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Applying the EPBD to improve the Energy Performance Requirements to Existing Buildings – **ENPER-EXIST**

Content:

Announcements workshops conferences etc.

PALENC/AIVC – Building low energy cooling and advanced ventilation technologies in the 21st century, Crete island, Greece, 27-29/9/2007
for further information see: http://palenc2007.conferences.gr/

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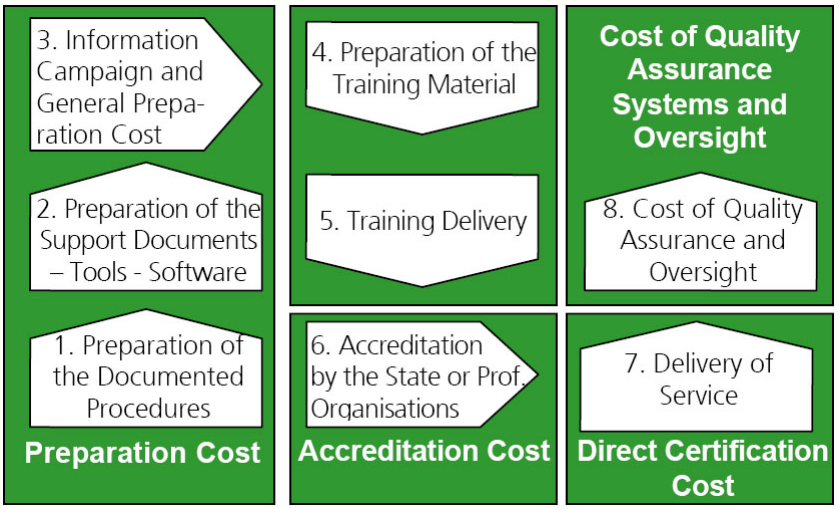
ENPER-EXIST Project Results: Non-technical issues

The main objectives of this work package are to study and analyse the non-technical issues related to the application of energy certification and regulation of existing buildings in the Member States, mainly the financial, educational and administrative aspects and also to propose specific actions to be undertaken in order to create a more positive environment for the application of energy certification processes.

The overall work involves three main tasks. The first task aims to investigate the impact of energy certification on the economy by estimating its direct and indirect cost.

The direct cost is the cost paid by the people requesting the certificate. The indirect costs are the costs incurred by the authorities to set up the certification scheme, develop software, organise training and accreditation of certifiers, manage data bases of certificates, etc. The evaluation was performed before the actual implementation of such certification was operational. It appears that there are large cost variations depending on the procedures chosen to apply certification.

Indeed the certification process is complex and a series of actions have to be implemented to make it run correctly. The flow chart gives a vision of these actions:



The estimated direct cost for a certificate was found to vary between 100 and 530 € for residential and 340 and 5000 € for non-residential buildings.

The indirect cost was estimated to vary between 1 € and 40 € for residential and 15 and 40 € for commercial buildings.

The second task of this work package deals with the study of the impact of the certification schemes on the Human Capital. The nature and the necessary qualifications of the certifiers has been studied. The necessary training efforts, the tasks and responsibilities as well as the differential needs for the various types of buildings have been analysed.

Finally, the third task deals with the study of the impact of the certification process on the national administrations. Two main issues have been analysed in particular: the identification of any new organisational structures needing to be created in the Member States, and the identification of possible actions to promote the certification process at a local level. The existing experience and knowledge in Europe has been analysed and some useful conclusions have been drawn.

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ENPER-EXIST Project Results: Roadmap for energy efficiency measures/policies in the existing building sector

Among the different sectors where energy savings can be realised, the European action plan for energy efficiency of the European Commission [1] has identified the building sector as a top priority. Huge energy savings can be realised in the building sector and especially in existing buildings. The action plan for energy efficiency mentions a potential by 2020 of 27% to 30% according to the building type. Realising this potential will require a set of accompanying measures that should be developed and implemented by different actors.

A specific action of the ENPER-EXIST project has been to define a roadmap showing ways to realise substantial energy savings in the existing building sector. A specific report contains the findings of this action:

This report gives an overview of the main problems raised by the non energy efficiency of buildings as for instance the impact on the environment, the security of energy supply, the impact on the economy, the social dimension or the employment potential.

Case studies have been developed for eight specific building market sectors, such as: apartment buildings where many different owners or tenants have to reach agreement on a common decision taking account for their divergent interests. Other examples of such difficult sectors include social housing or the situation of individual owners showing lack of motivation or financial means, rented office buildings, educational buildings and public buildings. Each case study describes the main actors involved in the decision making to whether or not realise energy savings, their motivations and barriers as well as possible measures allowing reinforcing incentives or overcoming barriers.

The main part of the report gives an overview of possible measures, legal or other type of measures, to encourage the energy efficiency in existing buildings. The list contains more than 50 measures covering both actual measures applied in European countries as well as measures under preparation or discussion. For each measure, national examples are described. The measures are classified according to the following categories: the regulation tool; the financial levers; non-governmental activities; demonstration/research and development projects; promotional measures/increasing public awareness.

For each of the six countries participating in the project, an overview of actual measures to improve the energy efficiency of existing buildings is given. At the same time, their national long term vision on achieving building energy efficiency is described.

One section of the report is devoted to the Energy Performance of Buildings Directive. In case of a revision, suggestions are given on how to upgrade or to enlarge its scope. Each proposal is commented with a list of pro's and con's.

The report is accompanied by a toolbox making the synthesis of the information enclosed in the report.

The final version of the Roadmap for energy efficiency measures/policies in the existing building sector will be available by May 2007.

[1] Action Plan for Energy Efficiency: Realising the Potential – Commission of the European communities - COM(2006)545 final

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EPBD Buildings Platform now offers 32 information papers: The latest two papers are on the energy performance certification and on the status of implementation in Greece

The EPBD Buildings Platform is a European Commission initiative in the framework of the Intelligent Energy-Europe (2003-2006) programme, which provides information services for practitioners and consultants, experts in energy agencies, interest groups and national policy makers in the European Member States for helping the implementation of the European Energy Performance of Buildings Directive (EPBD).

As a part of the service, the website of the project offers the download of information papers dealing with different specific subjects on the 5 main Directive's themes: certificate, inspection, experts, calculation, EP requirements and others summarising the status of the EPBD implementation in different Member States or country regions.

Currently 32 different information papers are available for download, all of them in English language, many in additional languages. The latest information papers have the focus on the implementation of the EPBD in Greece (P32) and on energy performance certification (P27).

The author of P27, Ahmad Husaunndee (CSTB) summarises the paper as follows: Certification of buildings is gradually being implemented across Europe. This information paper aims to inform the reader about the status of the Energy performance

EPBD Buildings Platform now offers 32 information papers: The latest two papers are on the energy performance certification and on the status of implementation in Greece (cont.)

certification in some of the most advanced countries involved in certification, how the European projects supported by the Intelligent Energy for Europe can support the implementation of the certification and present some actions which are going on to make the certification well known by European citizens.

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International analysis of low-energy buildings

As a starting point to the French R and D project on low energy buildings “PREBAT” (www.prebat.net) an international analysis of low energy buildings program was set up.

The protocol of the French Research Programme on Energy Efficiency in Buildings (PREBAT) sets out that one of the first actions to achieve is a "state-of-the-art, on a national and international scale, in research, good professional practices and the most advanced buildings; this state-of-the-art will serve as the foundation for continuous surveillance throughout the duration of PREBAT and will provide a basis for dissemination and valorisation actions".

This report is the intermediate report on the International Buildings and Energy Comparison, corresponding to the state-of-the-art priority set out by the protocol. This research, overseen by the CSTB – French Scientific and Technical Centre for Building, is co-funded 50% by ADEME - French Environment and Energy Management Agency, 25% by PUCA – Urban Development Building and Architecture Plan and 25% by research funds allocated by the CSTB and its expert partners.

The international comparison project provides an analysis of the high-performing programmes operating in a number of foreign countries, including their components and equipment as well as research and development programmes. The project is divided into two phases with an intermediate report in 2006 and a final report in 2007. This report provides an account of the first phase.

A socio-eco-technical method of analysis has been developed. It consists of 6 stages: Background, content of the innovation or initiative, implementation, evaluation, critical reflection (strengths, weaknesses, opportunities and threats), transposition conditions in France.

The key figures are summarised as follows. In 2000, buildings represented 47% of energy consumption in France, with industry and agriculture at 28% and transport at 25%. Two thirds of this is consumed in residential homes and a third in the tertiary, public and private sector. In 2004, the final energy consumed in the home can be distributed as follows: 44% in private houses built before 1974 and 24% in houses following 1974, 23% in collective buildings before 1974 and 9% in collective buildings following 1974.

Research has shown that via a survey of the regional initiatives a movement was launched for promoting low consumption buildings in France. The initiatives involve both the public and private sector. Some regions are currently launching tenders for projects with objectives fixed by PREBAT for 2010. This is good news for PREBAT. The objective is not to launch and manage such movements but to support and facilitate them.

The international Comparison project analysed the German programmes "Passivhaus”, "3-litre houses” "EnSan” and "Low energy houses in existing buildings”, the American programmes "Building America", "Zero Energy Homes", "Leadership in Energy and Environmental Design (LEED)" and the Japanese programme "low consumption houses". Passivhaus is transposable in France, with a problem associated with guaranteeing air permeability quality. The LEED experiments can be harnessed for developing the French HQE (High Environmental Quality) certification for tertiary buildings with a label allocating more importance to energy and adapted to the renovation of the current office buildings. The American and Japanese low consumption house experiments are more difficult to transpose given the differences in building methods.

The components and equipment studied include high thermal performance opaque inside walls, particularly those designed in Austria and Denmark, high thermal performance windows designed in Northern Europe, double flow heat recovery ventilation in Germany, Switzerland, the Netherlands, Belgium, compact heating-ventilation-hot water systems in Germany, Austria and Switzerland and photovoltaic systems in Japan. The high-performance opaque outside walls are transposable in France, subject to the setting up of conditions for correct implementation. The "Northern European” market of the three other components and equipment is associated with the development of extremely low consumption operations. Photovoltaic systems require continuous policy and tax support.

The research and development programmes that were analysed include the Austrian programme "Haus der Zukunft” and the Dutch programmes “Compass” and “Energy Onderzoek Subsidie” (EOS). The Austrian programme is interesting in terms of its practicality and the connection between the technical research and the socio-economic research. The Dutch programmes were interesting due to the dialogue bet-

International analysis of low-energy buildings (cont.)

ween the economic players and their focus on the “system” approach of the building.

The studied foreign experiments have allowed for three designs for the control of building energy to be put forward.

Within the "high energy saving" design, the primary objective is to lower the building energy consumption significantly. The "German low consumption variation” such as the “Passivhaus" programme, is aimed at going as far as removing the heating system. The "Swiss low consumption variation” such as “Minergie" is less demanding.

In the "consumption and energy production” design, the primary objective is not the significant reduction of consumption but the production of electricity by means of a photovoltaic system. The "American variation” that combines reinforced insulation with photovoltaic, is associated with a context called into question by a high-energy consuming lifestyle and distinguished by a concern for the attenuation of electric energy consumption resulting from over-loaded networks. The "Japanese variation” is not focused on insulation but puts forward the use of photovoltaic panels integrated into the casing of pre-fabricated houses. This design favours the modernism of the technical solutions implemented as well as the low consumption of electric energy.

In the "energy and environment” design, the energy is an important objective but hinged upon other environmental goals (on-site integration, water, materials, comfort etc.) deemed to be of importance by the buyer of the building. An example of this design is that of the American label LEED for office buildings. The investors decided in this case to prioritise a healthy and comfortable working environment over energy saving concerns.

On the basis of the lessons learned from the studied foreign experiments, eight suggestions have been highlighted for PREBAT:

- Establish a partnership with the local governments;
- Establish a partnership with the private sector;
- Promote labels on the buildings and on the components;
- Place particular emphasis on economic, financial and fiscal instruments;
- Monitor the quality assurance elements of setting up a building site, skills and training;
- Incorporate the usage dimension and user behaviour;
- Ensure R&D and developments comply with technical regulations;
- Associate energy with the environment, building and transport.

Five development areas were recommended for PREBAT:

- Promote the setting up a national repository and a device for the evaluation of the operations and ecological districts;
- Put forward a comprehensive design of buildings, specifically by means of simulation devices;
- Develop examples of solutions and good practice guides;
- Define an R&D strategy for the existing stock;
- Establish a permanent inter-regional and international comparison project and an observatory of the operations and ecological districts.

These five areas for development can be centred on two outlooks:

- A short-term outlook, centred on the distribution of the existing techniques with incremental innovations and focussed on economic feasibility;
- A mid- and long-term outlook, enabling changes to be anticipated that won’t come to light until over the next few years, which have the potential to generate radical innovations.

First results are already available at http://www.prebat.net/benchmark/benchmark.html.

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Implementation of the EPBD in the Netherlands

Context and conditions concerning the implementation of the EPBD in the Netherlands

The setting of requirements to the energy performance of new buildings (both residential and non-residential) has been a successful approach to improve the energy performance of buildings since 1995. The requirements have been tightened several times resulting in further improvement of the energy performance of new buildings. In 2000 the Energie Premie Regeling (Energy Premium Regulation) was introduced, a voluntary subsidy scheme for energy saving measures in existing residential buildings based upon the calculated energy performance of a building. This regulation was so successful that the financial sources ran dry quite quickly and the regulation stopped in 2003. But the EPA-software, related to the regulation, developed to calculate the energy performance of existing buildings remained in use and particularly housing corporations have been applying it since to screen the energy performance of their building stock on a voluntary basis.

The implementation of the EPBD in the Netherlands is based on the following starting points:

- Application of existing (legal) frameworks and (calculation)methods, wherever possible
- Minimisation of administrative costs for citizens

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Implementation of the EPBD in the Netherlands (cont.)

Implementation of the requirements by the EPBD

Requirements on the energy performance of new buildings are being fulfilled for many years now (laid down in the Building Decree, referring to Energy Performance Standards NEN5128 and NEN2916).

Requirement on energy certification of buildings is new for the Netherlands and it is elaborated in more detail in the next paragraph.

Requirements on inspections of boilers and air-conditioning systems are being fulfilled by means of an extensive information programme.

Energy Certification of buildings

The Dutch implementation of the energy certification of buildings is addressed in the Decree Energy Performance of Buildings (608-BEG, accepted November 24 2006). It determines that:

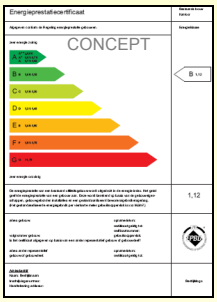
- The owner of a building provides an energy performance certificate upon new construction of the building, renting out or selling of the building;
- Public buildings having a useful area over 1000 m² need to a have an energy performance certificate, which has to be placed in a prominent place clearly visible to the public;
- Certain categories of building owners are exempted if they provide energy performance certificates for their entire building stock in one go. This mainly applies to housing corporations. This provision expires January 1 2009;
- Monuments, religious buildings and free standing buildings having a useful area smaller than 50 m² are exempted;

If a building has got an energy performance certificate based upon an 'Energie Prestatie Advies' (EPA, Energy Performance Advice) meeting the 'Tijdelijke regeling energiepremies 2003' in the period July 1 2002 – putting into action of this Decree, this energy performance certificate (not older than 10 years) will do to meet the requirements.

It is foreseen that this Decree will be put into force January 1 2008, except for the obligation for public buildings to show their Energy Certificate, which will most likely be put into force January 1 2009.

Further details concerning the energy performance certificate are elaborated in the Regeling Energieprestatie Gebouwen (REG, Regulation Energy performance of buildings, published in the 'Staatscourant' December 29 2006). The REG regulates that:

- Energy performance certificates are to be provided by certified inspectors (according to BRL9500)
- Energy performance certificates need to have a certain lay-out defined by the REG (the figure shows a concept)
- The calculation method for the Energy Index (EI) is according to BRL9501
- The Energy Index is transformed into an energy label as defined by the REG
- All energy performance certificates are to be registered in a national database
- If the Energy Index of a building deviates maximum 5% from the EI of comparable buildings then no specific calculation is necessary for that building.



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EU FP6 Ecobuildings project BRITA in PuBs presents first monitoring results: Retrofitted buildings meet the calculated energy demands

The EU project "Bringing Retrofit Innovation to Application in Public Buildings - BRITA in PuBs" with in total 8 demonstration buildings in 7 different countries has collected and analysed the first monitoring results after the realised retrofit measures. The energy consumptions of the Community Centre in Borgen, N and the Cultural Centre Proevehallen in Copenhagen, DK were monitored to be less than half of the consumptions before the retrofit. For more information on this and other project news please visit the project website.

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