

CLASS 1 Project

CLASS 1 SMART GUIDE

TRAINING MATERIALS FOR BUILDERS AND PROMOTERS

Deliverable D28
Written by the WP 6 leader
Mariella MELCHIORRI
ICIE - Istituto Cooperativo per l'Innovazione (Italy)

CLASS 1 SMART GUIDE

TRAINING MATERIALS FOR BUILDERS AND PROMOTERS

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INTRODUCTION

The present ppt document intends to provide builders and promoters with some information relevant to the Class 1 project achievements, with the ambition of highlighting those concepts, referring to the energy efficiency issues, which might provide added value to their ordinary activity thus improving and increasing their knowledge and their businesses.

Moreover builders and promoters have to become aware of their role and responsibilities towards communities, societies, environment, in a word “toward the planet”, upon which the construction industry has a strong influence and impact (from planning and design to use and demolition) in terms of resources consumption and pollution.

Communities, societies, environment, in a word “the planet”, ask them to assume and possess the concept of Corporate Social Responsibility (CSR) and, in coherence, adopt social responsible behaviors carrying out policies and initiatives in full respect of the economic, social and environmental issues.

This can be a business: for construction companies CSR include enhanced reputation, competitive edge, better risk management and a more committed and efficient work force which could have a considerable effect on profits.

SECTION 0

PRESENTATION OF THE CLASS 1 PROJECT:

THE BACKGROUND

SECTION 0. - PRESENTATION OF THE CLASS 1 PROJECT – THE BACKGROUND

The CLASS 1 project idea bases on the strengthening of the energy requirements to boost and drive the technological developments and to prove the economical and environmental benefits of ultra-low energy buildings integrated with biomass-and solar heating based renewable energy supply.



SECTION 0. - PRESENTATION OF THE CLASS 1 PROJECT – THE BACKGROUND

The Scientific & Technical objectives of the CLASS 1 project are:

- optimization of the integration of low-energy building technologies
- advancement of technologies in low-energy building, renewable energy supply, distribution areas
- improvement of the design, checking and verification procedures
- integration of the European Ecolabel in the building projects
- demonstration of large scale implementation at close to market conditions.

More specifically, the CLASS 1 project focuses mainly on:

- the optimisation of sustainable energy systems in local communities, through an innovative integration of Renewable Energy (RE) technologies with ultra low-energy buildings
- the Indoor Environmental Quality (IEQ) to make sure that the energy savings are met without reducing the IEQ standards set out in the design specification phase.

CLASS 1 project demonstrates:

- the improvement to 6 specific technologies: windows, slab and foundation insulation systems, bio-mass gasification, local district heating distribution networks, ventilation heat recovery combined with heat-pumps and BEMS
- the innovative integration of the above technologies (with solar heating) which lead to improved cost effectiveness

SECTION 1

THE SMART GUIDE:

**SCOPE, METHODOLOGY, GOALS, NEEDS, TRAINING STRATEGY,
ETC....**

SECTION 1 - THE SMART GUIDE

❖ WHAT IS THE SMART GUIDE?

The “**smart guide**” is the training tool addressed to “**building promoters and builders**” with the aim to introduce them to the concepts of low energy new technologies, low energy houses and sustainability.

❖ WHICH IS ITS SCOPE?

The scope of this tool is to make them aware of the “weight” of the above concepts in the current times and to push them to adopt these concepts, approach and relevant technologies in their professional activity both in the building process and in the selling process. The full and correct understanding of energy related concepts will allow them to better understand the added value and benefits of the “product” they are building and selling.

THE PRESENT GUIDE INTENDS TO ADDRESS THE GAP PRESENT IN THE CONSTRUCTION SECTOR WHERE THE ACTORS OF THE PROCESS (DESIGNERS, CLIENTS, BUILDERS, PROMOTERS AND TECHNICIANS OF LOCAL AUTHORITIES) ARE SCARCELY PREPARED TO DEAL WITH SUSTAINABILITY AND NEW LOW ENERGY TECHNOLOGIES.

❖ WHICH METHODOLOGY IS USED TO DRAFT THIS SMART GUIDE?

The Smart Guide has been developed according to the following steps:

STEP 1.  **training goals**

STEP 2.  **builders and promoters training needs analysis**

STEP 3.  **training strategy: some recommendations to follow**

STEP 4.  **training materials**

STEP 1. Training goals

The **main training goal** is to **disseminate the lessons learnt during the project**:

- comprehensive and easy to use design guidelines and checklists: from low-energy requirements to Indoor Environment Quality (IEQ), to daylighting and thermal comfort;
- methodologies/protocols for the verification of building projects: from practical and economical methodologies for self-checking the pre-set goals achievements to checking the buildings during the construction process;
- legal framework analysis reviewing the planning and regulatory means;
- instructions for municipalities and building industry for the best use of EU eco-label products.

STEP 2. Builders and promoters training needs analysis

To draft training tools it is fundamental to take into account not only the main goals of the **CLASS 1 project**, but also the specific training needs of the target group in order to respond to the “**training cycle**” (the diagram below), in which are synthesized the 5 phases of the **training process**.



STEP 3. Training strategy

The training strategy bases on some recommendations:

- take into account the time limits of a training event;
- draft practical and technical requirements, recommendations and guidelines for the planning, designing and approval phase;
- use examples helpful to illustrate concepts more clearly;
- use images, graphics to support communication;
- use clear terms without losing the technical language;
- help the reader with symbols to highlight specific concepts;
- help the reader with a glossary to fix the main definitions and concepts.

STEP 4. Training materials

The production of training material bases on the ability to translate the projects outputs, duly selected, analyzed and reorganized, in a specific training tool conceived as an instrument to transfer the lessons learnt during the project to the end user of the training activities, who are **builders** and **promoters** coming from the 5 countries, involved in CLASS 1.

**... AND NOW WE CAN START WITH
THE LESSONS LEARNT THROUGH
THE CLASS 1 PROJECT ...**

SECTION 2

THE TRAINING

INTRODUCTION

The training activity is characterized by the use of a smart guide which intends to provide information and experiences on the overall aspects relevant for promoters and builders who intend to address the sustainability and energy efficiency issues with the aim to get the added value which can improve and increase their knowledge and businesses.

The following section will address the sustainability and energy efficiency issues with specific reference to:

- a. the main concepts
- b. the main technical issues
- c. the legislation framework
- d. the construction sector context
- e. the benefits of eco label
- f. the low energy building market
- g. the innovative financing schemes

SECTION 2. THE TRAINING

A. THE MAIN CONCEPTS

The present section intends to provide some main concepts regarding sustainability and energy efficiency issues to builders and promoters who, in order to improve and increase their knowledge and businesses, must possess and become familiar with the following concepts.

SECTION 2.

A. MAIN CONCEPTS: SUSTAINABILITY AND ENERGY EFFICIENCY

The main concepts which builders and promoters must get familiar with are the following:

❖ **WHAT IS A LOW ENERGY BUILDING?**

A **low energy building** is characterized by:

- ✓ **high levels of insulation,**
- ✓ **energy efficient windows,**
- ✓ **low levels of air infiltration**
- ✓ **heat recovery ventilation**

They all contribute in reducing energy consumption for heating and cooling.

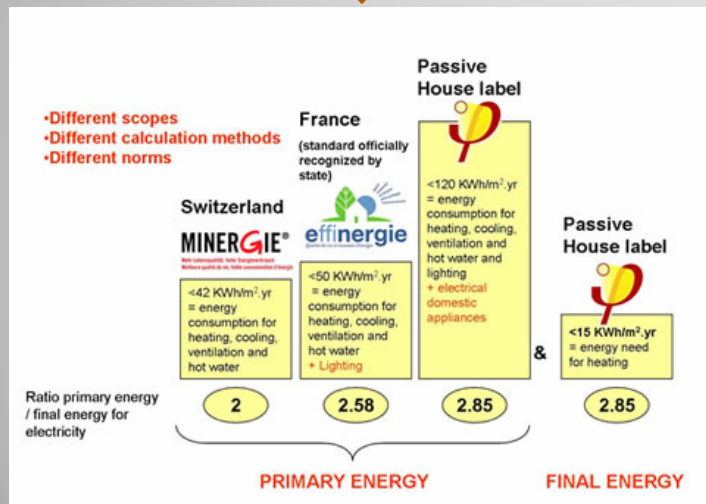
Energy consumption can be further reduced through passive solar building design techniques and/or active solar technologies.

A. MAIN CONCEPTS: SUSTAINABILITY AND ENERGY EFFICIENCY

❖ WHAT IS A PASSIVE HOUSE?

A passive house is a ultra-low energy building, with an extremely efficient building envelope to significantly drive down energy consumption in structures, and does not use more than 15 kWh/m² per year for heating and cooling.

SIMILAR STANDARDS IN DIFFERENT COUNTRIES



To be certified (on a voluntary basis), as Passive house, a building must meet the following set of standards :

- not use more than 15 kWh/m² per year in heating energy;
- with the building de-pressurized to 50 Pa (N/m²) below atmospheric pressure by a blower door, the building must not leak more air than 0.6 times the house volume per hour;
- total primary energy consumption must not be more than 120 kWh/m² per year;
- the specific heat load for the heating source at design temperature is recommended, but not required, to be less than 10 W/m².

A. MAIN CONCEPTS: SUSTAINABILITY AND ENERGY EFFICIENCY

❖ WHAT IS A ZERO ENERGY BUILDING?

It is a building characterised by yearly “**zero net energy consumption**” and “**zero carbon emissions**”. It can be autonomous from the energy grid system (although with seasonal fluctuations). Part of the energy is produced on-site with non-polluting renewable energy sources and technologies.

❖ WHAT IS AN AUTONOMOUS BUILDING?

It is a building designed **to be independent from the infrastructural support services/grid**, such as the electrical power grid, municipal water systems, communication services, etc. This might mean that it produces the energy necessary for its full functioning, that it is designed according to energy efficiency/saving criteria.

❖ WHAT IS AN ENERGY-PLUS HOUSE?

It is a building which produces more energy from renewable resources than the energy that it imports from external sources/grid. This typology combines micro-generation technology and low-energy building techniques, such as passive solar building design, insulation and careful site selection and placement.

SECTION 2. THE TRAINING

B. THE MAIN TECHNICAL ISSUES

The present section intends to provide some information on technical issues regarding sustainability and energy efficiency to builders and promoters. The deep awareness of the technical properties of their “products” and their relevant value will make them appreciate the added value of their products compared to traditional ones. This approach will contribute to improve and increase both knowledge and businesses.

SECTION 2. THE TRAINING

B. WHICH ARE THE TECHNICAL ASPECTS INVOLVED?

Builders and promoters must become familiar with those technical issues relevant to energy efficiency which give added value to their products.

The main technical aspects to get familiar with are:

- ❖ **thermal envelope**
- ❖ **airtightness**
- ❖ **heating systems**
- ❖ **Indoor Environmental Quality (IEQ)**
- ❖ **thermal comfort**
- ❖ **dailygning and visual comfort**

SECTION 2. THE TRAINING

B. WHICH ARE THE TECHNICAL ASPECTS INVOLVED?

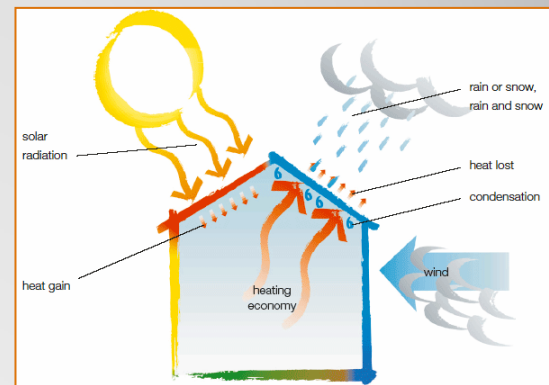
❖ THERMAL ENVELOPE

The thermal envelope is the “skin” of the building; it can be composed by a combination of different types of materials : bricks, glass, concrete, etc..

The specific characteristics of the envelope can influence indoor environmental quality and can contribute to increase or minimize the energy consumption.

A good design of the building “skin” combined with a good realization can have a strong impact on the efficiency of the building product, which can better answer to the final user demands with no increase of the cost of the building.

The thermal envelope separates the conditioned by the unconditioned spaces, the indoor by the outdoor environment!



SECTION 2. THE TRAINING

B. WHICH ARE THE TECHNICAL ASPECTS INVOLVED?

❖ AIRTIGHTNESS

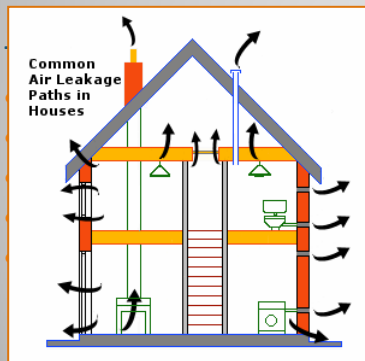
The **airtightness** of a building, or its **air permeability**, is expressed in terms of **air leakage** in cubic meter per hour per square meter of the building envelope area when the building is subjected to a differential pressure of 50 Pascals.

There is a direct connection between the airtightness of a building and the energy consumption.

The presence of uncontrolled air leakage increases the amount of heat loss as warm air is displaced through the envelope by colder air from outside. Air leakage of warm damp air through the building structure can also lead to condensation within the fabric (interstitial condensation), which reduces insulation performance and causes fabric deterioration.

The control of air linkages has to be performed during the following stages:

- ✓ **design stage:** to achieve insulation continuity and air tightness;
- ✓ **construction stage:** to ensure insulation continuity and effective air barriers;
- ✓ **testing stage:** to test insulation continuity and air tightness of the building after its construction.



ing airtight can be summarised as follows:

damage

(no draught/draught along the floor)

ontrol of ventilation etc.)

on as direct airborne sound is discontinued

SECTION 2. THE TRAINING

B. WHICH ARE THE TECHNICAL ASPECTS INVOLVED?

❖ HEATING SYSTEMS



There are several types of heating systems such as forced air, radiant heat, hydronic (hot water baseboard), steam radiant, geothermal. Each type of heat system should be considered for its effectiveness in meeting the budget and heating and cooling needs for the building.

A correct design and realization of a heating system can have a positive influence on the energy efficiency and the Indoor Environment Quality: oversizing a heating system can increase construction costs, lower energy efficiency and comfort level.

SECTION 2. THE TRAINING

B. WHICH ARE THE TECHNICAL ASPECTS INVOLVED?

❖ INDOOR ENVIRONMENTAL QUALITY (IEQ)

The Indoor Environmental Quality is the indoor climate of the building characterized by: thermal conditions; air quality; static electricity; light conditions; sound conditions and ion radiation.

To design and realize a building with a good Indoor Environmental Quality , it is necessary to follow the above guidelines:

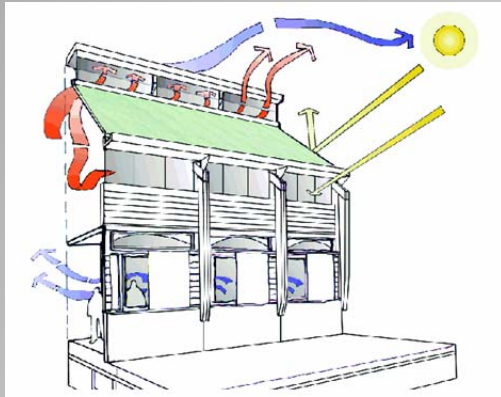
- 1) choose a good position of the building in relation with the exterior environment;
- 2) choose proper building construction procedures and materials;
- 3) design and realize a proper ventilation systems;
- 4) design and realize a proper heating systems;
- 5) potion and use in a proper way the apparatus;
- 6) design and realize good operation and maintenance.

A good Indoor Environmental Quality contributes to realize a building product with an higher economic value and, at the same time, to increase the image of the construction company.

SECTION 2. THE TRAINING

B. WHICH ARE THE TECHNICAL ASPECTS INVOLVED?

❖ THERMAL COMFORT



The **thermal comfort** is very difficult to be defined, because it is necessary to take into account a wide range of personal and environmental factors. The best and realistic goal to achieve, is a thermal environment, which can satisfy the majority of people. For the indoor thermal comfort, designers should take care of the following issues: **glazed surfaces; local temperature control; solar shading and ventilation.**

The most effective way to ensure thermal comfort is to **design** the **building appropriately**. Taking into account the indoor thermal comfort issue contributes to answer, in a better way, to the final user demands, avoiding to increase the final cost of the building and remaining competitive.

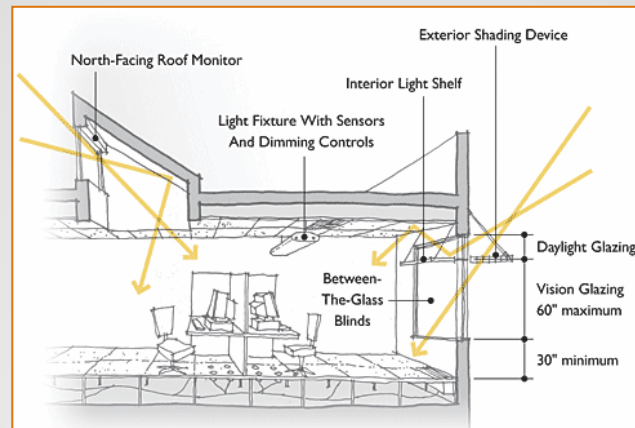
SECTION 2. THE TRAINING

B. WHICH ARE THE TECHNICAL ASPECTS INVOLVED?

❖ DAILYGHING AND VISUAL COMFORT

The benefits deriving from **daylighting** are: **energy savings; better light; direct connection with nature; improved health.**

Visual comfort is strongly affected by the **window location, shading, and glazing materials.** Well-designed windows can be a visual delight, on the other hand poorly designed windows can create a major source of glare.



SECTION 2. THE TRAINING

C. THE LEGISLATION FRAMEWORK

Technical and legislative issues are strictly connected. The legislative framework is another aspect relevant for builders and promoters activity. The main acts to be known are:

- ❖ the Action Plan for Energy Efficiency
- ❖ the Energy Performance of Building Directive (EPBD)
- ❖ incentive strategies and tools

SECTION 2

C. THE LEGISLATION FRAMEWORK - THE ACTION PLAN FOR ENERGY EFFICIENCY

The Commission has recently set up the ambitious target to reduce the European energy consumption **by 20% within 2020**, according to the newest **Action Plan for Energy Efficiency whose objective and scope is** *“to mobilize the general public and policy-makers at all levels of government, together with market actors, and to transform the internal energy market in a way that provides EU citizens with the globally most energy-efficient infrastructure, buildings, appliances, processes, transport means and energy systems. Given the importance of the human factor in reducing energy consumption, this action plan also encourages citizens to use energy in the most rational manner possible. Energy efficiency is about informed choice by individuals, not just about legislation”*.

The Commission proposes **10 priority actions** covering all energy sectors to be initiated immediately and implemented as soon as possible for maximum effect.

Priority Action 2 is particularly relevant: it regards **“Building performance**

Priority Action 2

Building performance requirements and very low energy buildings ("passive houses")

The Commission will propose expanding the scope of the Energy Performance of Buildings Directive substantially in 2009, after its complete implementation. It will also propose EU minimum performance requirements for new and renovated buildings (kWh/m²). For new buildings, the Commission will also by the end of 2008 develop a strategy for very low energy or passive houses²⁴ in dialogue with Member States and key stakeholders towards more wide-spread deployment of these houses by 2015. The Commission will set a good example by leading the way, as far as its own buildings are concerned.

SECTION 2

C. THE LEGISLATION FRAMEWORK - THE ENERGY PERFORMANCE OF BUILDING DIRECTIVE

In **2002** the EU Parliament approved the **on the Energy Performance of Buildings Directive (EPBD) (2002/9/EC)** with the aim to *assist Member States in meeting the Kyoto accord on carbon regulation and because there is a European consensus on the priority of energy efficiency.*

The **objective of EPBD (article 1)** is to *promote the improvement of the energy performance of building within the Community, taking into account outdoor climatic and local conditions, indoor climate requirements and cost-effectiveness.*

The **Directive requirements** concern:

- the general framework for a calculation methodology of the integrated energy performance of building;
- the application of minimum requirements on the energy performance of new buildings;
- the application of minimum requirements on the energy performance of large existing buildings subject to major renovation;
- energy certification of buildings;
- regular inspection of boilers and air-conditioning systems in buildings and in addition an assessment of the heating installation in which the boilers are more than 15 years old.

The Directive has now been fully transposed into the legislation of **22 Member States** (including **Romania, Estonia, Italy, France** and **Denmark**). The implementation of the Directive has succeeded in bringing energy efficiency in buildings into the political agendas of Member States, getting it integrated into building regulations and brought to the attention of citizens.

SECTION 2

C. THE LEGISLATION FRAMEWORK - THE INCENTIVES' STRATEGY AND TOOLS

A number of European countries have introduced **market-based instruments to encourage investment in energy efficiency improvement and achieve national energy savings targets**. These instruments are:

❖ **White certificate**, which is a market-based measure to set the goals to reduce energy demand to ensure that they are obtained through the most cost-effective solutions available. White Certificates are a system where producers, suppliers or distributors of electricity, gas and oil are required to undertake energy efficiency measures for the final user that are based on a pre-defined percentage of their annual energy delivery – or else to purchase certificates from other sources. Independent certifying bodies will then verify the energy savings and issue the certificates. White Certificates can be sold or traded. This creates a new trading market for energy efficiency.

❖ **tax credits and incentives** for more efficient new buildings and refurbishments.

SECTION 2.

D. THE CONSTRUCTION CONTEXT

The present section intends to provide builders and promoters with some information on the construction sector context, highlighting:

- ❖ the current status of the sector
- ❖ the role of building promoters and builders
- ❖ what building promoters and builders must know.

It is of the utmost importance that builders and promoters become aware that they operate in a context which is very dynamic from the technical but also economical and social points of view. The knowledge and awareness that they are not merely business subjects, will contribute positively in their decision processes which impact significantly on present and future society.

SECTION 2.

D. THE CONSTRUCTION CONTEXT – THE CURRENT STATUS OF THE SECTOR

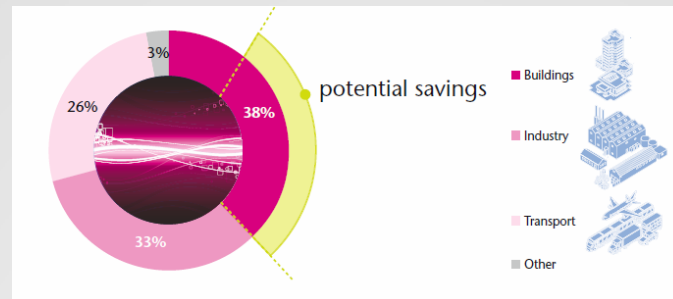
ENERGY CONSUMPTION IN EU MEMBER STATES

EU Member States are currently consuming **17%** of the world's energy production. Consumption mainly depend on the level of industrial development and the size of the population. Energy consumption can be mainly classified into three sectors - **buildings, industry, and transportation.**

ENERGY CONSUMPTION IN THE BUILDING SECTOR

Buildings consume about **38% of the total energy consumed in the EU** (more than in the transportation sector). Energy consumption is one of the major causes of greenhouse gas emissions.

Cost effective savings potentials are estimated at 20-30%.

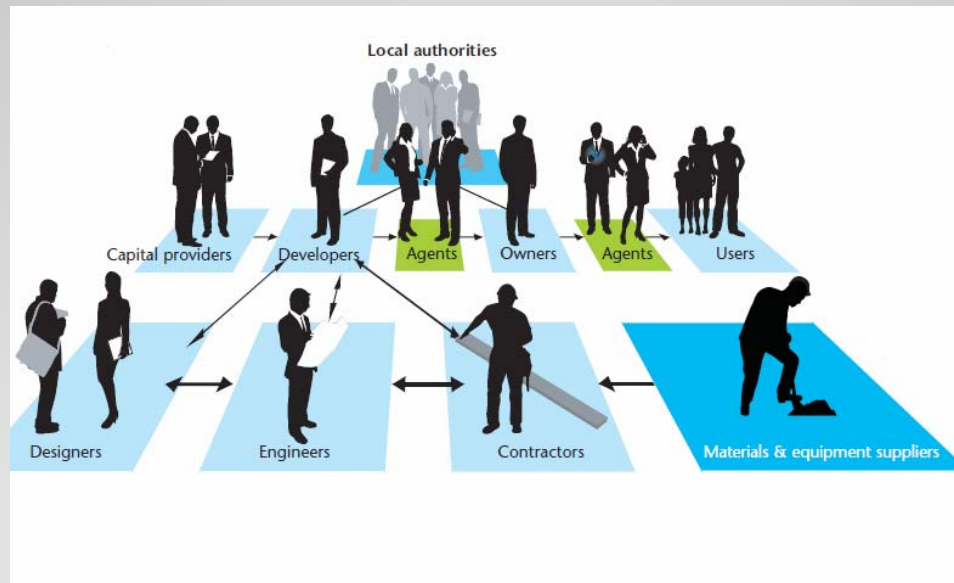


SECTION 2.

D. THE CONSTRUCTION CONTEXT – THE ROLE OF BUILDERS AND PROMOTERS

The building sector is characterized by fragmentation within value chain sections and poor integration among different roles. The complexity of interaction among these participants is one of the greatest barriers to energy efficient buildings.

The following figure illustrates the most significant commercial relationships in the building supply chain.



The builders **versus** promoters approach

❖ **Builders' approach** to their activity/business play an important role: it can make the real difference, if we consider the benefits deriving from their investments in the energy efficiency business. In fact:

- energy efficient homes are a better business
- differentiation from competition is the added value
- incentives for energy efficiency measures and solar systems contribute to increase competitiveness

❖ **Promoters' approach** plays also an important role in the value chain: they often stand between developers and tenants, owners and occupiers, sellers and buyers. They are the connection between demand and offer, thus they can really orientate the demand and, consequently the offer and viceversa.

SECTION 2.

D. THE CONSTRUCTION CONTEXT – WHAT BUILDERS AND PROMOTERS MUST KNOW

Builders and promoters should get acquainted with the following issues:

❖ THE IMPORTANCE OF A CORRECT ENERGY USE

Currently 40% of the total energy is used for the construction and maintenance of the buildings. The 50% of this cost could be saved just by building or renovating according to current standards such as extra insulation or tighter thermal shielding.

❖ THE BUILDING TECHNIQUES TO REDUCE ENERGY NEEDS

- increased insulation thickness
- increased insulation of windows and doors
- controlled ventilation for a stable air change
- reuse of heat from ventilation system
- minimization of thermal bridges during the building construction
- air tight thermal shielding
- using solar collectors for hot water production.

❖ OTHER STRATEGY FOR ENERGY SAVINGS

- Proper planning and good craftsmanship for achieving good energy saving results.
- Avoid thermal bridges in the building, meticulously handling the following points:
 - all installations
 - halogen spots
 - steel chimneys
 - wall and roof assembly points
 - assembly points where the vapour barrier is layered one over the other and under pressure
 - installations that are pulled through cavity walls
 - openings in the ceiling for gas heater, ventilation or stove hood
 - fasteners to windows in light buildings
 - joints floor/foundation/wall
 - openings on the outer wall, especially in light buildings
 - beam coating.

Investing in energy saving techniques
will improve the household economy on the long run

SECTION 2.

E. ECO-LABEL PRODUCTS

The present section intends to provide builders and promoters with some information on eco label products, highlighting:

- ❖ what ecolabelled products are
- ❖ which benefits ecolabelled products produce
- ❖ why ecolabelled products should be integrated in the building project and product.

This section will also provide :

- ❖ an example of the benefits deriving from the application of ecolabelled products;
- ❖ EU eco-label products web sites link.

It is of the utmost importance that builders and promoters become familiar with the above mentioned topics: also the introduction of ecolabelled products can make the difference in the development and promotion of their “product” both from the economic and social point of view, both in the present and future society.

SECTION 2.

E. ECO-LABEL PRODUCTS – What ecolabelled products are

To be defined as **eco-labelled**, a product must:

- certify good environmental quality and guarantee technical performance;
- generate less environmental impacts on air, water, soil and human health throughout its life cycle, from raw material extraction to end of life (“from cradle to grave”);
- have a usage cost generally lower than average.

The **EU Eco-label** is an official label established in 1992 by the EU Commission and is recognised throughout the EU symbol. The EU Eco-label is administered by the European Eco-labelling Board (EUEB) and receives the support of the European Commission, all Member States of the European Union and the European Economic Area (EEA). The Eco-labelling Board includes representatives such as industries, environment protection groups and consumer organisations.



SECTION 2.

E. ECO-LABEL PRODUCTS – Which benefits ecolabelled products produce

1) BENEFITS FOR BUILDING PROMOTERS AND BUILDERS

Building contractors/companies benefit from eco-label products in terms of:

- ✓ *company image,*
- ✓ *marketing potential and*
- ✓ *assurance of quality products.*

2) BENEFITS FOR OTHER USERS

All other users benefit from eco-label products in terms of minimal environmental damage throughout the product's life cycle. In fact Eco-label products are of high quality and are more health safer than the conventional ones.

SECTION 2.

E. ECO-LABEL PRODUCTS - Why eco-label products should be integrated in the building project and product

The reasons to use Eco-label products in a building project are the following:

(a) Meet the customer demand

Consumers are today more sensitive to the protection of the environment. Four out of five European consumers would like to buy more environmentally friendly products, provided they are properly certified by an independent organisation. The use of Eco-label products in buildings offers a reliable way to easily show that environmental impact has been lessened.

(b) Provide the following benefits for the company

- **Improve company image.** The Eco-label provides a platform for improving the company's image for both the end user and the public authorities.
- **Product definition.** The Eco-label on products implies product quality guarantee, assurance of diminished use of harmful substances throughout the life cycle of the product and good indoor climate depending on the product.
- **Keep existing customers happy.** Customers, whether private or public, can see the extra value in the Eco-label and will tend to remain more loyal to suppliers working with environmental issues.
- **Increase of competitiveness.** The Eco-label can be used as an edge in the marketing of the buildings to gain new customers.

SECTION 2.

E. ECO-LABEL PRODUCTS – An example of benefits deriving from ecolabelled products

The following are just a few example of the benefits deriving from the use of Eco-label outdoors paints and varnishes :

(a) in terms of manufacturing, it produces:

- reduction of substances harmful for the environment and for health
- reduction of air pollution
- reduction of by-products' hazardous wastes

(b) in terms of use, it produces:

- reduction of air pollution due to solvents
- user information for environmental use
- performance criteria

(c) in terms of end of life, it produces:

- reduction of the use of substances dangerous for the environment and health.

FOR MORE INFORMATION ON THE ECO-LABEL AND PRODUCTS VISIT:

EU:

http://ec.europa.eu/environment/ecolabel/index_en.htm

The European Eco-label catalogue

Search a manufacturer

You are looking for manufacturers who are :

- Located in: any country
- Manufacturing products in: All purpose & Sanitary cleaners
- Selling in: France

Search Reset View All

Manufacturer	Category	Origin
BRUNEL CHIMIE DERIVES	All purpose & Sanitary cleaners	France
CHIMIOTECHNIC	All purpose & Sanitary cleaners	France
ERC N.V.	All purpose & Sanitary cleaners	Belgium
KH Lloreda S.A	All purpose & Sanitary cleaners	Spain
LOBIAL	All purpose & Sanitary cleaners	France
NOVAMEX	All purpose & Sanitary cleaners	France
SALVECO s.a.r.l.	All purpose & Sanitary cleaners	France

© 2002 ECO-LABEL

Your guide to greener products

SECTION 2.

F. LOW ENERGY BUILDING MARKET

The present section shows the general framework of low energy buildings (the so called “green buildings”) market, in terms of global construction outputs and percentage of firms which dedicated their efforts to design end/or realize green projects.

These information are fundamental for builders and promoters, in order to know the current market and foresee future market trends.

Knowing this type of information can help and support builders and promoters to plan and orient their future business.

SECTION 2. - F. LOW ENERGY BUILDING MARKET

With output over a **1.8 trillion \$ annually**, Europe is also one of the top regional construction markets. Europe is a consistently stable economy with strong prospects for fostering a growing green building marketplace.

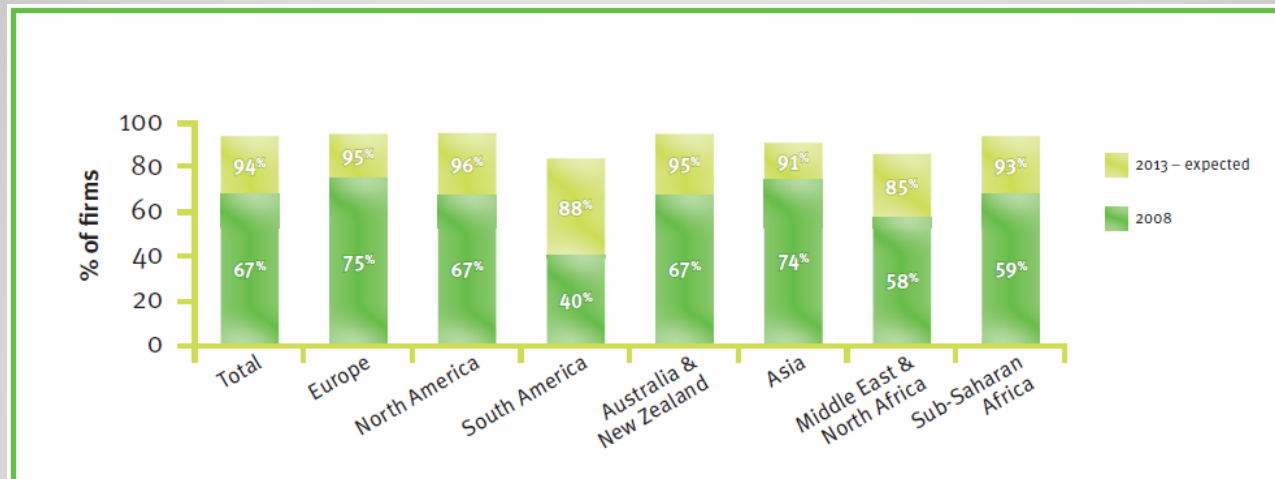
Global construction output (2007)



SECTION 2. - F. LOW ENERGY BUILDING MARKET

*“Green building offers the opportunity to conserve energy and water, improve building operations and enhance the health and wellbeing of the global population. Further, green building represents a **tremendous market opportunity**, as it grows rapidly to represent an increasing share of the global [A\$5.8T] construction industry output each year”. (McGraw Hill Construction, 2008)*

Percentage of firms which dedicated at least 16% of their projects to green building



SECTION 2.

G. THE INNOVATIVE FINANCING SCHEMES

This section addresses topics connected with financial issues. In the last decades innovative financing schemes have been tested all over Europe and now they can be considered consolidated. Energy Service Companies (ESCOs) are the subjects which play an important role in the financement of energy projects. Builders and providers should know about:

- ❖ ESCOs and their role
- ❖ ESCOs financing model
- ❖ ESCOs: barriers and drivers.

SECTION 2.

G. THE INNOVATIVE FINANCING SCHEMES – ESCOS AND THEIR ROLE

There are innovative schemes to financing energy efficiency measures. **The ESCO scheme is one of them.** They are promoted by the European Union's Directive on Energy end-use efficiency and energy services¹.

Energy **S**ervice **C**ompanies (**ESCOs**) are companies which take on the technical and financial risks involved in implementing energy efficiency measures and they cover their investments with the energy saved in a certain period of time (pay back time).

ESCOs' role can be described as follow:

- ESCO design and oversee the implementation of energy efficiency measures in a developer's facility,
- ESCO supply energy once the facility is up and running,
- ESCO ensure the financing of the project.

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G. THE INNOVATIVE FINANCING SCHEMES - ESCOS FINANCING MODEL

ESCOs use their own funds or else they provide an energy savings guarantee agreement which demonstrates the savings achieved by the project to cover the debt repayment. This facilitates access to finance and reduces the cost of borrowing.

ESCOs and EPCs (Energy Performance Contract) usually work on a project basis. Work proceeds through a number of important stages:

- ✓ identifying the potential for energy saving,
- ✓ designing the project and drafting the agreement,
- ✓ installing and maintaining the necessary energy efficient equipment.

ESCOs' tasks are not over once the renovations are complete, they remain involved to operate the system and to monitor the project's energy savings. The ESCO takes on the risk that the project will save the amount of energy projected to ensure appropriate pay-back and in many cases supplies the fuel and electricity.

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G. THE INNOVATIVE FINANCING SCHEMES – ESCOS: BARRIERS AND DRIVERS

Barrier n. 1 - Doubts about the impact of energy efficiency measures

The drivers which might contribute to overcome this barrier are:

- capacity building to increase trust, knowledge, and understanding of ESCO concept;
- accreditation of ESCOs;
- development of ESCO quality labels;
- development of standards and template contracts;
- energy efficiency audits and certificates.

Barrier n. 2 - Procurement rules do not foresee energy efficiency measurers

The drivers which might contribute to overcome this barrier are:

- supportive procurement rules;
- neutral Bodies to produce procedural protocols.

Barrier n. 3 - Diverging interest of investors and tenants

The barrier number 3 can be overcome reconciling the interests by making investors benefit from savings and tenants to enjoy higher living comfort.

Barrier n. 4 - Low priority of energy issues in local decision making

The drivers which might contribute to overcome this barrier are:

- increased climate consciousness and ambition to reach 20/20/20 targets;
- support from European Institutions and National Government;
- legal provisions (Energy Performance Directive; Energy Services Directive; Energy use efficiency Directive, etc.)

Barrier n. 5 - Fluctuation of energy prices

The drivers which might contribute to overcome this barrier are:

- State funding combined with specific ESCO financing;
- Guarantee of energy savings;
- Cash-flow based financing, ESCO takes financial risks.

RECOMMENDATIONS

Building promoters and builders have a strategic role to achieve the goal of energy sustainability in the buildings construction and maintenance sectors.

Some specific recommendations:

1. to become **aware** of **their role** and **responsibilities** towards communities, societies, environment
2. to assume and possess the **concept of Corporate Social Responsibility (CSR)**
3. to **know** the **main concepts of sustainability** and **energy efficiency**
4. to know the **legislation framework**
5. to be aware that *“investing in energy saving will improve the household economy on the long run”*.