

EUROPEAN FRAMEWORK

EUROPEAN STRATEGIES and ACTIONS SUPPORTING ENERGY EFFICIENCY IN PUBLIC BUILDING ENERGY EFFICIENCY ACTION PLAN

As a major step toward meeting the unprecedented energy challenges facing the EU, the European Commission today presented its Energy Efficiency Action Plan. The Plan contains a package of priority measures covering a wide range of cost-effective energy efficiency initiatives. These include actions to make energy appliances, buildings, transport and energy generation more efficient. Stringent new energy efficiency standards, promotion of energy services, specific financing mechanisms to support more energy efficient products are proposed. The Commission will furthermore set a Covenant of Mayors of the 20-30 most pioneering cities in Europe and will propose an international agreement on energy efficiency.

Altogether, over 75 measures are set forth. "Europeans need to save energy. Europe wastes at least 20% of the energy it uses. By saving energy, Europe will help address climate change, as well as its rising consumption, and its dependence on fossil fuels imported from outside the Union's borders," said Energy Commissioner Piebalgs. "Energy efficiency is crucial for Europe: If we take action now, the direct cost of our energy consumption could be reduced by more than €100 billion annually by 2020; around 780 millions tonnes of CO₂ will also be avoided yearly" he pointed out.

The Action Plan, which will be implemented over the next six years, is in response to the urgent call from Heads of State and Government at the Spring European Council this year for a realistic Energy Efficiency strategy. The Plan underlines the importance of minimum energy performance standards for a wide range of appliances and equipment (from household goods such as fridges and air conditioners to industrial pumps and fans), and for buildings and energy services. In combination with performance ratings and labelling schemes minimum performance standards represent a powerful tool for removing inefficient products from the market, informing consumers of the most efficient products and transforming the market to make it more energy efficient. Minimum performance requirements for new and renovated buildings will be developed. Very low energy consumption buildings (or passive houses) will also be promoted.

The Plan emphasises the considerable potential for reducing losses in the generation, transmission and distribution of electricity. The Action Plan proposes targeted instruments to improve the efficiency of both new and existing generation capacity and to reduce transmission and distribution losses. A comprehensive set of measures for improving energy efficiency in the area of transport is put forward. The Plan recognises that energy savings can be achieved, in particular, by ensuring fuel efficiency of cars, developing markets for cleaner vehicles, ensuring proper tyre pressure and by improving the efficiency of urban, rail, maritime and aviation transport systems. The Plan recognises the importance of changing transportation behaviour. The Action Plan also calls for appropriate and predictable price signals, essential for improving energy efficiency and overall economic performance.

The Plan also contains a number of additional proposals to raise energy efficiency awareness, such as education and training. Finally, the Plan emphasises the urgent need for energy efficiency issues to be addressed on a global level through international partnerships.

The Action Plan on Energy Efficiency, when fully implemented, can thus improve the Union's competitiveness, improve the living standards of its citizens, boost employment and increase exports of new, energy-efficient technology. On an individual level, small changes in our energy consumption patterns will mean saving money, improving the environment and doing our share for our common European goals.



Energy Performance of Buildings Directive

The Directive 2002/91/EC of the European Parliament and Council on energy efficiency of buildings was adopted, after a lively discussion at all levels and with overwhelming support from Member States and the European Parliament, on 16th December 2002 and entered into force on 4th January 2003. It is considered as a very important legislative component of energy efficiency activities of the European Union designed to meet the Kyoto commitment and responds to issues raised in the recent debate on the Green Paper on energy supply security.

Estimates project a cost-effective savings potential realizable by 2010 of around 22% within the building sector – if this potential was realized, around 20% of the EU Kyoto commitment could be met. Transposition of this Directive by 2006 at the latest will allow a portion of this potential to be translated into reduced energy consumption. The Directive is set to promote the improvement of energy performance of buildings with four requirements to be implemented by the Member States:

1. General framework for a methodology of calculation of the integrated performance of buildings
2. Setting of minimum standards in new and existing buildings
3. Energy Certification of Buildings
4. Inspection and assessment of heating and cooling installations.

The Directive is foremost a measure that concerns a very large number of actors on all levels and with different impacts and different motivations: designer, housing associations, architects, providers of building appliances, installation companies, building experts, owners, tenants, essentially all energy consumers in the European Union.

It will greatly affect awareness of energy use in buildings, and is intended to lead to substantial increases in investments in energy efficiency measures within these buildings. It presents a great challenge for the transformation of European building sector towards energy efficiency and the use of renewable energy resources.

The 4th of January 2006 was the official deadline by which the Member States had to transpose the Directive into national law.

Energy end-use efficiency and energy services.

The Green Paper on the safety of energy supply highlighted that, if no action is taken, the European Union's dependence on external energy sources will increase from 50% to 70% by 2030 according to current estimates. At the same time, the EU is continuing to produce more and more CO₂ and other greenhouse gases and the human activities associated with the energy sector are responsible for no less than 78% of Community greenhouse gas emissions. This is why efforts must now focus on improving end-use energy efficiency and controlling energy demand. The purpose of the proposal is to make the end use of energy more economic and efficient:

- by establishing targets, incentives and the institutional, financial and legal frameworks needed to eliminate market barriers and imperfections which prevent efficient end use of energy;
- by developing a market for energy services and for providing energy-saving programmes and other measures aimed at improving end-use energy efficiency.

The proposal applies to the distribution and retail sale of energy to end customers and targets the retail sale, supply and distribution of extensive grid-based energy carriers, such as electricity and natural gas as well as other types of energy such as district heating, heating oil, coal and lignite, forestry and agricultural energy products and transport fuels.

Member States must adopt and reach an annual target for saving energy. The target is to save an annual quantity of energy equal to 1% of the quantity of energy supplied and/or sold to the end customers, calculated for the base year indicated in Annex I of the proposal. Member States are to appoint one or more new or existing independent public sector authorities or agencies whose job it will be to ensure overall monitoring of the process set up to achieve these targets. Member States are to adopt and ensure they achieve a mandatory target for annual energy savings in the public sector through the procurement of energy services, energy programmes and other measures aimed at improving energy efficiency. The public sector's target will be to make annual savings of at least 1.5% of energy distributed and/or sold. Member States are to appoint one or more new or existing orga-



nisations whose job it will be to carry out administrative, management and implementation duties in order to reach the public procurement target.

The following requirements may be imposed in this context:

- the use of financial instruments for energy savings, such as third-party financing contracts and energy performance contracts;
- the purchasing of equipment and vehicles which perform well in terms of energy efficiency;
- the purchasing of low-energy products.

Member States are to remove barriers to the demand for energy services and ensure that energy distributors and/or energy retail businesses that sell electricity, natural gas, heating oil and district heat:

- supply and actively promote energy services as an integral part of the distribution and/or sale of energy to clients, either directly or via other energy service providers;
- refrain from any activity which could hamper the supply of energy services, programmes to improve energy efficiency and other measures aimed at improving general energy efficiency;
- supply information on their end clients which is needed to develop and implement programmes to improve energy efficiency.

Member States are to ensure that energy services, programmes or other services aimed at improving energy efficiency are offered to all eligible clients, including small and medium-sized enterprises (SMEs), consumers and voluntary groups of small customers.

Systems for qualification, certification and accreditation for suppliers of energy services should also be put in place.

Member States must also:

- repeal or amend legislative provisions and national regulations which hamper or restrict the use of financial instruments and contracts for making energy savings on the energy services market;
- establish publicly overseen financing options for energy end-use efficiency, especially for investments with comparatively long payback requirements or high transaction costs;
- set up programmes aimed at improving energy efficiency which facilitate the provision of energy services and which are financed by the appropriate national funds;
- develop high-quality energy auditing systems aimed at determining which measures can be taken to improve energy efficiency and which energy services it must be possible to provide, and to prepare for their implementation;
- ensure that end-users are provided with competitively priced individual metering and informative billing that reflect their actual energy consumption;
- report on the administration and implementation of the Directive.

Cogeneration based on a useful heat demand in the internal energy market

The energy-saving potential of cogeneration is currently under-utilised in the Community. The purpose of this Directive is to facilitate the installation and operation of electrical cogeneration plants (technology allowing the production of heat and electricity in one process) in order to save energy and combat climate change. The Green Paper on security of energy supply published in 2000 highlighted the need to limit the energy dependency of the European Union (EU) and reduce greenhouse gas emissions. However, carbon dioxide (CO₂) emissions in the EU are currently on the rise, making it difficult to meet the commitments under the Kyoto Protocol.

Electricity production from cogeneration accounted for 11% of total electricity production in the EU in 1998. If the share of electricity production from cogeneration increased to 18%, the energy savings could represent around 3 to 4% of total gross consumption in the EU.

Cogeneration saves energy and improves security of supply. There is considerable unexploited potential for cogeneration in the Member States. Moreover cogeneration:



- reduces losses on the electrical grid because cogeneration installations are usually closer to the consumption point;
- increases competition among electricity producers;
- allows new enterprises to be set up;
- is well suited to isolated or extremely remote areas.

The forthcoming legislative framework on cogeneration should overcome the major obstacles:

- inadequate control of longstanding monopolies;
- inadequate support from regional and local authorities;
- incomplete liberalisation;
- regulatory obstacles having a negative effect;
- no European standards for network connection.

The principle of cogeneration

Cogeneration is a technique allowing the production of heat and electricity in a single process. The heat is in the form of high pressure water vapour or hot water.

An electricity/heat cogeneration plant operates by means of gas turbines or engines. Natural gas is the most commonly used primary energy to fuel cogeneration plants. However, renewable energy sources and waste can also be used.

Unlike traditional power stations where exhaust gases are directly evacuated by the chimney, the gases produced by cogeneration are first cooled, releasing their energy into a hot water/steam circuit. The cooled exhaust gases then pass into the atmosphere via the chimney.

Electricity/heat cogeneration installations can achieve energy efficiency levels of around 90%. The process is more ecological, since during combustion natural gas releases less carbon dioxide (CO₂) and nitrogen oxide (NO_x) than oil or coal. The development of cogeneration could avoid the emission of 127 million tonnes of CO₂ in the EU in 2010 and 258 million tonnes in 2020.

The objective of this Directive is to establish a transparent common framework in order to promote and facilitate the installation of cogeneration plants where demand for useful heat exists or is anticipated. This overall objective translates into two specific aims:

- in the short term, the Directive makes it possible to consolidate existing cogeneration installations and promote new plants;
- in the medium and long term, the Directive should serve as a means to create the necessary framework for high efficiency cogeneration, aimed at reducing emissions of CO₂ and other substances, to contribute to sustainable development.

There are already examples of regulatory developments in some Member States, such as Belgium (green certificates and cogeneration quotas), Spain (new decree on the sale of cogeneration electricity) or Germany (new law on cogeneration).

The Commission must establish harmonised efficiency reference values by 21 February 2006 for separate production of electricity and heat. The Commission will review the harmonised values for the first time on 21 February 2011, and every four years thereafter, to take account of technological developments and changes in the distribution of energy sources.

Member States must ensure, on the basis of the harmonised efficiency reference values and within six months of their adoption, that the origin of electricity produced from high-efficiency cogeneration can be guaranteed according to objective, transparent and non-discriminatory criteria laid down by each Member State.

Member States must ensure that the guarantee of origin of the electricity enables producers to demonstrate that the electricity they sell is produced from high efficiency cogeneration.



A guarantee of origin must:

- specify the lower calorific value of the fuel source from which the electricity was produced, specify the use of the heat generated together with the electricity the dates and places of production,
- specify the quantity of electricity from high efficiency cogeneration (see Annex II),
- specify the primary energy savings calculated in accordance with Annex III based on harmonised efficiency reference values established by the Commission.

Member States must analyse the national potential for the application of high-efficiency cogeneration. Following a request by the Commission at least six months before the due date, Member States must evaluate progress towards increasing the share of high-efficiency cogeneration for the first time by 21 February 2007 and thereafter every four years. Member States or the competent bodies must evaluate the existing legislative and regulatory framework with regard to authorisation procedures. Such evaluation is carried out with a view to:

- encouraging the design of cogeneration units to match economically justifiable demands for useful heat output and avoiding production of more heat than useful heat,
- reducing the regulatory and non-regulatory barriers to an increase in cogeneration,
- streamlining and expediting procedures at the appropriate administrative level and
- ensuring that the rules are objective, transparent and non-discriminatory.



INTRODUCTION

The European Union and energy issues

Presenting its strategic objectives for 2000-2005 final, "Shaping a new Europe"], the Commission indicated energy to be a key factor for Europe's competitiveness and economic development.

The prime aim of the European Community's energy policy, as set out in the November 2000 Green Paper on the security of energy supply, is to ensure a supply of energy to all consumers at affordable prices while respecting the environment and promoting healthy competition on the European energy market. The European Union (EU) is facing new energy challenges for which it must have an appropriate energy strategy. Security of the Union's energy supply and protection of the environment have been highly important in recent years. In particular, the signature of the 1997 Kyoto Protocol on Climate Change boosted the importance of the environment dimension and sustainable development in Community energy policy.

The EU's external energy dependence is continuing to grow (it currently meets 50% of its energy requirements through imports). As the Green Paper states, if nothing is done, this rate of dependence will grow to 70% by 2030, which would further weaken the Union's position on the international energy market. Vigilance with regard to diversification of energy sources and supplier areas is one of the ways of ensuring security of supply. Creation of a single market is a part of the energy policy and has long been a priority of the Community. The Commission's aim here is to provide the EU with the most effective, safest and most competitive energy market. The creation of the single market, which is now well under way, has proceeded in stages. Initially, measures were taken to ensure the transparency of prices to final consumers and to facilitate the transit of gas and electricity between the Community's major grids. The next step was to remove certain restrictions so that companies would enjoy equal access to explore and prospect for hydrocarbons.

In 1996 and 1998, in an important move forward in the construction of the single energy market, Directives were adopted on common rules for electricity and gas respectively. These Directives ensured the free movement of electricity and gas within the Community. Liberalisation of the electricity and gas markets, which were opened up to major consumers in 1999 and 2000 respectively, has enjoyed some success, though the degree of liberalisation still varies greatly from one Member State to another. The call made at the Lisbon European Council of 23 and 24 March 2000 for the energy markets to be opened up more quickly provided a new major impetus in this area. In March 2001 the Commission adopted a set of measures to open the gas and electricity markets up fully by July 2007. These measures provide for conditions even more conducive to genuine and fair competition, and for the creation of a single market which offers guarantees to the public, protects the environment and ensures a safe and affordable supply of energy.

The completion of the internal market for energy is accompanied by measures to strengthen economic and social cohesion, such as the creation of trans-European energy networks. Legislation on Community guidelines in this area and on measures to create a favourable context for the trans-European networks was adopted during 1996. The decisions on the guidelines contain a list of projects of common interest in the trans-European electricity and natural gas networks. Under these guidelines, some 74 projects of common interest have been identified, representing a total investment of EUR 18 000 million. The funding of these projects is largely the responsibility of the operators in this sector. In a number of cases, the EU's financial instruments, consisting essentially of European Investment Bank (EIB) loans and European Regional Development Fund (ERDF) aid, have been mobilised. In its 1997 annual report on the trans-European networks, the Commission reported progress in the gas sector. However, the priority projects in the electricity sector are facing administrative, financial and environmental problems which are slowing them down. The guidelines are to be revised to focus on remaining bottlenecks and improve the interoperability of networks.



The introduction of trans-European energy networks also has an impact on relations with third countries. Inter-connections have been made with certain Mediterranean countries, the countries of Central and Eastern Europe and Norway. The CENTREL electricity grid, which covers Poland, the Czech Republic, Slovakia and Hungary, was connected to the UCPTTE grid (the main European electricity grid) in 1995. The extension of the UCPTTE grid to the Balkan States and its interconnection with the countries of the CIS is the subject of studies being funded by the Community, as are gas links between Eastern and Western Europe. Projects on connection with the countries of the Mediterranean basin are also being studied and a Euro-Mediterranean partnership in the energy sector has been set up.

At international level, the EU is likewise endeavouring to establish cooperation in the energy field with almost all the main countries and regions of the world. The Synergy programme was geared to the Community's general energy relations with third countries. Cooperation with Russia in the energy field was given a boost at the EU-Russia Summit in October 2000 thanks to the concept of energy partnership.

In addition, the European Community is a signatory to the European Energy Charter, which promotes East-West cooperation on energy. The EU plays an active role in initiatives in the Baltic Sea region, including the "Northern dimension" action plan. The EU is also developing major links with other countries such as the Balkan States and China. It is also taking care to maintain its relationships with its industrialised partners in the OECD and with its EEA partners. Finally, its links with the Gulf States are important both in themselves and as part of the dialogue between energy producers and consumers which has recently been revived. The EU is also represented in a wide range of international forums and organisations such as the International Energy Agency (IEA).

Energy from renewable energy sources (RES) is playing a key role in the diversification and sustainability of energy sources and in the campaign to combat climate change. The Altener programme, set up in 1993 and renewed in 1998, promoted RES in the European Union.

The 1997 White Paper provided a strategy and a Community action plan for RES. The prime objective set by the White Paper is to double the proportion of renewable energy sources in the EU's gross domestic energy consumption from 6% in 1997 to 12% in 2010. Despite some progress in this area, the 2002 evaluation noted that the share of renewable energy sources in total primary energy consumption has remained largely unchanged since 1995. In other words, renewables will not prove a success unless accompanied by a policy of firm management of energy consumption. Nonetheless, the Commission believes the goal set in the White Paper to be a realistic one. A Council and Parliament Directive on the promotion of production of electricity from renewable energy sources was adopted in September 2001. It aims to increase the percentage of "green" electricity in the Union from 14% in 1997 to 22% in 2010.

A "take-off" campaign to get RES off the ground is an integral part of the action plan and strategy for 2010 and should act as a catalyst for the development of key renewable energy sectors for which quantitative targets have been set for 2003. The take-off campaign also includes the renewable energy partnerships, which are a system of voluntary agreements by public or private partners with the Commission to achieve the objectives of the campaign.

For the first time, the Green Paper on security of energy supply stressed the fundamental importance of influencing demand rather than concentrating solely on energy supply. In order to limit our energy dependence, the growth in our demand has to be limited by legislative means, among others. A series of measures are presented to this end in the Green Paper.

In the context of the Kyoto Protocol, improved energy efficiency has become even more than before an important element of Community strategy. In April 2000, the Commission adopted an action plan to improve energy efficiency in the European Community. The SAVE programme encouraged energy efficiency measures, and was the main instrument for coordination of the plan. Under the plan, the new Directive on energy efficiency in buildings covers: a common methodology for minimum energy performance standards, the application of those standards for new buildings and for major renovations of existing buildings, production of an energy performance certificate in the event of the construction, sale or renting of a building and the checking of heating and air-conditioning systems.



Given that 40% of energy is consumed in the transport sector, which in turn is responsible for 28% of CO₂ emissions, the Green Paper stresses the importance of taking transport policy measures to reduce energy consumption. In this connection, the White Paper "European Transport Policy for 2010: time to decide" adopted in September 2001 by the Commission is, with its 60 proposals, a key instrument to change the present modal split. Oil accounts for 98% of energy consumption in the transport sector. An attempt at diversification is therefore essential in this sector. In this context, two Directives are designed to encourage the use of alternative fuels in the transport sector. The first Directive provides for fuels to contain a minimum percentage of biofuels from 2005, while the second allows the possibility of applying a reduced excise duty for biofuels.

The Commission has proposed a new multiannual action programme "Intelligent Energy for Europe"* (2003-2006), with a budget of 215 million euros. The programme is designed to boost Europe's support for the promotion of renewable energy (ALTENER) and for energy efficiency (SAVE) and to refocus international action on these two priorities (COOPENER). The Commission is also proposing to introduce a further programme section relating to the energy aspects of transport (STEER).

Alongside legislative measures or measures designed to encourage changes, technological progress is an important means of achieving the objectives of Community energy strategy. The Commission has supported research, development and demonstration projects in the field of non-nuclear energy under the ENERGY sub-programme of the Fifth Framework Programme for research and technological development. The Sixth Framework Programme also lays emphasis on sustainable development and climate change, including research in the area of energy and transport.

As regards nuclear energy, Union policy in this area is the responsibility of the European Atomic Energy Community (EURATOM) set up in 1957 on the basis of a separate treaty to that of the European Community. EURATOM has a number of tasks including research into and development of the peaceful use of nuclear energy, the drawing up of uniform safety standards, the creation of a common market for nuclear energy equipment and an adequate supply of nuclear energy. It is also responsible for ensuring that nuclear materials are not used for unlawful purposes such as the production of nuclear weapons.

The institutions common to the European Community (particularly the Council, Commission and European Parliament) and the Supply Agency created by the EURATOM Treaty are responsible for implementing the Treaty. EURATOM plays an active role in international initiatives, having concluded many international agreements with third countries or international organisations, notably the International Atomic Energy Agency (IAEA), such as the Convention on Nuclear Safety. The EURATOM Safeguards Office, for its part, is responsible for ensuring that within the EU nuclear materials are not diverted from their prescribed use and that the safeguards to be applied by the Community under an agreement with a third country or international organisation are observed.

Nuclear safety is of particular concern to certain countries, particularly in Eastern Europe. It has a prominent place in the negotiations under way with candidate countries. The TACIS, PHARE and, to some extent, SURE programmes are involved in measures to improve safety in third countries.

Lastly, in the tax field, the Commission has presented two proposals on the taxation of energy products. One proposal, presented in 1997, sets out a global tax system for such products; though the proposal is pending in the absence of political agreement between the Member States.

Europe's future depends on its energy supply being safe, ecologically sustainable and affordable. It is not a matter simply of making sure that sources of energy are physically available. In this respect, security of supply is closely linked to sustainable development policy, economic factors, developments on the energy markets and the socio-economic situation in the EU.

Energy efficiency and local authorities: roles and actions

Energy efficiency means reducing energy consumption without reducing the use of energy-consuming plant and equipment. The aim is to make better use of energy, promoting behaviour, working methods and manufacturing techniques which are less energy-intensive.



Local authorities can play a crucial role in promoting and realising energy saving actions since they are responsible for a wide range of buildings. Actions implemented by local authorities can lead to an improvement of both energy and economical budget and, at the same time, provide a great contribution to the realisation of Kyoto protocol.

Local authority can play different roles in promoting energy saving:

- It can act as final user that stipulate agreements with local providers in order to improve performances of plants and buildings;
- acting as intermediate between providers and inhabitants;
- supporting and creating agency and companies involved in energy market

EUROPEAN TOOLS and FINANCIAL MECHANISMS

Introduction

This section provides information about financing programmes created by European institutions in order to support national, regional and national actors in the development of innovative actions in the field of energy saving and efficiency.

This vademecum has born in a transition period, documents related to new programmes available for 2007 – 2013 period will be published in the next weeks. For this reason this section is focused on programme and projects financed in the context of programmes that are now closed, most of them will be proposed again for the 2007- 2013 period but no detailed documents are now available. In order to further help local authorities, description of each programme is supported by the description of one funded project.

ManagEnergy

ManagEnergy is an initiative of the European Commission Directorate-General for Energy and Transport aiming to support the work of actors working on renewable energies and energy demand management at local and regional levels. ManagEnergy was launched in March 2002, based on the requests for further improved communication and information dissemination on locally relevant energy issues raised in the first European Conference for Local and Regional Energy Management Agencies. Most ManagEnergy communication happens through the main ManagEnergy web sites www.managenergy.net and www.managenergy.tv. ManagEnergy supports the work of local actors as follows:

- The ManagEnergy Reflection Group whose members are major stakeholders in renewable energies and energy demand management, including representatives of local energy actors and the Commission;
- information on latest Community energy and transport policies and legislation;



information on project and programme funding available for local actors to support this legislation;
organisation of capacity building actions, European events and workshops, including a major European platform on live and recorded Internet broadcasts of energy events, speeches and presentations for improved communication and learning;
collection and dissemination of good practice in order to learn and share expertise and knowledge from others;
contact details of energy agencies and other energy actors for easier communication and networking;
a partner search facility to help you find partners;
Help Desk for actors, who need further information on ManagEnergy services, including the organisation of events, Internet broadcasts and local media-conferences;
statistics on the use of ManagEnergy services, contact details for the ManagEnergy team, registration form to register for ManagEnergy information, to send good practice reports and much more.

Concerto

The CONCERTO initiative, launched by the European Commission, is a Europe wide initiative proactively addressing the challenges of creating a more sustainable future for Europe's energy needs. Today, there are a total of 28 communities in 9 projects, each working to deliver the highest possible level of self-supply of energy. CONCERTO is part of the 6th framework research programme supervised by the DG Energy and Transport of the European Commission.

CONCERTO supports local communities, as clearly defined geographical areas or zones, in developing and demonstrating concrete strategies and actions that are both sustainable and highly energy efficient. Interactions and relevant energy flows between centralised and decentralised energy supplies and demands can be identified, measured and assessed. The CONCERTO initiative has been only possible as a result of the strong commitment from the relevant, local authorities and includes technical experts, academics, and private companies from across Europe. Throughout the 9 participating CONCERTO projects the focus is primarily on demonstrating the environmental, economic and social benefits of integrating renewable energy sources (RES) together with energy efficiency (EE) techniques through a sustainable energy-management system operated on a community level.

The CONCERTO initiative provides a platform for the exchange of ideas and experiences between the 28 CONCERTO demonstration communities, and other cities that are committed to introducing similar strategies. Communities participating will benefit from the shared expertise of Europe's most advanced communities, active in the field of energy sustainability. CONCERTO is the manifestation of the political desire for further action in the field of sustainable energy competitiveness and the internal market and the environment. The main impulse for this European initiative is the strong desire in all communities, among politicians, planners, energy service providers, and citizens to develop and demonstrate high degrees of decentralised energy supply, integrated with renewable energy sources (RES) as well as the conscientious application of leading energy efficiency (EE) measures in various end use sectors. In this respect, CONCERTO involves the promotion of energy efficient techniques in connection with the promotion of renewable energy sources in the European Union for the future health and wellbeing of all citizens.

Each CONCERTO community addresses its own specific solutions. The initiative as a whole, focuses on the integration of renewable energy sources (RES) and energy efficiency (EE) measures, involves eco-buildings integrating onsite RES with energy efficient building design and management, poly-generation, combined heat and power (CHP) and district heating (ideally using bio-mass). In addition, intelligent management of demand as well as local distribution grids and distributed generation are included. Yet another aspect of intelligent and innovative integration of RES and EE addressed by the CONCERTO initiative is how to tackle the issue of efficient energy storage in order to cover variability of RES supply, be it daily or seasonal.

CONCERTO projects are expected to produce well monitored field experience of energy supply and demand patterns to be communicated for the benefit of other CONCERTO projects and serve as a basis for future actions. In parallel to research conducted on technical aspects of RES, the socio-economic research component will analyse the local trends in energy costs, prices and savings, as well as social impact, quality, and added value of



the energy services provided. The promotion of the use of renewable energy sources (RES) brings best results when combined and linked with activities towards energy efficiency. Therefore, the CONCERTO initiative stresses the significant increase of the share of RES supply (green electricity, heating /cooling etc...) simultaneously with the reduction of energy demand and overall management of energy.

Communities involved in the CONCERTO initiative produce substantial benefits for all citizens at a local, regional, national and international level when fighting the climate change and improve the security of energy supplies. In return there are a wide range of benefits and incentives for communities, small and large, engaged in the CONCERTO initiative e.g.:

Communities will benefit from visibility as 'role models' and forerunners in the field of advancing means for sustainable energy management, which contribute to the European Union's global goals to fight climate change and improve the security of energy supplies.

Involvement in the CONCERTO initiative will provide several opportunities to bring together the CONCERTO communities for meetings. (CONCERTO fora as an occasion to network & exchange information on integrated strategies)

Inhabitants of all communities benefit from a cleaner more pleasant local environment, thus improving the quality of life and health of citizens.

EXAMPLE 1—“Ecostiler Project “

ECOSTILER, 'Energy efficient COmmunity STimulation by use and Integration of Local Energy Resources', is all about **a coordinated approach for achieving energy efficient communities**. The common and essential element of the project involves the use of **bio-gas and district heating systems**. They act as tools in the reduction of primary fuel consumption and CO2 emission. ECOSTILER's approach embraces communities of different sizes, ranging from small to large, making it a valuable demonstration project in the CONCERTO initiative. Research activities from the ECOSTILER project have **two separate aspects**:

- Socio-economic research conducted by the entire project
- Technical research associated with the demonstration technologies (primarily at the local level)

Some of the **socio-economic research activities** involve the monitoring of the project in terms of achieving ECOSTILER targets, technical, social, and environmental objectives. Additional activities in this respect include an analysis of the social and environmental impacts of the project and an assessment of the costs and benefits of the technological options **Technical research** on the community level embraces the assessment of corrosion in waste incinerators and power quality, odour reduction, and the viability of selling the dry fraction of manure as a bio-fuel. Moreover, aspects of the technical research at the local level include analysis of waste collection procedures. The project also engages in **market research for bio-gas** including the potential of renewably fuelled Combined Heat and Power (CHP) engines, and appropriate delivery mechanisms for wind energy, which all might lead to the establishment of an Energy Service Company

Research Activities: Technical issues concerning the efficient collection and monitoring of the main energy flows in the projects, such as the electricity, cooling and heating demands in the buildings, but also the electricity supply from each renewable electricity generator and renewable heating system, will be assessed. The non technical research activities have the objective to obtain a clear understanding of the socio economic aspects connected to the sustainability measures. Additional research action being undertaken includes research into the influence on occupant behaviour. In this respect research actions assess the impact the project has an effect on the energy consumption etc..., attitude towards EE and RES, and the perception of the quality of life. Moreover, research activities will focus on the influence on local policy, local economy, marketability, and cost reductions including the value of energy services.



EXAMPLE Act2 Project

PARTICIPATING COMMUNITIES: Hannover, Germany / Nantes, France

OBSERVER COMMUNITIES: Malmö, Sweden / Newcastle, United Kingdom / Koszalin, Poland

The act2 Project – Introduction

act2, 'Action to mainstream efficient building and renewable energy systems at a city level across Europe' has the underlining rationale of "cities willing to improve the quality of life and adapt their infrastructures to the sustainable energy model ruling the present century". Hannover in Germany and Nantes in France are the two CONCERTO demonstration cities in the act2 project. The act2 project builds on previous experience gained from the Hannover community project and other European city projects. The project supports the development of a similar strategy in Nantes and analyses the drivers for success in partner cities like Malmö, Koszalin and Newcastle, which are co-operating, as observers.

act2 aims and objectives: act2 aims to implement major developments in target communities taking significant steps towards establishing best practice experiences, as a single standard for future commercial practice. In the real estate sector, act2 communities specifically demonstrate technical and process solutions for large-scale energy efficiency (EE) and renewable energy source (RES) integration in new build and refurbishment projects, in housing and public buildings, and providing a benchmark for the Cities of Tomorrow.

act2 – focus areas: act2 implements a range of varying techniques for increasing the use of renewable energy sources (RES) and stresses the importance of the use of RES as the primary solution for decentralised energy grids within the supply menu. act2 retrofitted buildings in Hannover are connected to district heating from Combined Heat and Power (CHP) systems, while eco-buildings are equipped with wood pellet heating systems. Energy saving advice service for users and tenants and campaigns promoting the activities and convince other house owners from the CONCERTO demonstration communities are carried out.

act2 – research activities: act2 research activities have two focus areas:

1. Identification of hurdles and drivers for the implementation of energy efficiency (EE) measure and renewable energy sources (RES) on the community level (including analysis of all relevant actors and containing relevant socio-economic aspects)
2. Analysis and evaluation of new forms of design, planning, construction processes to realise ambitious energy objectives under economically compatible conditions (to provide know-how transfer of new energy concepts on large scale on the local community level)act2 aims to produce results which lead to a better understanding of the range of barriers and provide detailed know-how which can be transferred from the most experienced participant communities to the ones with less experience.

"INTELLIGENT ENERGY FOR EUROPE" PROGRAMME

Energy and transport play a large part in climate change since they are the leading sources of greenhouse gas emissions; this is why energy policy is particularly important in the European Union's sustainable development strategy. The EU is increasingly dependent on energy imported from third countries, creating economic, social, political and other risks for the Union. The EU therefore wishes to reduce its dependence and improve its security of supply by promoting other energy sources and cutting demand for energy. Consequently, it is putting the accent, above all, on improving energy efficiency and promoting renewable energy sources.

This programme ensures the continuity of EU action as developed in the previous energy framework programme (1998-2002). This new programme is aimed at providing financial support for local, regional and national initiatives in the field of renewable energy, energy efficiency, the energy aspects of transport, and international promotion. The budget is 200 million for the period 2003-2006.



The specific aims are:

- to provide the necessary factors to promote energy efficiency and develop renewable energy sources with a view to reducing energy consumption and CO2 emissions;
- to develop resources and instruments which can be used by the Member States to monitor and evaluate the impact of the measures adopted by the Member States;
- to promote efficient and intelligent schemes for the production and consumption of energy, based on solid and sustainable foundations, through awareness-raising and education.

To achieve these aims, the programme must ensure that there is a real change in energy behaviour in the EU on the part of individuals as well as industry and enterprise. It must also develop instruments to ensure effective follow-up, monitoring and evaluation.

Fields of action

The programme is divided into four fields, some of which match the earlier programmes to provide and reinforce continuity:

1. The SAVE field, which is concerned with improving energy efficiency and the rational use of energy, in particular in the construction sector and industry. Budget: 69.8 million;
2. The ALTENER field, which is concerned with the promotion of new and renewable energy for the centralised and decentralised production of electricity and heat, and their integration into the local environment and energy systems. Budget: 80 million;
3. The STEER field, which is concerned with supporting initiatives relating to the energy aspects of transport and fuel diversification by using renewable energy sources. Budget: 32.6 million;
4. The COOPENER field, which is concerned with supporting initiatives for the promotion of renewable energy and energy efficiency in developing countries. Budget: 17.6 million.

Key actions

The programme is structured around key actions for each field of action and funding is directed towards measures or projects concerned with:

- promotion of sustainable development, security of energy supply, competitiveness and environmental protection. Projects may include the development of standards and of labelling and certification systems and the monitoring of developments on the markets and energy trends;
- creation, enlargement and promotion of structures and instruments for sustainable energy development, such as local and regional energy management, and the development of financial products;
- promotion of systems and equipment in order to speed up market penetration by the best available technologies;
- development of information, education and training structures to raise public awareness and dissemination of know-how and best practices;
- monitoring of the implementation and impact of EU sustainable energy policy;
- evaluation of the impact of projects funded under the programme.

Funding

The EU contribution may not exceed 50% of the cost of the measure; the rest may be covered by either public or private funds or by a combination of the two. However, certain exceptions are allowed: for example, the EU aid may cover the full cost of action to evaluate the impact of the measures and coordinate them more closely. Indicative budgetary amounts are set for each specific field. The budgetary allocation is flexible in order to respond more fully to changing needs in the sector.

Implementation

The Commission, assisted by a committee, will be responsible for the implementation of the programme. It will set the objectives and guidelines, and be in charge of project selection, etc. Implementation of the programme will require a big increase in staff because the programme covers a wider range than its predecessor. In the present situation, given the nature of the action planned, the Commission considers that one option for management of the programme would be to set up an agency to implement it, under the supervision of the Commission; the agency could perform certain tasks relating to management and monitoring of the programme, such as drawing up recommendations on implementation of the programme and managing some or all phases of the projects.



Participation

The programme is open to any legal, public or private person established in the territory of the EU, the candidate countries and the countries of the European Free Trade Association (EFTA) and the European Economic Area (EEA).

Evaluation

The Commission will carry out an annual examination of progress on this programme. During the second year of application of the programme and before the Commission puts forward proposals on any subsequent programme, independent experts will carry out an external evaluation of the programme. The multiannual programme for action in the field of energy, "Intelligent Energy for Europe", implements the broad lines of action described in the Green Paper on the European Strategy for security of energy supply. This Green Paper aims at strengthening the security of energy supply combating climate change and boosting the competitiveness of EU businesses.

Example 1 ENPER-EXIST

Applying the EPBD to improve the ENergy Performance Requirements to EXISTing buildings

Partners: Fraunhofer-IBP, Germany; BBRI, Belgium; SBi, Denmark; EBM, The Netherlands; NKUA, Greece; ESD, United Kingdom; TNO, The Netherlands

Website: www.enper-exist.com

Objective: Support the take off of the European Buildings Directive for existing buildings

Benefits: Better knowledge of the specificities of existing buildings, covering both technical and non technical issues

Duration: 01/2005 – 06/2007

Budget: € 1,305,816 (EU contribution: 50%)

Short description

ENPER EXIST supports the implementation of the European Buildings Directive by improving our knowledge of existing buildings. On technical issues, this is achieved by:

- Analysing, and applying to existing buildings, the relevant pre-standards (prENs) of the European Committee for Standardisation (CEN); identifying issues that affect the use of these standards; and proposing alternative solutions based on national experiences and on methods developed in EU projects.
- Analysing of how much information on building stocks is available and how decision-makers use it; proposing solutions on how to improve this knowledge by using data from certification processes and experiences in advanced countries.

On non-technical issues, ENPER EXIST:

- analyses the impact of certification procedures on the market, on the human capital and on national administrations; identifies key problems that need specific attention; and suggests solutions based on experience of advanced countries.
- Defines a roadmap for future actions to improve the energy performance of existing buildings

Expected and/or achieved results

Achieved results:

- Written comments and suggestions on PrEN standards for the relevant CEN committees
- Expected results
- Report on current gaps in the use of CEN standards for existing buildings, and written comments to relevant CEN committees
- Report on the main legal, economical and organisational issues affecting building certification procedures, including recommendations based on available experiences
- An excel tool with currently available information in the existing building stock and proposals on how to improve this knowledge
- A roadmap for future actions to improve the energy performance of existing buildings



Lessons learnt

Although the project has not been completed it is possible to draw the following preliminary conclusions:

- A key problem for existing buildings is the collection of high-quality data, not the calculation procedures. It is thus important to develop building inspection guidelines that support data collection.
- To efficiently certify a building it is very important to take into account, and describe, the whole range of necessary steps.
- Many member states have poor data on their building stock. The certification process can be used to improve this situation and collect data.
- The currently available knowledge of Member States can take us a long way towards improved

Example 2 GreenBuilding

Partners: ADEME, France;ADENE, Portugal; ARMINES, France;Austrian Energy Agency, Austria; Berliner Energieagentur, Germany; CRES, Greece;CREVER, Spain;eERG, Italy; Fastighetsägarna, Sweden; Fraunhofer-ISI, Germany; Josef Stefan Institute, Slovenia; Motiva Oy, Finland

Website: <http://www.eu-greenbuilding.org>

Objective: Enhancing the energy efficiency and the use of renewable energy in non-residential buildings

Benefits: Stimulation of voluntary energy efficiency measures

Duration: 01/2005 – 12/2006

Budget: € 1.527 M (EU contribution: 50%)

Short description

GreenBuilding is the European Union's programme to enhance the energy efficiency of non-residential buildings. The aim of the EIE project GreenBuilding is to set up the infrastructure for the programme in ten European countries and to initiate modernisation measures in non-residential buildings on a voluntary basis during the twoyear pilot phase 2005-06. With the help of so-called technical modules, information on cost-effective measures to enhance the energy efficiency and the integration of renewable energies is provided to building owners. Building owners, who decide on the implementation of modernisation measures may receive the status "GreenBuilding Partner" if they achieve energy consumption reductions of 25% or more. Organisations supporting a building owner in becoming GreenBuilding partner with their products or services may receive the status of a "GreenBuilding Endorser". GreenBuilding supports participants in the programme with a set of promotional measures, including internet, publications, a best practice database and the right to use the GreenBuilding logo.

Expected and/or achieved results

20-40 GreenBuilding pilot projects in the ten participating countries by the end of 2006

50 GreenBuilding Partners by the end of 2006

80 GreenBuilding Endorsers by the end of 2006

Set of technical modules providing information on cost-effective measures on renewable energy integration and the improvement of the energy efficiency in non-residential buildings

GreenBuilding infrastructure with National Contact Points

Although the project has not been completed it is possible to draw the following preliminary conclusions:

In the face of rising energy prices, the readiness to consider energy efficiency measures in non-residential buildings is clearly growing.

GreenBuilding successfully serves as a leverage to raise awareness, provide information, ease decisions, support the realisation and spread the knowledge of successful energy efficiency projects in the non-residential building sector.

There are still large regional differences in the EU member states concerning the development of energy efficiency markets. GreenBuilding is most successful where these markets are already well-developed and market partners can be involved in the programme. At the same time, GreenBuilding contributes to the further development of energy efficiency markets in all participating countries.



COMPETITIVENESS AND INNOVATION FRAMEWORK PROGRAMME (CIP)

Competitiveness and Innovation framework Programme (CIP) is a coherent and integrated response to the objectives of the renewed Lisbon strategy. Running from 2007 to 2013, it has a budget of approximately EUR 3.6 billion. It represents a 60 % increase in annual spending on actions related to competitiveness and innovation by 2013 compared to 2006. The three specific programmes in the CIP framework are:

- Entrepreneurship and Innovation Programme
- ICT Policy Support Programme
- Intelligent Energy-Europe Programme
- Eco-innovation will be a transversal theme of the whole programme.

Intelligent Energy-Europe Programme

Objectives and fields of action

1. The Intelligent Energy — Europe Programme in support of energy efficiency, renewable energy sources and energy diversification is hereby established. The programme shall contribute to ensuring secure, sustainable energy for Europe, while enhancing European competitiveness.

2. The Intelligent Energy — Europe Programme shall provide for action, in particular:

- (a) to foster energy efficiency and the rational use of energy resources;
- (b) to promote new and renewable energy sources and to support energy diversification;
- (c) to promote energy efficiency and the use of new and renewable energy sources in transport.

Operational objectives

In operational terms the Intelligent Energy — Europe Programme shall aim to:

- (a) provide the elements necessary for the improvement of sustainability, the development of the potential of cities and regions, as well as for the preparation of the legislative measures needed to attain the related strategic objectives; develop the means and instruments to follow up, monitor and evaluate the impact of the measures adopted by the Community and its Member States in the fields addressed by that programme;
- (b) boost investment across Member States in new and best performing technologies in the fields of energy efficiency, renewable energy sources and energy diversification, including in transport, by bridging the gap between the successful demonstration of innovative technologies and leverage of public and private sector investment, promote key strategic technologies, bring down costs, increase market experience and contribute to reducing the financial risks and other perceived risks and barriers that hinder this type of investment;
- (c) remove the non-technological barriers to efficient and intelligent patterns of energy production and consumption by promoting institutional capacity building at, inter alia, local and regional level, by raising awareness, notably through the educational system, by encouraging exchanges of experience and know-how among the main players concerned, business and citizens in general and by stimulating the spread of best practices and best available technologies, notably by means of their promotion at Community level.

Themes

Energy efficiency and rational use of resources (SAVE)

Action to foster energy efficiency and the rational use of energy resources may include:

- (a) improvement of energy efficiency and the rational use of energy, in particular in the building and industry sector;
- (b) supporting the preparation of legislative measures and their application.

New and renewable resources (Altener)

Action to promote new and renewable energy resources may include:

- (a) promoting new and renewable energy sources for centralised and decentralised production of electricity, heat and cooling, and thus supporting the diversification of energy sources;
- (b) integrating new and renewable energy sources into the local environment and the energy systems;
- (c) supporting the preparation of legislative measures and their application.



Energy in transport (STEER)

Action to promote energy efficiency and the use of new and renewable energy sources in transport may include:

- (a) supporting initiatives relating to all energy aspects of transport, and the diversification of fuels;
- (b) promoting renewable fuels and energy efficiency in transport;
- (c) supporting the preparation of legislative measures and their application.

Integrated initiatives

Action to combine several of the specific fields referred to in Articles 39, 40 and 41, or relating to certain Community priorities, may include:

- (a) integrating energy efficiency and renewable energy sources in several sectors of the economy;
- (b) combining various instruments, tools and actors within the same action or project.

Actions

Promotion and dissemination projects

The following shall be supported:

- (a) strategic studies on the basis of shared analysis and regular monitoring of market developments and energy trends for the preparation of future legislative measures or for the review of existing legislation, including with regard to the functioning of the internal energy market, for the implementation of the medium and long-term strategy in the energy field to promote sustainable development, as well as for the preparation of long-term voluntary commitments with industry and other stake-holders and for the development of standards, labelling and certification systems, where appropriate also in cooperation with third countries and international organisations;
- (b) creation, enlargement or reorganisation of structures and instruments for sustainable energy development, including local and regional energy management, and the development of adequate financial products and market instruments, building on experience from past and present networks;
- (c) promotion of sustainable energy systems and equipment in order to further accelerate their penetration of the market and stimulate investment to facilitate the transition from the demonstration to the marketing of more efficient technologies, awareness campaigns and the creation of institutional capabilities;
- (d) development of information, education and training structures, the utilisation of results, the promotion and dissemination of know-how and best practices involving all consumers, dissemination of results of the actions and projects and cooperation with the Member States through operational networks;

Market replication projects

The Community shall provide support to projects concerned with the market replication of innovative techniques, processes, products or practices of Community relevance, which have already been technically demonstrated with success. These shall be designed to promote broader utilisation of such techniques, processes, products or practices within the participating countries and facilitate their market uptake.

Annual work programme

The annual work programme shall set out in detail

- (a) measures needed for its implementation;
- (b) priorities;
- (c) qualitative and quantitative objectives;
- (d) appropriate evaluation criteria and qualitative and quantitative indicators to analyse effectiveness in delivering outcomes that will contribute to the achievement of the objectives of the specific programmes and the Framework Programme as a whole;
- (e) operational timetables;
- (f) the rules for participation;
- (g) the criteria for the selection and evaluation of the measure



LOCAL EXPERIENCES

ITALY

WHITE CERTIFICATES

In order to promote high performance plants and equipments in place of old and ineffective equipments, National Energy Authority forces energy providers to reach specific energy saving objective through projects involving final users. Projects are submitted to the national authority which evaluates and certifies obtained savings and then it authorises the authority for the energy market to issue white certificate in a measure equal to obtained savings.

In order to fulfil their saving objective and don't incur in sanctions, energy providers have to submit to the National Energy Authority a number of certificates equal to their annual saving objective. If these savings are not directly realised, energy providers can buy white certificates from third actors in the context of a real energy market, organised and managed by Energy Market Authority. Each year, National Authority defines economical contribution to be provided to providers fulfilling their objectives.

Laws forcing energy providers and existence of a real market give to projects and certificates an added economical value. In other terms, price of certificates, contribution of the authority and other public grants, all together these features represent public incentive towards energy saving actions, otherwise hard to realise.

“PUBLIC FUNDS AND ENERGY EFFICIENCY (EE) CERTIFICATES: THE EXAMPLE OF THE PROVINCE OF REGGIO EMILIA”

In the context of the above mentioned framework, the province of Reggio Emilia launched a very important initiative related to the installation of high energy performance boilers in private houses. The initiative is regulated by a call for proposal defining technical contents of the project, eligible actors, duration of the project, evaluation criteria, ecc.

First Phase: The province of Reggio Emilia evaluates proposals for energy saving actions and defines list of private citizens to be furnished with new boilers;

Second Phase: Private citizens are in charge of the installation

Third Phase: Selected proponent is in charge of monitoring installation and its conformity with the energy saving measures described in the selected project. In order to make it easier, the proponent is asked to define installers.

Fourth Phase: Selected proponent pays to the Province a contribution equal to the EE certificates produced by the new boilers

Fifth Phase: The province reimburses private citizens for the expenses related to the installation.



ENERGY SUPPLY CONTRACTS

Introduction: General issues

The European Directive 2006/32 and its requirements lead to the need for a deep reflection of the Italian situation and, at the same time, further contributions could be taken by outputs and documents produced by European projects focused on energy efficiency issues. However, in order to understand Italian situation it's necessary to think about laws and rules regulating general local administration and even energy policies.

Firstly, financial rules for local authorities have been focused on reduction of expenses : each year, local authorities are forced to reduce expenses respect to the previous year but a less strict obligation regulates investments' capacity. Secondly, local authorities are even more forced to outsourcing management and maintenance of public buildings as a consequence of lacking staff and impossibility to employ new persons. In this context, need for reducing quantity of contracts leads to the stipulation of a global energy contract including management, maintenance, providing and redevelopment.

Introduction: National legal framework

Since late 90s "Energy Service" contracts are promoted: they are tax measures based on VAT reduction and the main difference between these contracts and traditional ones is the aim : not only maintenance and management but even integration of these activities with energy saving actions and exploitation of renewable sources that means providing fuels and restoration of plants. Successively, this general aim have been developed and ten main requirements have been defined. The main requirement is concerning accounting: heat provided to the building is accounted by a counter located and the contract fixes a rate for each provided heat unity. The contract is mainly applied in the domestic field, including school buildings.

Introduction: Results of the "Energy Service" contracts' application

In the last decade, this specific contract has been mainly applied in the public sector with a very undeveloped utilisation in condominiums. Initially, utilisation of this contract has been very opportunistic: mainly based on management, maintenance and fuel providing and no attention paid to technological development and to energy saving measures. Now, thanks to new technologies, energy operators have promoted also substitution of old generators. This situation is similar to the "Energy Supply Contract" defined by the European Directive 2006/32 and also to some national documents, for example "Facility Contract" in Germany. By this contract, energy operator is in charge of financing, designing, realising and managing a plant providing energy (heath, electricity or cogeneration) to building (public or private, new or existing). This service is paid on the basis of provided energy and, in the case, for a contribution proportional to the plant's value. Technical capacity of the operator takes to bets performances that, improving effectiveness of the plant, take lower consumptions of primary energy and to a competitive cost for the produced energy.

Introduction: "Energy savings" contracts: objections and suggestions

The main objection is the different between users' and producers' interests: firsts are interested in reduction of final consumption, latter are interested in developing consumption. Facing this situation, some proposal have been defined:

- a) Definition of rate based on two criteria: fixed rate covering labour and variable rate covering fuel's cots. By this way, the producers isn't interested in increasing consumptions since deriving incomes are very low.
- b) Utilisation of thermostatic valves and accounting for each single flat in order to reduce producers' control on consumptions;
- c) Combination of Energy Supply Contract and Energy Performance Contract which is more linked to savings trough technical and behaviour measures awarding both users and producers (sharing savings). This typology concerns actions not linked to generation, such as regulation of temperatures, building energy management systems, reduction of energy's waste. Similar experience is described in Guidelines issued by Assian Government and defined as "Combined Energy Saving and Delivery Contract".

FOCUS on Global services in energy field

When we apply Global service approach to energy field, it's possible to list a set of advantages:

- integration of several services and actions in only one contract with consequent reduction of internal procedures anc costs, in terms of staff and administration;
- Simplification of accounting procedures: expenses and incomes are easy to control



- Discount deriving from providing of high amount,
- Secured increasing of the real estate value

Usually, a global service contract includes, besides energy providing, some standard activities:

- Quantitative and qualitative analysis of real estate
- Constant monitoring of infrastructures and their performances
- Planning and implementation of maintenance, especially high costs interventions
- Creation and management of databases
- Operational and administrative reports

In the last years, local practices provide for an increasing number of global services committed to external actors on the basis of call for proposal pooling different local authorities: competition between potential contractors and integration of many actors lead to an increasing.....

FOCUS ON GLOBAL SERVICES IN ENERGY FIELD: the example of the Province of Modena

The following example concerns designing and publishing of a call for proposals for a Global Service Contract in the energy field for several municipalities located in the area of Modena, acting together as a unique committer. The main actor of this example is AESS, Agency of Energy and Sustainable Development in the province of Modena.

Phase 1

Starting from documents provided by the commitment actors (maps, data of consumption, etc), AESS staff analysed buildings owned by the committing institution and it outlined following features:

- Typology;
- Features and maintenance state of buildings
- State of plants
- Technical functioning system
- Functional scheme of the plant
- Existing documents and related needed certifications

Phase 2

On the basis of resulting data, AESS created a detailed database compatible with Microsoft Access programme. By this tool, it's possible to identify building having high consumption levels which are the buildings needing for more precise analysis in order to achieve the energy balance and then the identification of effective energy saving actions. Starting from time sequence of consumptions , energy performance is defined for every buildings and then energy classification of public buildings is made. This classification is in line with European Directive 2002/91.

Phase 3

Energy audit is implemented trough software identified by AESS, these software identify benefits coming from each single energy saving action. These actions would concern:

- Building in its structure
- Plants
- Utilisation conditions such as plant control or division

For each action following data are provided: timetable, investment and management costs, saved energy, other economical and not economical benefits deriving from the action, avoided greenhouse and polluting emissions

Phase 4

A detailed workplan is created and provided to the committing actors. This plan on CD ROM contains:

- State of existing plants;
- Report on improving actions emerging from the analysis with focus of those ensuring the most favourable ratio between,,on one hand, investments and, on the other hand, energy saving and management costs.
- General budget



Phase 5

Definition of the contents of the call for the proposal. Contents define rules and conditions for the implementation of the action and the fulfilment of energy saving objectives identified in the context of the previous analytical phase. Actor participating in the call for proposal have to submit a detailed proposal ensuring, at least, the respect of rules and condition, the implementation of needed actions and the fulfilment of energy saving objectives . Following are data of the call issued by AESS in collaboration with some small municipalities in the area of Modena.

Contents of the call for tender

Auction	€ 14.901.135,00
Plants/Systems to be managed	30
Plants/Systems to be restored	7
Domotic interventions in schools	1
Expected energy saving	15%
Remote control in every thermal plant	
Heat meter in every gym for separated accounting	
Results of the call for tender	
Number of proposals	10
Highest bidder	ATI -CPL Concordia
Economy saving	8,5 %
Guaranteed Additional works	
Thermal plant to be restored	5
Geothermal plant	1

PRIVATE BANKS

Latest rules and proposals

Environment Commission of the Italian Parliament approved on March 2007 a resolution on environmental action implemented by energy society. This resolution promotes the implementation of the European Directive 93/76 supporting the development of public projects for energy saving financed through the support of third actors. Financing through third actors means providing of auditing, installation, management, maintenance and financing of energy saving actions recovering related costs through the level of energy saved.

European Directive 32/2006 defines financing through third actors as a financial agreement involving a third actor (other than provider and final user) providing capitals for the project, third actor that will be reimbursed by the final user on the basis of the invested capital and of the energy saved by the user. In this context bank is the actor providing resources to Energy Societies.

At the same time, latest development of the energy legislation fostered new financial opportunities from private and national bank.

On one side, "Cassa Depositii e Prestiti" (national financial actor supporting public projects) launched a new loan supporting public and private actors purchasing small scale plants of renewable energy production.<

On the other side, private banks launched a large set of financial tools supporting energy savings and, in this contexts, Cooperative credit is even more careful to needs of public authorities.

Following are some examples of energy saving loans launched by Italian banks before the latest legislative changes.



CLEAN LOAN

Supplier: BCC (Bank for Cooperative Credit)

Category: unsecured credit

Beneficiaries: public authorities and groups of public authorities

Objective: To install devices for renewable energy and energy saving

Payment procedure: Grant is paid against documented costs

Application procedure: For "low technology " impact project, applicant has to submit accepted and signed preventive costs; for "high technology" impact project, applicant has to submit a plan drafted by a professional and accepted and signed by the same applicant.

ENERGY SAVE

Supplier: Montepaschi Siena

Category: unsecured credit

Beneficiaries: public authorities and groups of public authorities

Objective: finance projects aimed at achieving energy saving results

Payment procedure: trough amortization plans based on semester or year instalments, including capital and interest

BANK FOUNDATION

Even if in the context of very restricted geographical areas, Bank Foundation are even more important as financial actor supporting the action of public authorities. Fields of intervention are defined by each single foundation but on the basis of a range of opportunity fixed by the a national law. In this range environment is listed oa one of the possible field of intervention but finding relevant environmental and energy projects funded by bank foundation is not easy. Following example is one of the most specific and its relevance depends also on the fact that Cariplo foundation is one the most important in Italy. This example concerns a call for proposal for energy audit and training on energy management in small municipalities. here are listed the most important features of the call.

Call for proposal published by Cariplo Foundation

Objectives: auditing and training

Eligible actors: municipalities or group of municipalities from Lombardia Region and neighbouring provinces of Piemonte Region

Formal eligible criteria addressing

- 1) financial issues (max amount awarded, max % of financing, minimum contribution from on resources),
- 2) target of project activities (contents of audit and target and contents of training)
- 3) Curriculum Vitae of involved third actors (minimum level of experience);

Budget: total available amount 1,5 MEUR

Qualitative priority selection criteria:

- 1) Audit methodology reliability
- 2) Training action significance
- 3) Networking of municipalities
- 4) Experience of external auditors
- 5) Budget effectiveness
- 6) Previous energy saving policies and actions



Models for Energy Streamlining in Municipal Premises in Sweden

1. Background

In the project ENABLE IMPACT which deals with more efficient energy consumption in municipal buildings different tools are created for energy audits and training as well as financing methods for energy streamlining. The conditions vary a great deal in the different countries; Italy, Germany and Sweden. However, one can learn from one another and in each case the guiding principle is total or partial financing through energy saving. Of course, environmental aspects should also be considered as well as improvements of the premises and management.

2. Financing Possibilities in Sweden

Financing through owned or loaned capital with own management of the premises is the most common model and basis for some variants for which subsidies can be obtained for certain investments. To increase the number of energy efficiency activities through own financing it is important to break the paradigm of thinking on pay-off times. Considering municipal write-off time etc. most radical efficiency projects are profitable from a result aspect long before they are profitable from a pay-off aspect.

Funding to municipalities is available during 2006-2008 from the National Board of Housing, Building and Planning (Boverket) in connection with energy streamlining investments in public buildings. Municipalities can also apply for subsidies for investments within the energy field from the regional County Administrative Board (Länsstyrelsen). Rules exist, but most activities are usually approved. The maximum contribution is 30% and is called "OFFROT". A leaflet describing the conditions; who can apply, which measurements etc., can be downloaded from www.boverket.se. An energy survey is to be attached to each application.

There are also possibilities to apply for funds for activities reducing the emission of green house gas from the Climate Investment Programme "KLIMP" of the Swedish Government. The funds can be applied for by a municipality as 'owner' of a whole programme. The maximum funding is 30%. More information can be found on the web site of the Swedish Environmental Protection Agency (Naturvårdsverket) www.naturvardsverket.se

Other means of financing energy saving activities in buildings is to use the "Energy Service". This method may not be applicable to just one specific activity but a certain number of measures may be necessary to cover the administrative costs. "Energy Service" is an umbrella term for new and developed cooperation models for carrying out energy streamlining activities and modernization of buildings, which are financed by reduced energy costs. The models are based on audits of the technical and running status of the buildings made by the energy service companies. The companies then suggest measures required and calculate saving potential. The results are compiled and form the basis for an energy streamlining and modernization project which is guaranteed to be profitable. What is essential in the cooperation model is that human resources can be given other tasks and possibilities for new investments can be created without increased costs for the owner of the building. This can be carried out due to the fact that the project is financed by the guaranteed saving of energy. The Energy Agency for South East Sweden has through the special EU projects, PU Benefes and Eurocontract the possibility, initially, to support a municipality in this process.

Financing Models for Energy Streamlining in Municipal Buildings in Germany

1 Introduction

The cost of supplying power to municipal and district buildings in Germany lies at € 2 billion per anno. With rising energy prices and the financial crises in which many municipalities and districts find themselves, the optimisation of energy supply and energy use to state-owned properties is becoming increasingly important. Most of the energy saving investment is financed by owned or loaned capital of the owner of the buildings. Nevertheless third party financing can play an important role as a way of both financing and operating such processes (Rise in contracts 12% in 2005 vs. 2004).



Third party financing

Third party financing is of increasing importance for the power supply of municipal premises. For the supply of heat you differentiate (according Verband für Wärmelieferung – www.vfw.de; numbers from 2006) between

- Systems which are designed, financed, delivered and operated by the third party (Energieliefer-Contracting 83%)
- Contracts with additional non-investitive measures to reduce energy- consumption (Performance Contracting 8%)
- Contracts just to finance a new system (Finanzierungs-Contracting 4%) and
- Contracts to operate systems (Anlagen-Management 5%)

The second way (performance contracting) promises the largest energy saving but can only be used for buildings with slight changes in the use of the building. Therefore the first (Energieliefer-Contracting) is the common way. In most cases (about 85%) the heat supply of the building is contracted. Sometimes (15%) the supply of electric energy is dealt with. The supply of cold and compressed air is of minor importance. In case a municipality wants to influence the shell of a building they have to start a public private partnership (PPP). Because of the complexity of the contracts the investment must be above 15 million Euro – thus it is implemented for building pools and the set up of new buildings. The whole lifetime of a building and the management of the facility is usually covered. In the orders of the contracts you can refer to ecological qualities (e.g. zero emission can equal 10% of the price). A preference of local craft is not foreseen but often chosen in order to optimise the operation and maintenance. In order to optimise the prices you should pool buildings. For that you can cooperate with neighbour municipalities.

Conventional financing

Normally the owner of the building owes or loans money to realise an investment in energy saving. By now there are no national subsidies for energy saving but there are reduced interest rates for such municipal investments (e.g. 2% - the conditions can be downloaded under www.kfw.de). Sometimes you find federal subsidies for special technologies: (The state of Saxony contributes up to 50% of the investment in remote control systems <http://www.umwelt.sachsen.de/lfug/documents/Foerderrichtlinie.pdf>). Theoretically investments can be partly financed by the emission trade. Up to now the author hasn't got any notice of a municipality using or planning to use this way. The system for emission trade is established at a national bank (KfW).

