implementation and controlling of energy saving measures to a private energy saving partner – the so-called contractor. The successful contractor undergoes a tendering process. The tendering process is managed in Berlin by the Berliner Energieagentur GmbH. The existing contracts between the client and the energy suppliers covering the delivery of electricity and heating are not affected by the project. The contractor, however, agrees the necessary technology and supply with the energy suppliers.
An Energy Saving Partnership is not only applied to energy saving in large building complexes. The Berlin model is a conscious effort to pool smaller projects and create “building pools”. These pooled buildings have different levels of energy consumption, construction material, fixtures and fittings which lead to profitable cross calculations and also mean that seemingly unprofitable buildings are integrated into the project.

The contractor signs a contract to guarantee the client a minimum level of energy savings. Experience shows that over 25 % of energy costs are able to be reduced – savings not normally realisable by a (state) owner of real estate on his own. The contractor only receives his agreed earnings if the stipulated energy savings are reached. The client is also able to save money through savings on heating and electricity achieved through the energy efficiency measures. The investments carried out by the contractor are refinanced through the savings. Any remaining savings are shared by the partners according to a ratio system agreed to in the contract for the duration of the project. The contractor remains responsible all this time for the maintenance and service of the systems. The client profits from all cost savings once the contract has expired.

3. Target group

- ☒ Public administration
- ☒ Schools
- ☒ Industry, SME, service industry
- ☒ Public utilities

4. Main aims

- ☒ Environmental protection
- ☒ Energy savings
- ☒ Increasing the energy efficiency
- ☒ Increasing the use of RES
- ☒ Other: Lower cost for energy service of buildings

5. Results, Effects

Improvement of social & living conditions

Some work places are created by the project manager Berliner Energieagentur.
The reduction of energy consumption lead to a reduction of dust and NO_x.

Other achievements and results

Ross-subsides of less profitable measures are included in the complete package of the contractor.
Assuming ownership of energy optimised plants after expiration of the energy saving contract without additional financial compensation.
The transaction costs are lower through the creation of a building pool.
One responsible agency for planning and execution, integration of maintenance and corrective maintenance.

Please give numbers in relation to your base year:

Environment - reduced emissions (in %):	
- CO_2	60 000 t/a
Savings:	
- Money (in €)	2.4 Mio € / a
Other effects (e.g. no. of participants, visitors, products distributed etc.):	investment cost 60 Mio € (1996-2005)

6. Evaluation

Energy Saving Partnerships work because they:

- guarantee energy and costs savings by contract
- reduce energy consumption in large building complexes or a building pool through investments by the contractor
- refinance the investment through the savings in energy
- allow the building owner to participate in the saved costs.

For the tendering process it is necessary that the client can give reliable information about the energy consumption of the building pool, the energy cost of the last years. Furthermore he has to give information

about the technical equipment of the building (age of the boilers and burners, type of fuel, age of the building, how the buildings are used and so on). For success it is necessary to involve a project manger who is able to handle the tendering process and to give advice to the client about the offers of the different bidder.

7. Contact information

Name	Berlin Senate Department of Health, Environment and Consumer Protection Grundsatz- und Planungsangelegenheiten des Klimaschutzes	
Address Phone e-mail	Klara Furth-Deutschländer Brückenstraße 6 10179 Berlin + 49 30 90 25 20 50 Klara.Furth-Deutschlaender@SenGUV.Verwalt-Berlin.de	
URL	www.berlin.de/sen/umwelt/index.shtml	
Links to reports and other related information		www.berlin.de/sen/umwelt/klimaschutz/download/esp_broschuere_2006.pdf www.berliner-e-agentur.de/index.php?idcat=38

Description of instrument Sustainable transport and mobility

Gothenburg: Clean Vehicles Strategy

1. Instrument Category / responsible institution

	Category	City Adminis-tration	Chamber of Commerce/ Trade/ Crafts	Energy Agency	Housing Society	Other
Sustainable transport and mobility	☒	☒	☐	☐	☐	☒

2. Instrument

Name of the instrument:	**Clean vehicles in Gothenborg - Eight years of experience in promoting clean vehicles**

General description of the instrument

The City of Gothenburg started early in the 1990's to pay attention to the topic of clean vehicles. The conditions they faced were poor; there was no real market yet: only a few "clean vehicle" models were available, only a very limited number of fuelling stations was being set up, there were no market activities among car dealers and to top it of, there was a low awareness among car users/ buyers.

The initial work within Gothenburg leads in 1993 to putting environmental demands on buses. The activities for clean vehicles were increased with the work for the Environmental Zone for Heavy Duty vehicles, which was established in 1996. In 1998 a marketing campaign for clean vehicles was initiated, and a year later environmental demands for construction machinery were introduced.

The City does not do all of this work on its own. It works in close co-operation with four other partners, making it a project group of five: the Traffic & Public Transport Authority, Gothenburg Energi (Energy), Gatubolaget (Fleet services), Renova (recycling) and Miljöförvaltning (Environment). Together they cover in an integrated manner the topics energy, vehicles, recycling, environment and transport. The local organisation involves a steering group that focuses on strategically issues and a working group that takes care of the operational issues. The whole initiative has been placed under supervision of one project leader.

A problem that Gothenburg faced (and that has been indeed a problem for all working in the field of clean vehicles) is the definition of a "clean vehicle". As of yet there is no fixed national, European or International definition. Until now Gothenburg has worked with a number of different definitions, in the latest years working together with other Swedish cities in trying to harmonise and come up with only one definition for the country. The definition of what is a clean vehicle is important because Gothenburg uses the definition for a number of initiatives. It is used for the development of policies for vehicle procurements, for creating local parking benefits, for the communication with companies and the public, and for policies involving the local taxi bays.

The aim for the Gothenburg project on clean vehicles is in itself simple: Increase the use of Clean Vehicles in Gothenburg. The targets that have been set are all related to the year 2008. In that year there must be:

- 90% clean vehicles in the City of Gothenburg's fleet (70% today)
- 5% clean vehicles of all new cars sold in Gothenburg (12% today i.e. the target is reached)
- a Self-running market (target reached).

Over the years Gothenburg gained a lot of experience as to who should be addressed when trying to increase the number of clean vehicles. It turned out that it is of great importance to focus on those that could have a good motive for using a clean vehicle, e.g. because vehicle running costs can be reduced or because eco-adaptation can be good for business. The current list of target groups include environmentally certified companies, e.g. ISO 14000, suppliers to the city council, taxi and courier companies, companies with many cars, car sales staff, fuel suppliers, environmental consultants and journalists.

There is a number of possible ways to reach these target groups. The ones that Gothenburg has found are effective are: telemarketing, letter campaigns, personal visits, seminars, input trough dealers and the

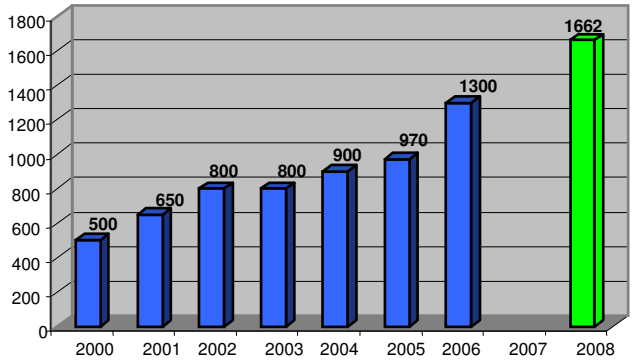
media, website and newsletters.

The way to actually influence these target groups is by informing them carefully and extensively. For this you need to make sure that you are better informed than they are. When you are talking to them be sure to focus on running costs and functionality, not on emissions. Also try to talk to the managers (e.g. managers of economy, ecology and fleet managers). Show them calculations and facts about different models. Help them to get easily into contact with dealers. And finally show them your policy documents (that will have an impact on the clean vehicles situation in your city, e.g. on the environmental zone, parking restrictions and parking tariffs).

This Gothenburg approach is being monitored carefully to see what the actual results of the activities are and to insure positive results. They gather information on what the "client" thought about the provided information (good/ bad/ appropriate and so on), they ask for any actual results (like an adapted car policy or an increase in the number of clean vehicles), they check the numbers of visits to the website and the numbers of subscribers to newsletters, they poll the attitude amongst car retailers and fuel suppliers, they check up on the number of advertisements (e.g. from car retailers and car manufacturers), other market activities. And finally they keep a close watch on the actual number of clean vehicles in the region.

Results

The number of clean vehicles within the municipal fleet of Gothenburg has been rising steadily over the last years. It seems very likely that the 2008 target will indeed be reached (see figure).



The actual number of clean vehicles on the city streets has increased to a total of approximately 8000, and there are now 31 alternative fuel stations in the city. Furthermore there is a marked increase in the knowledge on and the interest in clean vehicles.

On a national level there is now a much bigger market with more clean vehicle models on offer. It also appears that other cities are starting to follow the example.

Some conclusions

The Gothenburg project proved that 5-10 years was enough to "educate" this local market. It also brought to light that the vehicle dealers are more important than first thought; special attention has to be given to them. Apart from the local initiatives it is also crucial to have national incentives and appropriate taxation. It seems that it is easier to subsidise than to tax-regulate. But the question remains how to wisely do this?

Taking the project further

- Introduce the clean vehicle definition on a national / European scale
- Lobbying towards reducing taxes on renewable fuels
- Extend the cooperation with other cities in Sweden and the EU
- Suggesting incentives in order to reduce the tax on clean vehicles, especially heavy duty vehicles.

3. Target group

☒ Public administration
☒ Industry, SME, service industry
☒ Public utilities
☒ Other: general public

4. Main aims

☒ Environmental protection ☒ Increasing the energy efficiency ☒ Awareness raising, change of behaviour

5. Resources

Operating: Financial resources Human resources Third party resources	Between 1997-2007 the average yearly amount = 150 000 €. 1 person has been responsible at city level.

6. Results, Effects

Other achievements and results

- Improved co-operation on a local and regional level
- better awareness among civil servants and general public
- The project has measured number of clean vehicles throughout the years. Also amount of alternative fuels (app. 3-4% 2006)

7. Evaluation

Success factors:

- integrated approach involving all relevant stakeholders in the city and the region
- political support
- financial support from national government and EU

Restraints/ risks:

- measure was dependent on the availability and the (continued) well functioning of (newly developed) techniques
- market availability of vehicles

Prerequisites:

- consistent policy (and laws) on clean vehicles on a national and EU level availability of infrastructure (e.g. filling stations for bio-ethanol)

8. Contact information

Name	Fredrik Högberg	
Address e-mail	City of Göteborg, Traffic & Public Authority P.O. Box 2403 SE-403 16 Göteborg, Sweden fredrik.hogberg@trafikkontoret.goteborg.se	
URL	www.miljofordon.se	
Links to reports and other related information		www.trafikkontoret.goteborg.se/FineToolsAPI/DownloadFile.aspx?fileid=993.pdf&filekey=0c68f88504af37b73430d43197cb1477

Description of instrument Energy renovation of existing buildings

Tallinn: Grant Scheme for Ecological Refurbishment

1. Instrument Category / responsible institution

	Category	City Adminis-tration	Chamber of Commerce/ Trade/ Crafts	Energy Agency	Housing Society	Other
Energy renovation of existing (public or private) buildings	☒	☐	☐	☐	☐	☐

2. Instrument

Name of the instrument	**Grant for energy efficient refurbishment of apartment buildings.**

General description of the instrument

The main goal of the instrument is to support the energy efficient refurbishment process of the existing housing stock in Estonia.

The instrument is among measures provided in the *Estonia's National Housing Development Plan for the years 2003–2008* (hereafter referred as a Plan), which was approved by the Government in February 2003. The plan is based on a more general strategy document – Estonian housing development plan until 2010.
The general responsibility for implementation of the Plan lies with the Ministry of Economic Affairs and Communications (MoEAC). The refurbishment measure is carried out by the Estonian Credit and Export Guarantee Fund (KredEx) in co-operation with local authorities and non-governmental organisations in the housing sector. The Plan in general and the measure are both financed from the state budget. The target group of the measure includes apartment unions, apartment owners'associations and housing unions.

KredEx was founded in 2001 by the MoEAC with the main aim to improve the financing of small enterprises in Estonia and to decrease export-related credit risks, but also to enable people to build or renovate their homes and promote energy efficiency in Estonia. In frames of the refurbishment measure the state supports repair works related to the retrofitting of the main structures in pre-1990 apartment buildings up to 10% of the cost. KredEx also provides loan security for apartment unions on loans that will be used to repair or renovate a house's heating system, for roof repairs, insulation of outer walls, window replacement or insulation, etc. The security covers up to 75% of the loan until the end of the loan period. To apply for refurbishment assistance, the apartment building in question must have been through technical inspection (incl. an energy audit). To conduct such an inspection, the apartment/house union or the association of apartment owners may receive assistance in the amount of 50% of the inspection cost.

The measure is still on-going on yearly basis as the total amount of financing depends on sums provided from the state budget. Data on support measure given in the City of Tallinn in 2003 and in next years are presented in the following table.

Year	Number of projects	Sum of the support (MEEK)
2003	154	7.15
2004	275	10.24
2005	336	11.11
2006	272	15.07

The actual financial support from the state budget has been extremely modest. For example, in 2005 and 2006 KredEx has run off the annual support a sum for this measure during a couple of days after commencing the reception of applications. Therefore, the greatest barrier for this instrument has been the non-sufficient financing from the state budget.

3. Target group

☒ Public administration
☒ Private house owners / housing society

4. Main aims

☒ Energy savings
☒ Increasing the energy efficiency
☒ Awareness raising, change of behaviour

5. Results, Effects

Improvement of social & living conditions

In Estonia heat losses in existing building stock are high resulting in high maintenance cost, therefore the refurbishment is urgently needed in most of residential high rise houses built before 1990 as then the thermal insulation standards were extremely low. The indoor climate and comfort need improvement as well. The saving potential is significant – savings in heat up to 30-35% can be reached in many cases, depending on the level of investment for refurbishment measures. The typical retrofitting measures include additional thermal insulation of building envelope, replacement of windows, installation of new up-to-date heating substations, balancing of in-house heating system, etc. Particular attention has to be drawn on ventilation systems to avoid the syndrome of a "sick house" as a result of windows replacement.
Due to high losses (20% as average; today, in 2007, the losses are lower – 17-19% depending on DH network) in DH pipelines the effect of saved heat is significantly higher at primary energy (fuel) level. In Tallinn the reduction of environmental impact is more modest as the share of natural gas is high in the fuel balance of the city.

Other achievements and results

Several old small boiler houses built in early Soviet period supplying heat to apartment houses firing fossil fuels (hard coal, heavy fuel oil etc) have been shut down. Some small district heating networks were connected to large DH system in Tallinn.
As a result, Tallinn has cleaner environment (atmosphere) and less noise in our living regions and apartment houses.

Please give numbers of 2003 in relation to your base year:

Environment - reduced emissions (in %):	
- CO_2	0.8%
- NO_x	0.7%
Savings:	
- Fossil fuel (in tons)	4 875 t of HFO (or 5 833 thousand m^3 of natural gas)
- Landscape (in km^2)	No impact
- Money (in €)	883 thousand €
- Increased use of RES (in MWh/a)	Additional information: In Tallinn, biomass (wood fuels) is to some extent used, but only for heating in private sector – in family-houses and in some smaller apartment houses with individual heating. Data on fuel amounts are not available. Two small CHP plants firing biogas are running in Tallinn utilizing landfill gas collected from closed landfill in Pääsküla (suburb of Tallinn). The heat is used for heating of approximately 1000 apartments.
Other effects (e.g. no. of participants, visitors, products distributed etc.):	Reduction of total annual emission of SO_2 by 0.45%

6. Evaluation

The process of supporting measures for energy efficient refurbishment of apartment buildings from the state budget has been launched successfully and it has gradually gathered momentum during last years.

The main barrier for widening the process, as well as for carrying out the refurbishment works at more comprehensive level, is the low annual financing support from the State.

Among pre-requisites for achieving best results in refurbishment the proper energy audit of the building is one of the most important ones. Unfortunately, there is not yet any common format for presenting the results of the audit. Neither, there is no system of certification or licensing of energy auditors in Estonia. The energy auditing and labelling procedures of buildings are in the process of elaboration together with the introduction of other requirements of the Directive 2002/91/EC.

It should be noted, that up to now, there is no monitoring and follow-up system arranged for collecting the data on actual measures taken, on achieved energy savings, etc. Therefore, it is not possible to assess the effect of the subsidy and to carry out analyses of refurbishment results in apartment buildings considering the aspect of energy efficiency.

Nevertheless, in the beginning of 2006 the KredEx, in cooperation with the Ministry of Economic Affairs and Communications, established an Energy Efficiency Consulting Centre as a subdivision of KredEx, with the goal of disseminating energy efficiency related information on apartment buildings. Hopefully, the monitoring and follow-up activities on energy efficient refurbishment will be started as well.

7. Contact information

Name	Energy Efficiency Consulting Centre (EECC)
Address	Pärnu street 67B 10134 Tallinn, Estonia
Phone	+372 6819 950
e-mail	kredex@kredex.ee

Links to reports and other related information	*Report of Research and development contract.* Lepinguline uurimis- arendustöö nr 407L. Ühepereelamute ja ahiküttel korterelamute kütusekasutus ja õhuheitmete emissioon Tallinnas. TTÜ STI. Tellija Tallinna Transpordi ja Keskkonnaamet, aruanne 2004. *Report of Research and development contract.* Lepinguline uurimis- arendustöö nr 408L. Tallinna munitsipaalhoonete energiaauditid ja energeetiline sertifitseerimine I-III. TTÜ STI. Tellija Tallinna Kommunaalamet ja Linnaplaneerimiseamet, aruanded: 2003, 2004, 2006. www.kredex.ee/esk – Energy Efficiency Consulting Centre

Description of instrument Administrative organisation: internal structures and processes

Zurich: Energy Efficient Procurement of Office Equipment

1. Instrument Category / responsible institution

	Category	City Adminis-tration	Chamber of Commerce/ Trade/ Crafts	Energy Agency	Housing Society	Other
Administrative organisation	☒	☒	☐	☐	☐	☐

2. Instrument

Name of the instrument	**Energy efficient procurement of office equipment**

General description of the instrument

Within the City administration 1 300 copier with printer/scanner/(fax)- function (so-called multifunctional equipment) are used. Every 4 years, a specialist for office equipment (in the school department) calls for bids concerning the leasing of the desired equipment. This person is obliged by the Zurich Energy Master Plan to develop a yearly operational measure plan in coordination with the Energy Deputy of the City. During the yearly controlling meeting with this specialist in 2004, the Energy Deputy had the idea to integrate minimal energy criteria into the bids. These minimum requirements had to be developed first. For this purpose the Energy Deputy started a project with an external specialist of the Swiss energy organisation SAFE. This project was financed by the City's energy saving funds. After a detailed measuring-program the energy criteria were defined for different types of multifunctional office equipment. The criteria are now disseminated by SAFE on their public website topten.ch. The City specialist had to integrate these cirterias in his bids, which was done in 2006. Another important point in the leasing contract is the obligation, that the supplier of the office equipment has to do a yearly controlling on the energy efficiency of the used multifunctional office equipment.

3. Target group

☒ Public administration
☒ Schools

4. Main aims

☒ Energy savings
☒ Increasing the energy efficiency

5. Resources

Please give information in € or hours, if available:

<u>Development:</u> Financial resources Human resources on city level Third party resources	 25 000 € 100 hours
<u>Operating:</u> Financial resources Human resources Third party resources	 0 20

6. Evaluation

Cooperation with the front-orientated specialist within the school departement. Show the benefit of this measure for his work. Communicate his contribution to the energy policy and financial goals. Look for an external partner to disseminate the criteria on an existing and well-known website. Give tips for additional instruments (e.g. time switches).

7. Contact information

Name	Bruno Bébié
Address	Departement der Industriellen Betriebe Beatenplatz 2, Postfach 8023 Zürich
Phone	+41444122624
e-mail	bruno.bebie@zuerich.ch
URL	www.stadt-zuerich.ch/internet/esz/home.html

Description of instrument Municipal energy management, decentralised energy supply, integration of renewable energies

Naples: Energy Manager

1. Instrument Category / responsible institution

	Category	Administration City	Chamber of Commerce/ Trade/ Crafts	Energy Agency	Housing Society	Other
Municipal energy management (planning process for public or private buildings)	☒	☒	☐	☒	☐	☐
Energy renovation of existing (public or private) buildings	☒	☒	☐	☒	☐	☐
Administrative organisation	☒	☒	☐	☐	☐	☐
Information, communication and co-operation	☒	☒	☐	☒	☐	☐
Special local regulatory (legislative) instruments	☒	☒	☐	☒	☐	☐

2. Instrument

Name of the instrument	**ENERGY MANAGER: In charge of Energy saving and the rational use of energy**

General description of the instrument

The Energy Manager is a figure introduced in Italy by law no. 10/91 for public and private organisations which consume a great deal of energy, expressed in TOE:

- 10,000 TOE for factories ;
- 1,000 TOE for the public and service sectors

The Energy Managers working in Italy are about 2,650, of whom over 500 are employees in local branches of nationwide companies which consume more than the above threshold.

The tasks of the Energy Managers are to:

- identify and list all energy-users, indicating potential, way of using energy and all information necessary to evaluate a correct management of energy;
- regularly update the energy-users he/she is responsible for;
- draw up and implement a programme to check operating conditions of energy users, indicating the methodology to be adopted;
- identify and examine opportunities to optimise energy use according to law;
- draft a maintenance programme for energy users and for those components which affect energy consumption;
- carry out a technical-economic analysis of all potential methods of optimising energy use and activities which may affect energy consumption;
- draft energy budgets, taking into account economic aspects and the final use of the energy;
- carry out a technical-economic analysis - in terms of energy - of general plans for work included in the investment plan;
- identify general plans for energy-saving which seem economically advantageous.

Regions and local authorities have developed the role of Energy Manager. They continue to guide their

work with reference to energy efficiency laws; they insist that energy distributors respect the objectives of energy saving and the development of renewable sources determined in Regional Programmes.
Italy converted the European Directive (2002/91/CE) on Energy Certification for Buildings into its law (Legislative Decree 192/05). This law gave the Energy Manager the task of drawing up a document to certify that all the data corresponds to energy containment measures for buildings and their heating systems. The owner of the building must send the certificate to the appropriate local public office to obtain a licence to go ahead with the building work.
The Energy Manager for the Municipality of Naples (the head of the Energy Department) and ANEA (The Naples Energy Agency) coordinate and draw up the activities for energy saving.

Projects underway or about to be launched by the Municipality of Naples on the advice of their Energy Manager, together with ANEA, are:

Safe Boiler, which consists in promoting the correct maintenance of systems which provide heating and/or hot water for individual flats or whole buildings. The aim is to reduce pollution and energy consumption and to increase the safety of the equipment installed.

The **Installation of photovoltaic equipment in Municipality-owned buildings**, in particular:

- Equipment of power equivalent to 20 kW on the Scandone swimming pool
- Equipment of power equivalent to 20 kW on the local San Giovanni council office
- Equipment of power equivalent to 191 kW on the Canzanella market in Fuorigrotta.

Agreement with the local methane gas distributor (Napoletana Gas) to identify municipality sports centres (including swimming pools) on which to install solar equipment (for the production of hot water or electricity).

Incentives campaign with Municipality funds to be granted to citizens of Naples for the installation of solar equipment for the production of hot water, and the substitution of electric water heaters with gas ones. The project's aims include the following:

- To raise public awareness of the use of renewable sources (particularly solar power) and energy saving;
- To increase public acceptance of new technologies through information, support and local marketing;
- To determine a positive impact on the economy and employment.

The **Energy Parks Project** whose aim is to:

- enhance, through specific events, city parks created in Naples;
- gather information, through research and observation , to choose features for the city parks;
- programme, realise and monitor renewable energy equipment installed, or to be installed, parks and gardens or public buildings in the city

The **installation of photovoltaic equipment** on 100 schools in the Municipality of Naples, and the provision of information to pupils and their families;
Training and refresher **courses** for Energy Managers

3. Target group

☒ Public administration
☒ Schools
☒ Public utilities

4. Main aims

☒ Energy savings
☒ Increasing the energy efficiency
☒ Increasing the use of RES
☒ Awareness raising, change of behaviour

5. Resources

Development:	
Financial resources	€ 20,000.00
Human resources on city level	3 technicians
Third party resources	

6. Results, Effects

Improvement of social & living

The creation of the role of Energy Manager within the Municipality of Naples has led to the launch of various projects aimed at saving energy and popularizing renewable sources. National and Regional funds have also been invested in these projects which have stimulated the market for related technologies and therefore employment levels and the economy in general.

Other achievements and results

The municipality is authorised by law to operate in the field of energy-saving, not only on its own premises, but also in local energy programming. The person in charge of the saving and rational use of energy in the Local Authority therefore represents the convergence and coordination of various approaches, without neglecting any of the supervisory functions which the law gives to the municipality and which boost energy efficiency, safety and protection from pollution.

7. Evaluation

Local Authorities now have the power to govern the energy system of their own territory, encouraging well-balanced development, compatible with the safeguarding of the environment - an extremely important, professional objective for which they are almost completely responsible and which is perfectly integrated into the compatible development plans.
The existence of territorial eco-budgets, open to an analysis of energy consumption, is in practice closely connected to economic development plans (hence their considerable political significance). Therefore optimum solutions for the Economy-Energy-Environment system are to be sought within the territory and adopted by the Local Authorities who can implement appropriate laws and regulations and also have a broad view of overall strategies and time scales. The Ministry for Economic Development, the Local Authorities and therefore the Municipality of Naples have launched various energy efficiency initiatives. These represent an ambitious target that will involve very large investments in the various sectors. Energy Managers will be able to play a significant role in this context, especially in networking. The work of recent months will bring about changes, particularly in the civil sector, while additional incentives for new and existing buildings will come from the national Budget and Italian Legislative Decree no. 311/06. The Budget introduced 55% tax deductions for the energy enhancement of buildings, particularly for certain solutions such as insulation, solar power etc. It also included incentives for electric engines in the industrial sector. The second legal tool, Decree 311/06, will lead in three years to the construction of buildings which will have 50% less heat dispersion than those built until 2005. Furthermore, the solar power decree has simplified existing procedures and thus become a more effective instrument. Some instruments, such as energy efficiency certificates are gradually delivering expected benefits; there are already synergies between public bodies and companies (for example Provincia di Napoli and Napoletana Gas) with government incentives. Clearly the problem is to achieve a perfectly-functioning energy-efficiency schedule, which means carrying out a great deal of work on networks and on the relationships between production, transport and the use of energy. There must be total synergy between the stakeholders, which will lead to a reduction in consumption and therefore to a levelling off, or fall, in dependency on imports.

8. Contact information

Name	ANEA – AGENZIA NAPOLETANA ENERGIA ED AMBIENTE
Address	Via Toledo 317 Napoli (ITALY)
Phone	+ 39 081 409 459
Fax	+ 39 081 409 957
e-mail	aneainfo@tin.it
URL	www.anea.connect.it
Links to reports and other related information	www.comune.napoli.it

Description of instrument Methods for calculation, indicators, monitoring

Paris: Carbon Balance

1. Instrument Category / responsible institution

	Category	City Adminis-tration	Chamber of Commerce / Trade/ Crafts	Energy Agency	Housing Society	Other
Methods for calculation, indicators, monitoring	☒	☒	☐	☐	☐	☐
Information, communication and co-operation	☒	☒	☐	☐	☐	☐

2. Instrument

Name of the instrument	**Green house gases balance (bilan carbone)**

General description of the instrument

The carbon balance traduces in terms of carbon emissions the energy consumption, water consumption, paper consumption, transports and so on.
This method carried out by ADEME (French National Agency about Energy and Environment) has been experimented on some buildings in 2004 and on all the buildings owned by the city in 2005; and to estimate all the city territory in 2006. It is a tool of assessment for the Climate action plan of Paris and a tool of environmental accounting.
CO_2 emissions by sector are the following: transport 50%, buildings 30%, activities 15%. The buildings of the administration associated emissions amount to 70 000 tons of carbon per year. To realise a complete carbon balance of Paris, we need 6 months for gathering data. The City with the help of ADEME and private consultant made it. Now, the city manages it and will adapt it for its departments.

3. Target group

☒ Public administration
☒ Industry, SME, service industry
☒ Public utilities
☒ Private house owners / housing society
☒ Public housing enterprises
☒ Tenant

4. Main aims

☒ Environmental protection
☒ Energy savings
☒ Increasing the energy efficiency
☒ Increasing the use of RES
☒ Awareness raising, change of behaviour

5. Resources

<u>Development:</u> Financial resources Human resources on city level Third party resources	 method developed by the national energy agency 2 persons and 1 referent by department
<u>Operating:</u> Financial resources Human resources Third party resources	 3 000 euros per building, 50 000 € for the territory 2 managers, 1 consultant numerous ! but free

6. Results, Effects

Improvement of social & living conditions

Environment - reduced emissions (in %):	
- CO_2	253 000 t eq CO_2 for the administration 24 000 000 t eq CO_2 for the territory in 2004

All the results of the "Bilan carbone" are used for the 8 workshops currently in place (November 2006 - January 2007) for the elaboration of the climate protection plan.
Workshops are divided as follows:

- improve energy efficiency in buildings
- reduce emissions from economic activities
- decrease consumption and emission of transport of people
- increase clean vehicles in goods transport
- facilitate responsible public purchase and good management of waste
- information and communication towards inhabitants
- cooperate with other cities of the Ile-de-France region
- adapt the land use planning to the climate protection

And after 6 months of participative democracy, the councillors of the City of Paris adopted last 1st on October the Climate action Plan of Paris with these objectives:

- Local administration :

  -30% emissions by 2020 compare to 2004
  -30% energy consumption (buildings and street lighting)
  30% of renewable energy in supply by 2020

- Territory :

  -25% emissions by 2020 compare to 2004
  -25% energy consumption by 2020
  25% of renewable energy in supply by 2020

7. Evaluation

Success factors : good database of invoices, consumptions indicators and so on and one coordinating team with high qualified experts

8. Contact information

Name	Mr Yann FRANCOISE
Address	Direction des Espaces Verts et de l'ENVIRONNEMENT - Service de l'Ecologie Urbaine Pavillon du Lac - Jardin de Bercy - 1, rue François Truffaut - 75012 Paris
Phone	00 33 1 40 19 74 45
e-mail	yann.francoise@paris.fr

4.4. Energy Master Plan

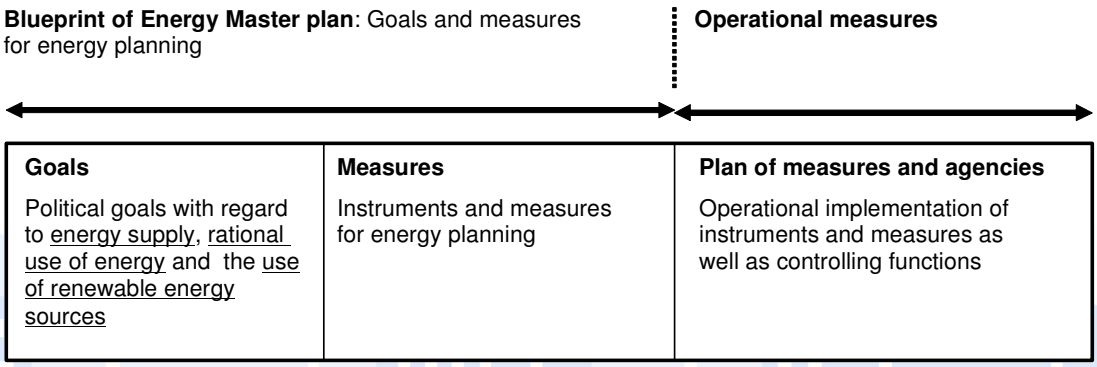
A common analysis of partners lies in the necessary coordination and coherence of instruments developed by a city to reach the best results. The statement at the basis of this thought is that sustainable development on the energy field is not just the sum of instruments tackling problems punctually. They must be comprised in a global goal of sustainability embodied in a general policy set up by the city.

This approach is what the instrument "Energy Master Plan" focuses on.

The Energy Master Plan in general takes into account the special framework conditions of each City with respect to energy issues. The Energy Master Plan is understandable as a self-learning management process of the involved stakeholders of the City administration. The blueprint for an Energy Master Plan offers to the participating cities as well as to all other interested cities a basic structure of an energy planning document. With the help of the blueprint cities can improve their energy planning documents or set up new energy planning documents with the blueprint as a guideline if they do not have any yet. The blueprint was set up based on the structure of Zurich's Energy Master Plan and the results of the evaluation by project partners. In particular with view to the transferability of the instrument, different levels of competency in city administrations have to be taken into account.

This approach will permit to consider all the possible differences and present a blueprint that is useful for most of the cities. In addition a short review summarises the EC Directives and main EC policy documents related to the goals and measures of an energy master plan.

The Energy Master Plan comprises on the one hand the energy policy goals which are mandatory for the relevant industrial and public service departments. On the other hand it also contains measures that can be derived from the city's energy plan and prevailing laws. Moreover the Master Energy Plan defines agencies. (In terms of the EMP, an agency is a key-person in each unit within or outside the City administration, which plays a relevant role in the City's energy policy by its front-orientated function. These key-people are obliged to work out the operational measure plans (together with the process-owner) and their departments are responsible for preparing the plan of operational measures which are necessary to reach the energy goals.



The Energy Master Plan has to be examined every e.g. 4 years to ensure that it keeps abreast of modern technology and prevailing conditions.

The Blueprint of the Energy Master Plan does not include the operational measures. The measures are drawn up by the designated agencies on the basis of goals determined. The operational measures are then examined within the framework of an annual audit and where necessary modified to meet changing conditions.

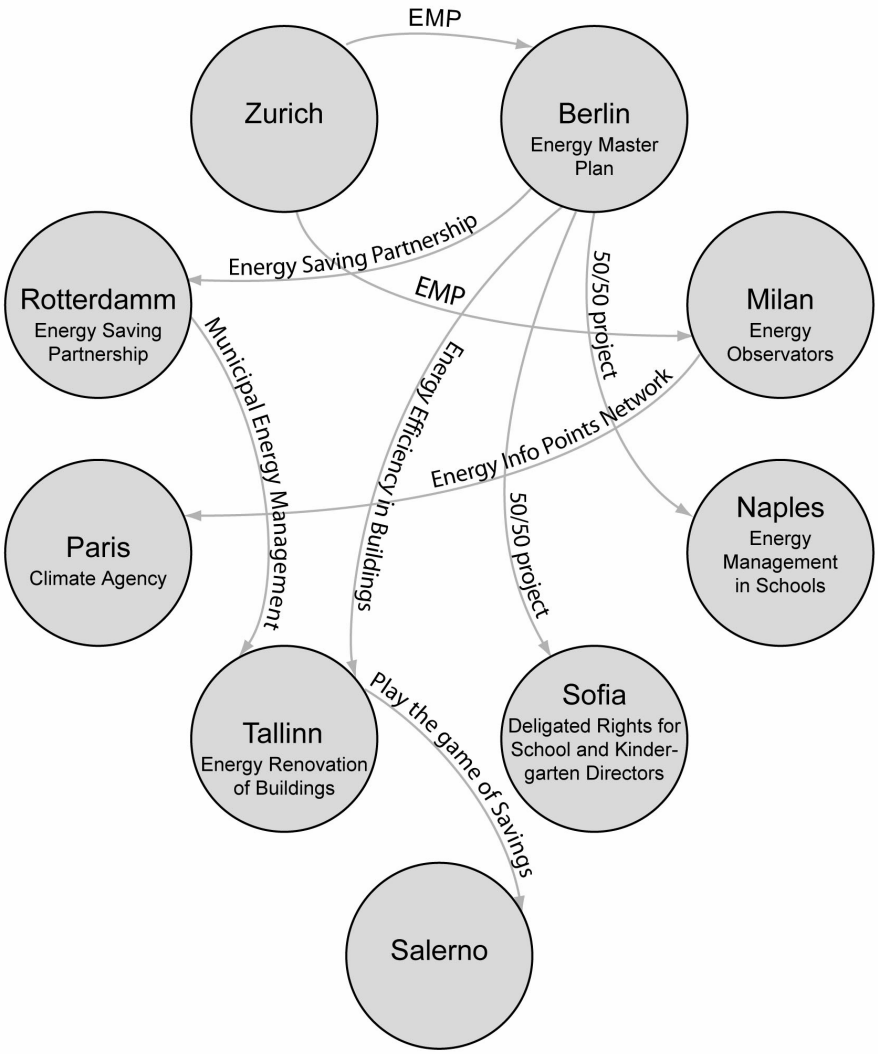
Due to the large number of agencies involved in the implementation of the city's energy policy, co-ordination within the city's administration is vital. This is indicated by the classification according to energy policy goals and determined when the operational measures are prepared and checked. In principle all agencies are expected to co-operate when this is necessary to achieve the energy policy goals.

From the large number of interfaces between the energy and other policies, with reference to the mobility strategy in the Master Energy Plan, only those agencies involved in the city's traffic policy are explicitly included.

4.5. Adaptation of instruments from partners by project partners

The most successful instruments presented during the unfolding of City Instruments project have all a common denominator: whoever was the process owner of the instrument implemented relied on a regular monitoring, controlling and reporting activity.

The graphic below indicates which implemented instrument that was presented during the workshop series the development of a new instrument in the project partners' city.



4.5.1. Berlin

This approach is what the new instrument "Energy Master Plan Berlin" should focus on.

The Energy Master Plan in general takes into account the special framework conditions of each City with respect to energy issues. The Energy Master Plan is understandable as a self learning management process of the involved stakeholders of the City administration.

It is planned to adapt parts of the Energy Master Plan (EMP) of Zurich into the Berlin State Energy Programme. The EMP is an instrument to ameliorate internal structures and processes of administrations with respect to energy issues and to co-operation in a very systematic way. The target groups of the instrument Energy Master Plan are the administration of the Land and the City of Berlin (district level), i.e. important stakeholders inside the administration like utilities (if owned by the City), handicraftsmen, architects and planners if part of the public administration.

It will be necessary to compare the framework conditions of Zurich and Berlin in detail (legal framework, institutional and organisational framework) to find out which part of the action plan can be adapted to Berlin.

The benefit of such a process will be that the stakeholders of the administration feel more responsible for the implementation of energy saving measures in the administration and the co-operation between the different stakeholders of the administration will be strengthened.

4.5.2. Province of Milan

The Energy Observatory is a new instrument Province of Milan intends developing to monitor and report the attainment of both quantitative and qualitative goals set by the Action Plan which has been elaborated within the framework of the Provincial Programme for Energy Efficiency approved in November 2005. The development of the instrument was influenced by the Energy Master Plan of Zurich. The local administrations falling within the territory of competence of Province of Milan, made up of 189 Municipalities, are the primary target. The impact of the implementation of this set of measures related to energy efficiency and renewable energy sources strongly depends on the effectiveness of the controlling process, on the capacity of reporting on-going progress as well as on disseminating results. Both activities, controlling and reporting, will be carried out by the process owner (Province of Milan - Energy Sector) through the establishment of the Energy Observatory with its human resources and energy relevant skills. The monitoring activity will include a critical feedback by the process owner concerning the successful implementation of measures, the adjustments and improvements eventually needed the planning of future measures and the dissemination of best practices.

The strategic action ambits upon which the Provincial Energy Observatory will finalise its own activities in the implementation of energy policies oriented towards demand side management are:

a) Building regulations for energy efficiency;
b) Building energy certification;
c) Financial instruments for energy saving measures.

4.5.3. Naples

Many recent studies indicate that, in order to safeguard the environment and reduce the risk of climate change, it is imperative to take a different direction, cutting the emissions of carbon dioxide (CO_2) and other climate-changing gases.

Photovoltaic plants are becoming more popular, and more and more funds are available. In February 2007 the Italian Government made available funds to realise these systems. At the same time Italian schools have acquired more financial independence and thus have more incentive to spend their money more wisely. As a result Energy Management has become more important for school managers.

The project "Solar Schools" aims to place photovoltaic equipment on school buildings belonging to the Municipality of Naples. ANEA prepared a preliminary draft of the project in September 2007 in collaboration with the Municipality. An energy diagnosis of 15 schools was begun in order to evaluate energy (electricity, gas…) use, to identify any waste and find technical solutions to improve the situation. Detailed surveys of school roofs were carried out to evaluate the suitability of photovoltaic systems. A further objective is to promote and to raise awareness on energy saving and the use of renewable sources among new generations in Naples.

4.5.4. Paris

The most suitable instrument, regarding the needs of the City of Paris, presented during the different workshops of the City Instruments project was the Energy Info Points network of the Province of Milan. However this instrument has to be adapted to the specificity of the French capital. The final option retained is the energy agency. This agency will help reaching the ambitious goals the capital sets to itself by addressing the peculiar specificities of this metropolitan area.

The City of Paris decided to set up its own Energy Agency to reinforce its means to fight against climate change as well as rising energy prices. The City of Paris decided to take action and voted the Paris Climate Action Plan in October 2007. This Action Plan sets ambitious goals of energy efficiency, the integration of renewable energy and the reduction of subsequent green house gases emissions. At the moment the internal services of the City administration have a field of action restricted to the patrimony of the city and cannot address the issue on all fronts. The recent increase of awareness concerning global warming alongside rising energy prices gave birth to a high demand for expertise in energy efficiency and renewable energy from individuals but also private companies. At the moment there are two environment agencies in the whole Ile-de-France region: the regional delegation of ADEME (the national energy agency) and the ARENE (the regional one). There are flowed with demand from all over the region and are not dedicated to Paris territory specificity.

The goal of the agency is to become the upstream reference for the setting up of sustainable projects. It should become an expertise and resource centre that would assist technically the building of energy saving and renewable energy projects. The agency would carry out specific studies for the city regarding the best orientation it could take. Another forecasted role is to group energy saving projects in order to collect "White Certificates" and offer financial support. The agency would also host an observatory on energy consumption and greenhouse gases. The agency should become the head of the Energy Info Points network existing in Paris at the moment in order to offer free and impartial advices to Parisians. This structure will also ensure to perpetuate their finance.

The cost of implementation of 200,000 to 300,000 euros has been approved; however the City expects an additional punctual support from the ADEME (the national energy agency) for the implementation phase. Paris is also thinking about filling an application

form from the Intelligent Energy Europe programme to get financial support for the first 3 years.

4.5.5. Rotterdam

The City of Rotterdam has chosen the Energy Saving Partnership instrument, as it was presented by the City of Berlin.

The Energy Saving Partnership was developed and implemented in Berlin with the aim of reaching ambitious objectives for climate protection and reducing energy costs in the face of a tight budgetary position. Today the Berlin model for saving energy is transferred to other local authorities as well as to projects in the private sector.

The basic principle is quite simple: a private specialised energy service company – the so called contractor – brings his know-how and the necessary financial means into the project. It is his responsibility to ensure adequate investments are made in the buildings and thus to guarantee the energy savings. Both partners share a handout of the cost reductions. Profits are reaped by both client and contractor – not forgetting the environmental benefits of reduced energy consumption.

Energy Saving Partnerships lead to:

- Reductions in energy consumption
- Lower costs
- Environmental protection

Energy Saving Partnerships work because:

- they guarantee savings by contract
- they reduce energy consumption in large building complexes or a building pool through investments by the contractor
- they refinance the investment through the savings in energy
- they allow the building owner to participate in the saved costs

An Energy Saving Partnership runs according to the following sequence:

The client (for example the local authority) is responsible for the upkeep of various buildings, such as kindergartens, schools, or offices. It is bound by contract to energy suppliers who deliver electricity and heating (e.g. gas or district heat). In order to reduce energy, costs, and carbon dioxide emissions, the client runs a competitive tendering process to transfer the financing, planning, implementation, and monitoring of energy saving measures to a private energy saving partner – the contractor. The successful contractor undergoes a tendering process. The existing contracts between the client and the energy suppliers covering the delivery of electricity and heating are not affected by the project. The contractor, however, agrees the necessary technology and supply with the energy suppliers.

An Energy Saving Partnership is not limited to large building complexes. The Berlin model is a conscious effort to group smaller projects and create “building pools”. These

pooled buildings have different levels of energy consumption, construction material, fixtures and fittings but lead to a profitable cross calculation. This means as well that less unprofitable buildings are integrated into the project.

The contractor signs a contract to guarantee the client a minimum level of energy savings. Experience shows that over 25 per cent of energy costs can be reduced – savings not normally realisable by a (public) owner of real estate on his own. The contractor only receives his agreed earnings if the stipulated energy savings are reached. The client is also able to save money through savings on heating and electricity achieved through the energy efficiency measures.

The investments carried out by the contractor are refinanced through the savings. Any remaining savings are shared by the partners according to a ratio system agreed to in the contract for the duration of the project. The contractor remains responsible all this time for the maintenance and service of the systems. The client profits from the full savings once the contract has expired.

4.5.6. Sofia

A main concrete goal of the Strategy for Educational System Development Strategy for the City of Sofia (2007-2015) is the administrative and financial decentralization of the system. Main important measures are as follows:

- Delegating administrative and financial rights to the directors of municipal kindergartens and schools - the expected result is optimization of the expenses and better management
- Improvement of the material base, including the building stock - better work environment and conditions;
- Economically Effective Use of the Resources in the System - more effective use of the building stock and management of the material resources.

The idea of Sofia Energy Agency - SOFENA is to integrate energy management and planning as an element of the strategy and to involve energy efficiency and management issue in the courses that have to be organized for the directors in order to be trained how to take the advantages of the new decentralized system.

The instrument Delegated Rights for School and Kindergarten Directors aims at increasing schools and kindergarten directors' skills in the area of energy efficiency and energy efficiency planning as a part of decentralization of the management of municipal educational institutions. The current strategy for the educational system in Sofia does not include measures for optimization of the energy consumption through better energy management and users behaviour. The increased rights gives the opportunities for the directors to implement instruments for energy management for the building stock, such as energy audit, energy balance, energy efficiency action plan, educational instruments for the staff and kids, new procurement procedures for new energy efficient equipment and appliances, etc. The benefits are improved energy efficiency and optimization of energy consumption through organizational, behavioural and technical measures. Main

risks are related to the lack of capacity, time and commitment of the directors to the energy and environmental problems.

4.5.7. Tallinn

The new instrument “Energy renovation in schools” has been proposed to overcome the problems faced after the renovation of school buildings in Tallinn. Tallinn City Government has renovated majority of its school buildings that have been built during Soviet times. After the renovation it became apparent that the use of energy and the maintenance costs rose dramatically.

The objectives are to guarantee energy efficiency in school buildings in Tallinn; to find reasonable solutions to more costly and energy using solutions; to promote energy efficiency in buildings; to raise the awareness on the energy efficiency in the local municipality level and also in the building sector in general.

It is foreseen in the pilot case to perform energy audit, use expert recommended solutions to guarantee the energy efficiency in the building and while cutting the heating costs and finding solutions to the ventilation problems - cost efficiency.

The benefits will be awareness raising amongst the policy makers; possible benefit is the practice of energy efficient refurbishment of municipality owned buildings in Tallinn and also in other municipalities.

The main risk is connected to the communication of the project results – if they fail or are not widely used. Reasoning behind can be possibly high cost of energy efficient renovations that do not pay back within short period of time; political decisions - only short term objectives rather than long term effectiveness.

This particular instrument could be used in other post-Soviet countries or other countries where the environmental issues are not fully accepted yet by the politicians and their main focus is on short-term results.

4.6. Ideas for new instruments

The project partners developed three ideas, on the basis of the evaluation of the workshop series and also as a result of discussions with external experts joining the workshops. Three fields of activity should be addressed in a more proper way by new instruments:

- Demands of pedestrians and cyclists in Cities planning
- Support of procurement processes for solar systems of private house owners
- Energy Monitoring and Benchmarking for Public Buildings

4.6.1. Transport planning incorporating demands of pedestrians and cyclists for local sustainable mobility

Slow modes play a necessary role for everyday mobility in cities and municipalities. Anyway, they are often neglected in urban transport planning. Planners are often unaware of the specific demands and needs of pedestrians and cyclists. It is still quite normal to combine cycling and walking on insufficient sidewalks in order to have room for motorised traffic. It is still common to design bicycle lanes, pedestrian crossings and sidewalks to minimum requirement.

In order to give slow mobility modes more attention in transportation planning and politics the proposed instrument has to support visible and efficient measures to promote slow modes mobility (SMM).

This needs to be grounded on solid foundations within the field of urban transport planning theory and practice. Therefore, the development of a general approach to slow modes mobility planning as a framework for local action forms an important part. This will be based on a thorough examination of current research on slow mobility modes, of possible lines of action to influence mobility behaviour, of the benefits to be gained in terms of energy efficiency, increased safety and improved quality of urban living.

- Type:
  Sustainable Mobility
- Target Group:
  Urban transport planners, Urban development planners, inhabitants
- Objectives
  - to raise the awareness of urban planners and decision makers regarding the importance and the opportunities of non motorised traffic
  - reduction of motorised traffic in urban areas
  - to include approaches for non motorised traffic in the process of urban planning
  - promotion and support of an integrated planning approach concerning traffic

4.6.2. Low Interest Bank Loans for Procurement of Solar Systems for Private House Owners

The idea is that bank loans with low interest rates from a local bank should be used to finance investments of private investors (house owners, condominium). A local / regional energy agency or the administration of a region should support these investments by bringing together the investors, the local banks and the sellers of solar systems e.g. PV system, solar thermal system.

A local / regional energy agency or the administration of a region should look for these investors, e.g. PV system, solar thermal system. This regional agency could also collect interested investors from different towns and villages of the region.

The energy agency should take care of the procurement process of such solar systems. The energy agency or the city administration should act as moderator between the local bank, which will give the loan, and the private investors.

The energy agency should select the distributors of the solar systems and check their competence too.

Local banks have often a lack of information about solar system technology for private houses and so there is a fear of risk. Banks have not been keen to promote this type of financial product to foster energy refurbishment.

The purchasing process done by a professional energy agency secures a good quality of solar system and their installation offered by well known enterprises (distributors).

It is though a favourable momentum due to an increased awareness of banks as to potential benefits. The advantage of private investors will be to get an adequate designed solar system.

The two main problems that will need to be solved are:

- To convince local banks to give low interest loans to private house owners
- To refinance the cost of the energy agency for the supervision of the tendering process

A conference on this and further financing topics will be held in Germany in autumn 2008.

4.6.3. Energy Monitoring and Benchmarking for Public Buildings

Often Municipalities do not have statistical information about the energy consumption of their buildings. For designing energy-saving programmes or energy action plans, e.g. it is necessary to have such information to set up priorities for energy saving measures.

Although high CO_2 reduction potentials in the European building sector are reported, in practice they are only partly realised. The lack of information about what is actually going on in the building inventory is a big obstacle for creating well-tailored and cost-efficient programmes to improve the energy savings of public buildings.

The suggestion is to develop a benchmarking tool that does allow comparing the situation of cities on national and European level.

The Municipality will have a detailed energy data basis for the management of its owned and/or operated buildings. The Municipality will have the opportunity to develop a clear concept of priorities to refurbish existing buildings with respect to the reduction of energy use for heating, cooling and electricity.

The objectives are

- to get a clear basis for collection and measuring of the energy consumption of every building operated by the Municipality and
- to set up a plan to refurbish the buildings with respect to the reduction of energy consumption for heating, cooling and electricity.

The instrument should be based on the outcome of European projects like for example DATAMIND (http://env.meteo.noa.gr/datamine/).

The advantage would be that on a common European basis a benchmark between Cities would be possible. Furthermore, a profound and targeted discussion about the causes of different energy consumption values for the same building type would be possible.

The main problem that has to be solved is the need to develop a clear statistical basis for generating necessary basic information.

4.7. Lessons learnt

Successful instruments share a number of common aspects:

- A comprehensive approach supported by an integrated view of the issues tackled by a strong political support
- The involvement of different policy areas increases synergies
- A thorough analysis of problems to be tackled as well as sufficient preparatory time for implementation
- The development of an operational programme (like Energy Master Plan, Energy concept, Climate protection concept) addressed by targeted instruments and clear assignments of responsibilities
- The running of a strong operational programme as a lever, giving evidence of a strategy being concretely carried out in the City
- The improvement of cooperation between public bodies, private companies and NGOs
- Organisational procedures encouraging interdisciplinary team work
- Concentration/agreement amongst the parts must always be sought even if difficult, time consuming and requiring the highest level of administrative and professional skills
- Cooperation with the knowledge institutions (like energy agencies, universities) is important
- The inclusion into daily practice of regular controlling and coordination procedures
- Confidence in engaging citizens in an innovative process leading to the improvement of the quality of the environment: work with the population you have, instead of the population you want.

4.8. Impacts achieved

The project partners got a deep understanding why the partners developed each single instrument, how it works and how much time it takes to implement successfully each instrument.

Through the workshops, subsequent discussions and instruments assessment partners developed a common language on the issues and a common methodology essential to the setting up of any instrument.

The involved project partners started to adapt an instrument from a project partner City.

The Best Practice Catalogue was delivered by e-mail to more than 500 Cities, Energy Agencies and international City Networks worldwide. Several City Networks published information about the outcomes and results on their internet website.

The website is visited from guests worldwide. Most of the guests came from France, Italy, Germany, USA, Estonia, Great Britain, Netherlands, Belgium, Bulgaria and Spain.

5. Conclusions & Recommendations

The partners of the IEE City Instruments Project dealt not only with instruments tackling climate change, that means energy saving and use of renewable energies but also with the topic of increasing urbanisation, the intensive economic growth where the environmental issues are neglected and diversifying population / immigration.

We learnt that some major questions on future changes with respect to climate change and increasing urbanisation can not only be solved by cities. General existing structure of societies needs a broader approach to change them in direction of a more sustainable way of living. This was clearly worked out with respect to sustainable transport and mobility. The transition to a more sustainable way of transport is connected with the transition of structural changes of social systems.

However, to actually contribute to a transition to sustainable society, there need to be much more attention towards aspects related to the political, regulatory, financial, behavioural, economic and social context.

A common denominator to all city administrations is the need for political commitment and leadership, strategic stability and operational flexibility. A weak political engagement anchored to a short-term vision as well as a complex public administration structure are amongst the major causes for a poor institutional coordination, for a lack of regular and effective circulation of information within the different branches of the administration and for the use of complicated and non-transparent procedures.

It is important to analyse first very clearly the problem that has to be solved. Each City has to know the context in which it is working and whom it wants to influence. Local experiments need to be linked to strategic and tactical processes where societal context factors co-evolve with operational innovations.

It is important to communicate the results of this assessment to the inhabitants and the related stakeholders as well as developing a clear operational concept with these groups. Furthermore it is essential to set up strong guidelines for the monitoring, and implementation of measures and to clearly outline the specification of responsibilities and the assignment of tasks.

The most successful instruments presented during the unfolding of the City Instruments project have all one common denominator: whoever was the process owner of the instrument implemented, it relied on a regular monitoring, controlling and reporting activity. This approach is what the developers of new instruments, to be developed by Cities, should observe.

Every city needs an instrument for monitoring CO_2 emissions reduction efforts. The instrument should allow common work in the sense that comparisons between Cities should be possible although the instruments (actions) themselves may be very different in each country. One important matter to measure CO_2 emission reduction efforts is to communicate the results to the council, and to the public, and the instrument has to be matched with the requirements.

Cities need to use highly efficient energy management systems, which exploit renewable energies, reduce energy consumption and optimize the efficient use of fossil fuels. Moreover Local Authorities can play an important role in implementing pilot schemes and projects that may be reproduced in other Cities and areas, and also in the private sector.

The communication era we are living in offers a large number of media supports. Still it is essential to find the right way to communicate to people so that the message is understood and action is taken: there is not one way to communicate and not only one public but several.

In order to have an effective implementation, the financial instruments must be properly designed to meet environmental and energy challenges while taking into account the functioning of the market (win-win situations), the existing legislation and other political, economical and social conditions and characteristics of the metropolitan region where they have to be implemented.

Among prerequisites for achieving best results in refurbishment a proper energy audit of the building is one of the most important ones.

Also political stability and courage, institutional capacity of the local authorities, ability to integrate the instrument into a market structure by using innovative solutions, clear contracts, coherence with the national, regional and local laws, establishment of energy efficiency consulting centres, good technical concept, integration of the users into the planning process, briefing the users into the operation and maintenance of the installations are seen as success factors.

6. Contact details of partners

Bulgaria

Mr. Zdravko Georgiev
Project Engineer,
Sofia Energy Agency - SOFENA
Address: 44 Oborishte Str., Sofia-1505, Bulgaria
E-Mails: zgeorgiev@sofena.com; issofena@techno-link.com
Web: www.sofena.com

Estonia

Ms. Meeli Laane
Head of Development Sector
Tallinn City Government Environment Department
Address: Harju 13, 10130 Tallinn
E-Mail: Meeli.Laane@tallinnlv.ee
Web: www.tallinn.ee/est/g2254

Germany:

Mr. Dr. Armand Dütz
B.&S.U. Beratungs- und Service-Gesellschaft Umwelt mbH
Address: Saarbrücker Str. 38 A, D-10405 Berlin, Germany
E-Mail: aduetz@bsu-berlin.de
Web: www.bsu-berlin.de

Mr. Leonard Meyer
B.&S.U. Beratungs- und Service-Gesellschaft Umwelt mbH
Address: Saarbrücker Str. 38 A, D-10405 Berlin, Germany
E-Mail: lmeyer@bsu-berlin.de

France

Ms. Marie-Laure Falque-Masset
Energy projects manager
ARENE Ile-de-France
Address: 94 bis avenue de Suffren - 75015 Paris, France
E-Mail: ml.falquemasset@areneidf.org
Web: www.areneidf.org

Ms. Judith Cazas
Energy projects manager
ARENE Ile-de-France
Address: 94 bis, avenue de Suffren - 75015 Paris
E-Mail: j.cazas@areneidf.org
Web: www.areneidf.org/

Italy

Mr. Sergio ZABOT
Director of Energy Sector, Province of Milan, Italy
Address: Corso di Porta Vittoria, 27 - 20122 Milano, Italy
E-Mail: g.bono@provincia.milano.it
Web: www.provincia.milano.it/ambiente/energia/tavoloenergia.shtml

Mr. Michele Macaluso
Mr. Mauro Simeone
Agenzia Napoletana Energia e Ambiente - ANEA
Address: Via Toledo 317 80132 Napoli, Italy
E-Mail: aneainfo@tin.it
Web: www.anea.eu

Netherlands

Ms. Cleo Pouw
Address: City of Rotterdam, OBR - Rotterdam City Development Corporation
P.O. Box 6575 - 3002 AN Rotterdam - The Netherlands
E-Mail: C.Pouw@obr.rotterdam.nl
Web: www.obr.rotterdam.nl/

Switzerland

Mr. Bruno Bébié
Stadt Zürich - Departement der Industriellen Betriebe
Address: Stadthaus, Postfach, 8022 Zürich, Switzerland
E-Mail: bruno.bebie@zuerich.ch
Web: www.stadt-zuerich.ch/internet/dib/home.html