

Brussels, 04 February 2009

Subject: Recast of the Energy Performance of Buildings Directive

1. INTRODUCTION

The world is facing one of its most severe economic crises; the breakdown of the financial system has resulted in a major economic downturn with dramatic consequences on employment. Global forecasts for 2009 are not optimistic. Governments all around the world are trying to find solutions to limit the recession and restart economies. The European Commission has recently published a Recovery Plan.

Energy efficiency in buildings can bring a significant contribution to solve the present crisis, by: lowering energy bills for citizens and governments; reducing exposure to energy supply problems; minimizing stress on electricity supplies which register peaks during cold winters and hot summers and creating new green collar jobs through the refurbishment of existing stock and the development of very low energy buildings. Furthermore, a major programme focused on energy efficiency in buildings has the possibility to have almost immediate positive effects, which is critical to ensure a fast recovery from the current crisis.

Action in buildings also has the opportunity to address other important social and environmental concerns, from fighting fuel poverty through to combating climate change, and is therefore fully in line with Europe's 2020 energy and climate objectives.

The need for ambition in the area of buildings goes beyond the merits of individual actions, being equally driven by the fact that without action, many of the EU's current objectives cannot be met. With the lion share of final energy consumption and CO₂ emissions coming from buildings, a failure to act on buildings will lead to a failure in achieving long term climate goals. With buildings accounting for 7-8% of employment and 9% of GDP, and energy efficiency providing up to 530,000 new jobs (Eurima estimates), lack of action will mean a lack of jobs throughout the economy. Energy efficiency and in particular insulation are highly cost-effective as it was demonstrated in the European Commission's Joint Research Centre study¹: 80% of the green house gas reduction potential in buildings in Southern Europe and 95% of the potential in Central Europe can be reached at negative CO₂ abatement costs.

Action in buildings is therefore an absolute necessity for the EU. This document seeks to show why the recast of the Energy Performance of Building Directive (EPBD) is a major and critical initiative in order for the European Union to achieve its 2020 and 2050 targets. It puts emphasis on some major evolutions that will need to happen in the whole construction sector. And in particular, using data from a number of recent studies and the European Commission own impact assessment, it attempts to explain:

- **How the four pillars of the EPBD can bring the right solutions**
- **What is needed beyond the EPBD to seize this huge potential?**

2. THE FOUR MAIN PILLARS OF THE EPBD

In this section you will find for the four main pillars of the EPBD: a brief summary of the current EPBD requirements; the proposed changes in the Recast EPBD; a summary of the European Commission's Impact assessment²; and, Eurima's position.

- **FIRST PILLAR: removal of the 1000m² threshold for existing buildings when they undergo major renovation**

Current EPBD: requires that existing buildings above 1000m² should have their energy performance requirements brought up to standard when undergoing major renovation; major renovation being defined as either the cost being above 25 % of the value of the building, excluding the value of the land upon which the building is situated, or when 25 % of the building shell undergoes renovation.

The Recast: proposes to eliminate the 1000m² threshold, to keep the definition of major renovation identical, and to have minimum energy performance targets (components level and whole building) set by member states in accordance with those calculated via "the EU methodology" (see second pillar).

Analysis of the Impact assessment: Because of the 1000m² threshold, the "major renovation" opportunity to improve energy efficiency of buildings currently only applies to **29% of the total conditioned floor area or 26% of CO₂ emissions (or 236 MtCO₂) caused from total space heating** (see figure 1).

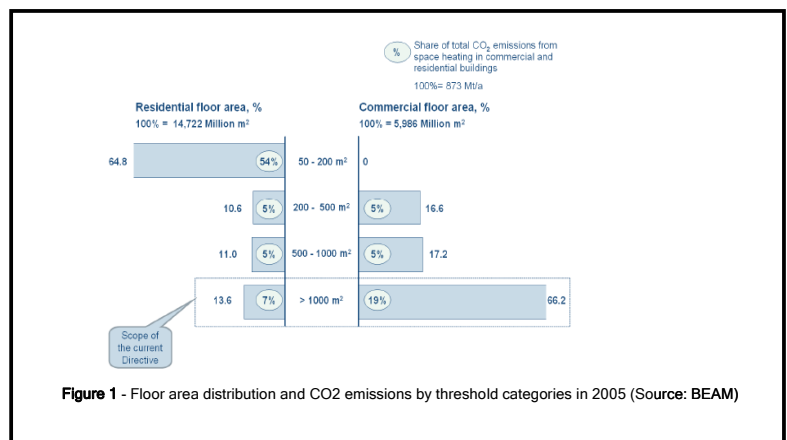
When completely removing the 1000m² threshold, then the "major renovation" opportunity to improve energy efficiency in buildings applies to the whole existing building stock. This is already the case in several countries (Germany, Denmark, Netherlands...).

Evidence on cost-effectiveness of action, demonstrates that the best moment for the introduction of energy efficiency measures is when the building undergoes major renovation (approx. every 25-40 years) or when a specific component (e.g. roof or window) is replaced, thus ensuring that the additional investment needs are low and are repaid through energy savings within the lifetime of the measures.

Two other options (A1, A2) were envisaged in the impact assessment: lowering the threshold to 500 m² or 200m². One can easily see from above graph that these options would only bring very limited improvement in the energy performance of the existing building stock.

Potential savings and benefits²

Renovation & 1000m ² threshold	Energy saved	Emissions reduction	Annual capital cost	Total cost saving	Jobs creation
	Mtoe/a	MtCO ₂ /a	billion €/a	billion €/a	Jobs /a
A3: removal of 1000m ² threshold	20	51	8	17	75.000



Eurima position

1. **Eurima fully supports the removal of the 1000m² threshold.** A study made by Ecofys for Eurima, in 2005, found that the current EPBD had a “technical potential” (all renovations applied at once across Europe) to reduce CO₂ emissions from buildings by only 12%, while 54% could be captured if the threshold of 1000m² was eliminated³.
2. Eurima has proposed an amendment to the recast EPBD with regards to **the definition of major renovation**: “... 25% of the building value...” would be changed to “...15% of the building value ...” in order to capture a greater number of cost-effective opportunities.
3. When renovating existing buildings, one should always follow the principle of the TRIAS ENERGETICA: **improving performance of the envelope components or reducing energy demand for heating and cooling should always come as 1st priority as the envelope may remain for over 100 years, where systems will not and as it is neither cost effective nor sustainable to oversize systems.**

- **SECOND PILLAR : energy performance requirements and very low energy buildings.**

Current EPBD: requires that Member States determine minimum energy performance requirements and their levels of ambition. The principle of minimum energy performance requirements already applies to new or existing buildings when renovated, it also applies at component level. The calculations are based on a general framework (EPBD annex) adapted to technical progress.

The Recast: recognizes that these minimum energy performance requirements vary broadly across the EU, even within similar climatic zones and for many Member States cost-optimal levels are far from being achieved. Cross-border comparisons are difficult due to the diverse calculation approaches and parameters used. Therefore, further work at Community level - benchmarking - could realize additional energy savings. The benchmarking would be based on an agreed methodology, developed at EU level, which would calculate energy performance requirement based on a cost-optimum approach. It also introduces a roadmap for the implementation of the above system, which will apply to all types of buildings, new and existing, as well as parts of building such as components.

In addition, the Commission proposes to encourage a movement in Member States towards very low energy buildings as the norm for new build and renovation. The Recast asks Member States to draw-up national plans (targets by 2015 + regular reporting to the Commission through the National Energy Efficiency Action Plans) for increasing the number of very low energy buildings, with public authorities having to play a leading role.

Analysis of the Impact assessment: As for most of the proposed changes, the European Commission’s impact assessment looked at a number of different approaches to moving towards better national standards and considered the merits of each:

- ***Specifying EU - wide energy performance requirements (D1)***: The proposal entails that specific energy performance requirements levels are proposed. This would allow for a large part of the energy savings potential to be reaped, would ease cross-border operating businesses, and would support the internal market of related construction materials and appliances. However, determining these levels would be a very demanding and highly disputed task and would entail very high level of EU regulation.
- ***Introducing a benchmarking mechanism (D2)***. The proposal is to include a benchmarking mechanism in the EPBD principal methodology to calculate the cost-optimal level of energy performance requirements for buildings. The current provisions of the EPBD would not be changed and Member States would still have to set up their individual levels. A benchmarking mechanism would clearly indicate whether Member States are below the optimal levels, i.e. money from energy savings is lost every time regulations are applied.

- **Requiring an evolving improvement scheme for the buildings stock focusing on the worst performing buildings (D3).** It is proposed that Member States should prepare Action Plans on how to increase the refurbishment rate and the energy efficiency of the worst performing buildings. Such an approach would require high administrative costs for Member States and would also be a considerable burden for the owners of the poor performing buildings.
- **Setting up EU-wide low or zero energy/carbon buildings/passive house requirements (D4).** Introducing such requirement for newly constructed buildings from a certain date onwards would lead to very well performing new buildings and foster innovation. However, it would increase houses prices (7% to 15%) and the additional investments may not be fully paid back by energy cost savings, posing a significant burden to citizens and national budgets. Therefore, a softer approach could be taken which is to include the obligation on the develop 'roadmaps' in which Member States would show their commitment towards achieving low energy/emission houses.

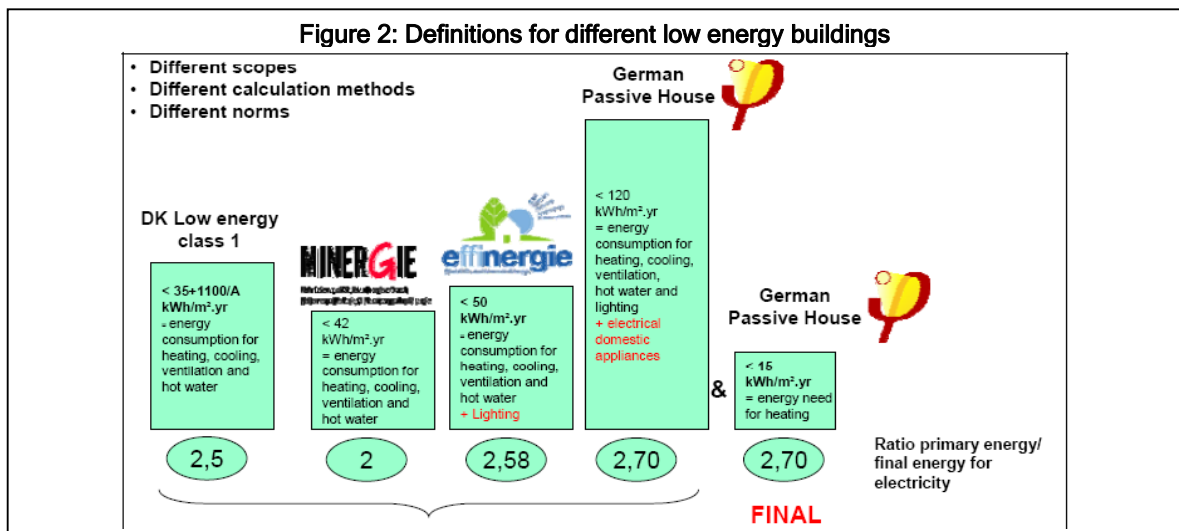
Potential savings and benefits²

Min. energy performance requirements	Energy saved	Emissions reduction	Annual capital cost	Total cost saving	Jobs creation
	Mtoe/a	MtCO ₂ /a	billion €/a	billion €/a	Jobs /a
D1	10	24	6	12	82.000
D2	5	13	3/6	6	82.000
D3	Contribute to realize high cost effective savings				
D4 (100% realization from 2012)	up to 15	up to 41	Additional cost could be as high as 50 to 120	up to half a million	

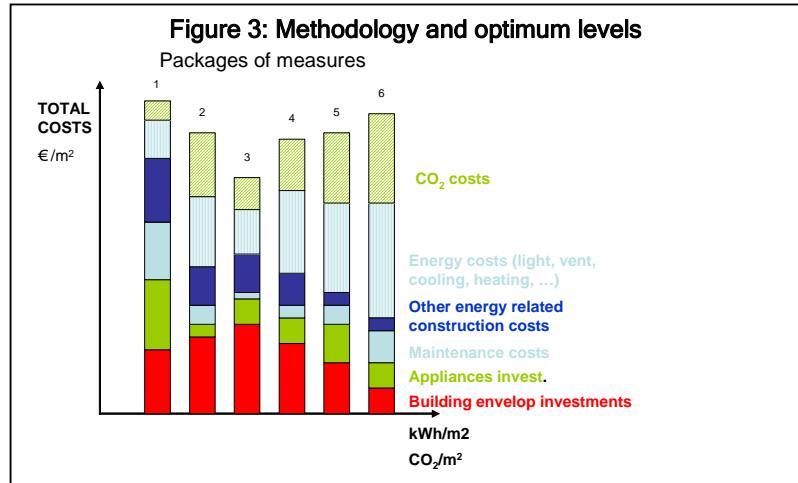
Eurima position.

Eurima believes that both, clear targets towards very low energy buildings and benchmarking between Member States, are critical amendments for the Recast EPBD, and will support ambitious objectives in these areas, as they will be key drivers for the building sector, across Europe, to seize its potential contribution to EU objectives.

1. Several Member States have already established ambitious targets for new buildings (France 2012, UK 2016, DK 2020, NL 2015, Germany 2020, and Finland 2016). As the technology already exists, and cost-optimality can be ensured and calculated, **all Member States should adopt similar targets.** See figure 2 (ref: EuroACE⁴)



2. **All new public buildings**, in their leading role, should achieve the very low energy level by 2012. **For other new buildings, the target date should be 2014.**
3. **For existing buildings**, as from 30 June 2014, Member States shall set energy performance requirements for envelope components and technical building systems based on the methodology for calculating cost-optimal levels, taking into account societal costs and benefits.
4. Eurima fully supports the principle of developing an EU methodology for setting energy performance requirements for defined typical reference buildings, both for new and renovated buildings as a whole, and as well as parts of, like envelope components or technical systems.
5. This methodology based on life cycle costing and sound parameters (energy mix and prices, climate condition, CO₂ emission cost, investments, interest rates, subsidies, operating and maintenance costs ...) would, after a transitional benchmarking period - until 2014, be the base for all countries to set-up their minimum energy performance requirements. However Member States should be encouraged to set more ambitious targets.
6. The results of the calculations set in the methodology, based on the life cycle costs, for a very large number of different packages of measures for a given type of reference building should be expressed in terms of economic as well environmental optima at societal level. See Figure 3.



- **THIRD PILLAR : energy performance certificates**

Current EPBD requires that when buildings are constructed, sold or rented out, an energy performance certificate is made available to the owner... as well for buildings with a total useful floor area over 1.000m² occupied by public authorities...

The Recast EPBD: recognizes the quality issue of the certification process that needs to be carried-out by independent experts and proposes to address it through a random control system; it recognizes the important leading role of public buildings by lowering down to 250m² (instead of 1000m²) the size of buildings that need a certificate to be displayed in prominent place, and it puts much emphasis on the availability of the certificates during property transaction.

Analysis of the Impact assessment: The certificates can be a powerful tool to create a demand-driven market for energy efficient buildings, as they allow economic agents to estimate costs in relation to energy consumption and efficiency. The possible impact of certificate in some countries is **estimated at annual 2% energy savings of building sector consumption when properly implemented**. There are several actions that have been analyzed in the impact assessment. The principle of options B1 and B3 are included in the recast EPBD, while that of B2 and B4 are not:

- **Quality and compliance requirements for certificates (B1)**, it is proposed that a requirement for random sampling checks of the certificate's quality and the compliance with the building energy codes is carried out by public authorities or accredited institutions. This would ensure that the information in the certificates is of good quality and reliable. It is expected that this would trigger an increase in the renovation rate, and thus higher energy savings.
- **Requiring that the recommended cost-effective measures of the certificate are realized within a certain time period (B2)**. Such a requirement would lead to high savings but also to a significant financial burden for EU citizens and businesses as the measures might then not be combined with a 'major renovation' and therefore it could probably not be justified at EU-level. However, for public buildings, such measure should be made mandatory for all cost effective recommendations of the certificates.
- **Making certificates a mandatory part of property advertisement and/or property transactions documents (B3)**. This would entail that information on the energy performance of a building is included in publicity for property transactions (similar to the display of CO₂ emission of new cars) and that with each transaction the certificate has to be presented.
- **Requiring the linking of the certificates with other support or discouragement mechanisms (B4)**. It is suggested that the energy efficiency improvements of a building which are achieved as a result of a financial incentive, are demonstrated or justified with the certificate. This would help property owners/tenants in making informed decisions about the cost effectiveness of their investments and there would be a proof that the funding provided really lead to energy savings.

Potential savings and benefits²

Certification	Energy saved	Emissions reduction	Annual capital cost	Total cost saving	Jobs creation
	Mtoe/a	MtCO ₂ /a	billion €/a	billion €/a	Jobs /a
B1	21	57	8	14	60.000
B2 (tertiary)	12	33	5	4	100.000
B3	Very high		Low	Very high	
B4	High		-	-	High

Comments: Eurima understands that not all results of options can simply be added; options B1 and B3 are complementary, hence overall impact is probably in the order of magnitude of twice that of B1; options B2 was only quantified for tertiary buildings and, if applied, would be overlapping with B1.

Eurima position

1. Eurima recognizes the importance of certification and **fully supports all efforts to improve quality**, hence effectiveness of the certification process (B1 and B3 actions). In addition, European standards should be adopted for **education and training curricula**, as well as for process, methods and content of certification.
2. Energy certification shall include:
 - The energy performance of the building, and **actual impact of components such as the envelope performance on heating and cooling energy demand**
 - **References values such as minimum energy performance**
 - Recommendations for **cost effective measures to be carried-out when building undergoes major renovations (envelope, technical system, ...)** and when individual parts are renovated
 - Information on available fiscal and financial incentives

3. **For public buildings**, it should be mandatory to implement cost effective recommendations of the certificate within a limited time frame, i.e. 5 years. Option B2.
4. As this is already the case in several countries, **certificates schemes should be the basis for determining the level and conditions** of financial incentives, taxes credits, loan conditions ...

- **FOURTH PILLAR: Inspection of boilers and air-conditioning systems**

The Recast EPBD: states that clarifications on the frequency of inspections are introduced in order to stress the importance of proportionality between inspection costs and anticipated energy savings (benefits) stimulated by the inspection. A requirement for an independent control system for the inspection reports, i.e. via random sampling checks of quality, is introduced.

Inspection of boilers and AC	Energy saved	Emissions reduction	Annual capital cost	Total cost saving	Jobs creation
	Mtoe/a	MtCO ₂ /a	billion €/a	billion €/a	Jobs /a
Inspection report	5	15/20	-	-	46.000
Quality and compliance	Very high		-	-	23.000

See impact assessment for further details.

Conclusions on the analyses of the four pillars

According to the Impact assessment, the minimum total impact of the most beneficial options for which quantification was possible, is:

- 60 - 80 Mtoe/year energy savings by 2020, i.e. a reduction of 5-6% of the EU final energy consumption in 2020;
- 160 to 210 Mt/year CO₂ savings by 2020, i.e. 4-5% of EU total CO₂ emissions in 2020;
- 280,000 (to 450,000) potential new jobs by 2020, mainly in the construction sector, energy certifiers and auditors and inspectors of heating and air-conditioning systems.

The base line for the calculation is current EPBD fully and properly implemented, meaning already an estimated savings of 96 Mtoe final energy.

Eurima quantified the potential benefits of a revision of the EPBD through studies with Ecofys³ in terms of **“technical potential” benefits**; the chosen base line was “prior implementation of the EPBD”, and results:

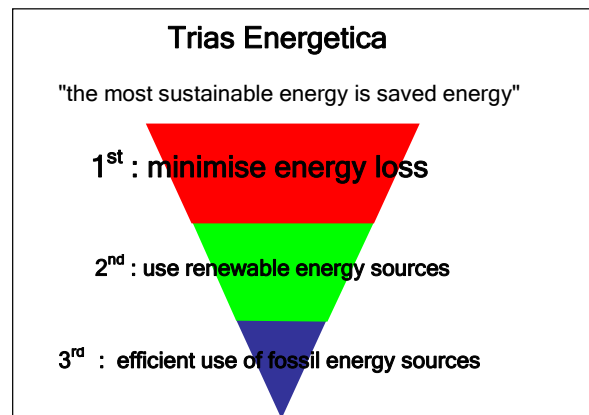
- 3.3 million barrels of oil /day or 190 Mtoe/year
- 460 Mt/CO₂ savings
- 530.000 jobs
- 270 billion €/year

Given that the impact assessment calculates “phased development savings” by 2020 and Eurima has calculated a technical potential (all measures applied in all buildings at once), it is possible to reconcile the figures and **it confirms the huge potential benefits of the Recast EPBD**.

3. ENERGY EFFICIENCY AND RENEWABLES: TWO COMPLEMENTARY INSTRUMENTS

Eurima considers that energy efficiency and renewable energies are two complementary ways to improve the energy performance of buildings. They just need to be applied in the right order.

From the point of view of financing and subsidies, governments, local authorities as well as citizens are all confronted to the same dilemma: the amount of money available is finite. So where should it be invested in priority? Eurima recommends addressing first the demand side, based on a very simple principle: “the most sustainable energy is saved energy”. This is the message of the “*Trias Energetica*”:



It is worth emphasizing that giving priority to energy savings will bring additional and significant benefits: first, it will reduce the quantity of energy needed. Consequently the 20% target in renewable energies set up by the European Commission will be easier to reach.

This in turn will reduce the percentage of fossil fuels on the energy supply side. The benefits for Europe are clear: improved security of supply and less dependency on countries outside the EU.

Another benefit will be on sustainability: there is consensus that renewable energies should be developed, but not at the sacrifice of sustainability. From this point of view, the 20% target on renewable energy has sometimes been questioned because it might generate competition with other very fundamental human needs such as food. If the 20% target is easier to reach, then it will also be easier to judiciously select the type of renewable energy, and make sure that the sustainability of natural resources is preserved

4. BEYOND THE EPBD - SEIZING THE POTENTIAL FROM BUILDINGS

1) An “EU Marshall Plan” for buildings

The huge economic and environmental potential of buildings can be tapped. It will take education, capacity building, finance and regulation but getting Europe’s buildings on the right track can be done, if the right mix of measures is developed.

Not only Europe should provide adequate financial support but it should make sure that mechanisms are put in place so that it facilitates investments in the building sector - An “*EU Marshall Plan*” for buildings. In this perspective, it is important that local stakeholders like Cities Council (Covenant of Mayors), Regional authorities, local banks ... have access to available funds so as to insure that money is spent and properly invested.

In November 2008, the European Commission has launched a **European Economic Recovery Plan** (COM(2008) 800 final). The Commission has done a first step by making a few proposals targeting energy efficiency within the building sector. Based on these first recommendations, the European Union needs to adopt an ambitious plan for buildings that would help the recovery of our economies as well as address European needs. This plan should be based on an appropriate selection of mechanisms, such as, amongst others:

- **Low-VAT rate:** Eurima welcomes the proposal of the European Commission on a reduced VAT rate for energy efficiency. Eurima calls on the EU to allow for a permanent reduction in the level of VAT on energy-saving products, materials and building processes related to implementing and upgrading thermal insulation and energy efficiency measures. We propose to link this reduction in VAT to the Energy Performance Certificates and that the reduced VAT rate on labour intensive services shall apply if the work aims to achieve the efficiency upgrades proposed by these Certificates.
- **Structural Funds:** The European Commission has proposed to amend Regulation (EC) No. 1080/2006 on the European Regional Development Fund in order to devote a greater share to energy-efficiency investments, including funding of social housing. Eurima supports the proposal from the European Commission to allow all EU Member States to get funding for energy efficiency. We also support the compromise amendment proposed by the French Presidency in December to let Member States defining categories of eligible housing in national rules. Expenditure on energy efficiency improvements and renewable energy in existing housing shall be eligible up to an amount of 15% of the total ERDF allocation, and not 4% as it is currently proposed by the European Commission in its proposal.
- **Tax incentives:** The European Economic Recovery plan suggests urgent tax measures to improve the energy efficiency of the housing stock and public buildings and promote rapid take up of 'green' products. Eurima believes taxation ought to be one of the instruments governments should apply to promote energy efficiency investments. Increased voluntary (and, in time possibly binding) cooperation among Member States through comitology should be increased by the Commission. Income, corporate tax credits to promote building could be used to support energy performance improvements. Property-tax differentiation, based on certification schemes should also be developed.
- **European Investment Bank:** The European Investment Bank has increased its global investment value in 2009 and 2010 to reach around EUR 72bn. Eurima calls to implement most of additional lending toward energy efficiency measures in buildings.
- **Marguerite Fund:** In December 2008, the European Council announced the creation of a new equity fund, called the European Fund for Energy, Climate Change and Infrastructure ("Marguerite Fund"). In our view, the "Marguerite Fund" should largely focus on the energy refurbishment of buildings because it could be a very effective scheme to facilitate investments in the building sector.

2) A roadmap for Europe

National, regional and local authorities have to develop the right policy packages addressing specific local circumstances and buildings characteristics. The report "Better Buildings through Energy Efficiency - A Roadmap for Europe⁵" provides a number of specific recommendations for all building types. The study involved the analysis of the main barriers linking to main types of buildings policy instruments. The result of the study provides an overview of promising instruments and policy packages suggested for a successful endorsement of building energy efficiency. A number of general conclusions can be drawn from this Europe-wide report:

- Tenure matters, regions don't: Surprisingly, the mix of elements needed to deliver important changes are practically the same everywhere in Europe. However, the tenure situation (private/public) and the type of building (new/existing) calls for different mixes of instruments.
- Help me don't tell me: Information alone seems to deliver extremely limited results. Awareness of the need to act, is high, what is missing is a helping hand to support individuals and organisations through the complex process of improving a building.
- Upfront money is key: Although energy efficiency improvements pay back many times over, ensuring that money is available for the upfront investment is essential.
- Rules do help: For new buildings legally binding rules make a real difference; for existing buildings rules on minimum standards for renovation help, especially when combined with financing and a helping hand.

THE ROADMAP FOR BETTER BUILDINGS RECOMMENDS SPECIFIC POLICY PACKAGES, SHOWING WHICH INSTRUMENTS CAN WORK TOGETHER TO ADDRESS A SPECIFIC SETTING

SUGGESTED POLICY PACKAGES BY SECTOR AND TENURE

	New buildings	Existing buildings
Residential buildings		
Owner-occupied	Yellow	Yellow
Private rental	Yellow	Purple
Social rental	Yellow	Green

Commercial buildings		
Owner-occupied	Yellow	Purple
Private rental	Yellow	Purple

Public buildings		
Owner occupied	Grey	Grey

Key to table above:

	Yellow	Green	Purple	Blue	Grey
Preferential loans for significant energy performance combined with energy audits and organisational support	Mandatory performance evaluations combined with regulatory benefits for above-standard performance	Energy upgrading requirements combined with energy audits and organisational support	Tax credits for installing energy-saving products (for landlords) combined with energy audits and organisational support	Energy upgrading requirements	Above-standard requirements for government buildings, combined with energy performance contracting

The roadmap identified what specific support instruments can work together to address a specific setting. For example, the report showed that preferential loans for significant energy performance combined with energy audits and organisational support work with owner-occupied buildings. For private rental buildings, tax credits for installing energy-saving products (for landlords) combined with energy audits and organisational support should be supported.

REFERENCES

¹ “Environmental Improvement Potentials of Residential Buildings (IMPRO-Building)” by Françoise Nemry and Andreas Uihlein, JRC Scientific and Technical Reports, September 2008

² SEC(2008) 2864, Impact assessment,
http://ec.europa.eu/energy/strategies/2008/doc/2008_11_ser2/buildings_impact_assesment.pdf

³ Ecofys studies II to V for Eurima: <http://www.eurima.org/eurima-publications/>

⁴ “European national strategies to move towards very low energy buildings”, report SBi 2008:07 for EuroACE

⁵ Better Buildings through Energy Efficiency - A Roadmap for Europe (Klinckenberg Consultants study for Eurima): <http://www.eurima.org/eurima-publications/>