

# Energy efficiency measures in the Existing Building Stock : Towards an energy efficient building stock in 2020

*Wednesday November 22 2006*

*Chairmen :*

**A. Dubler**

*Architects' Council Europe & President of International Council of French Architects*

**P. Wouters**

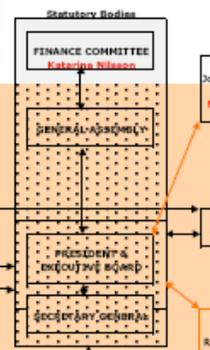
*Belgian Building Research Institute*



# Programme

- Welcome
  - A. Dubler, Architects' Council Europe
- Introduction
  - P. Wouters, BBRI
- Roadmap for future actions regarding the energy performance of existing buildings
  - X. Loncour, BBRI
- Energy Saving measures in existing buildings in Denmark
  - S. Aggerholm, SBI
- Building Blueprint – endorsement schemes for buildings energy efficiency improvements in the EU25
  - F. Klinckenberg, Klinckenberg Consultants representing EURIMA
- Vision of the industry,
  - Francis Da Silva, Saint-Gobain
- Q&A with the different speakers

# ACE Architects' Council Europe



**COMMUNICATION** (e.g. Com. Policy)  
Events and promotional activities  
ACE Info/Press - Editorial Board  
Architecture and the public interest  
Promotion of architectural policies (EFAP)  
Raising Awareness - Web Site  
Cultural heritage (e.g. Portuguese Init.)  
Sponsoring/Sponsorship  
EU Funding (Specific Programmes)  
*Coord. Luciano Lazzari / David Felice*

Various networks of architects:  
Cultural Foundations  
"houses" of architecture  
Humanitarian etc.

**External Memberships & Liaisons**  
Club Profile  
EESC Liaison Group/Civil Society  
Euro. Forum for Arch. Policies  
European Construction Forum  
SCREDEI

**ARCHITECTURE AND SOCIETY**  
**O. Dziekonski**  
**P. Benuska**

Environment - Energy Standardisation  
(EPB Dir, Them. Strat. On Urban Env't., CEN)  
**O.Lewis, IE**  
**Vibeke Grupe, DK**

Housing (e.g. Social) (e.g. EU Charter)  
**Teresa Taboas, ES**  
**Milan Horak, SK**

Urban & spatial issues (TSUE/Struct Funds,...)  
Networks/Local Auth.  
**A. Borghi, IT**

**INTERFA**  
STRATEGIC THEMATIC AREA

ACCESS TO THE PROFESSION  
*P.H. Schmidt, F. Llibre, T. Laigu*

**PRACTICE OF ARCHITECTURE**  
*J. Wright, R. Budding*

**ARCHITECTURE AND SOCIETY**  
**O. Dziekonski**  
**P. Benuska**

*John Wright, UK*  
Legal Advice Ref. Gc

*R. Procas, BE*  
PII (Liability/Insurance)  
*Jan Kabecky, BE*

Trades in services WTO/GATS/VDG/TRADE  
*John Wright, UK*

(DIM Directive) for mobility Internal (EU)

NRAs (Eurosaf) (Mexico, USA, Canada, Hong Kong, ...)

Health and Safety (Charter, Revision EU Directive)  
*Jan Kabecky, BE*

Procurement of Arch. Services (Inst. & Review 2004/4 Green Procurement)  
*Jan Kabecky, BE*

Public Procurement Design and Build PPP/PTP  
*Jan Kabecky, BE*

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Arch. Design Competitions  
*Georg Herdt, AT*

Private procurement  
*Priscilla Solfero, FR*

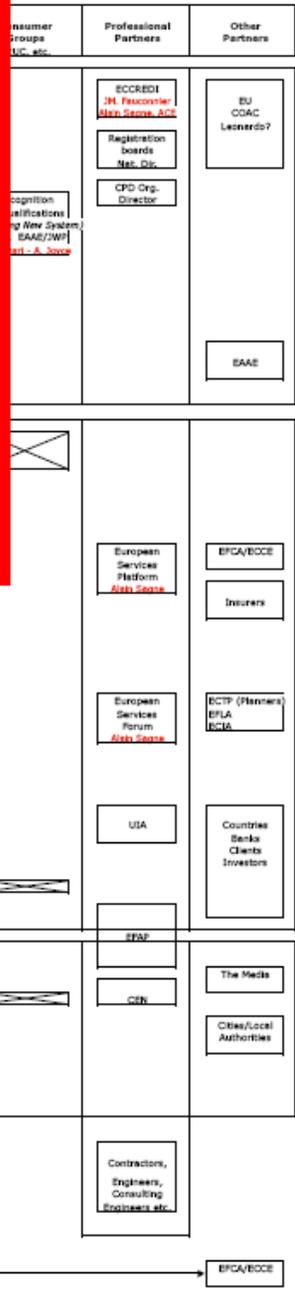
Arch. Design Competitions (Core Rules & Guidelines) & All procurement methods  
*Paula Nuckels, PL*  
*T. Hebborn, H-G Brannert, DE*

Best Practice Guidelines for Private Institutions Conventions/Charters  
*Isabelle Mousu, FR*

Energy performance (Guidelines for Members) Overall environmental performance of buildings Conventions/Charters  
**Vibeke Grupe Larsen, DK**

Database Information on the profession across Europe (Supplementing/developing EU section on COAC Databases)  
Thematic Database of ACE Documents/Syntheses  
*Coord. Fabien Lilliers, ES - ACE Sec.*

Socio-Economic information on the profession  
European Observatory



**QUALITY** CONTRIBUTION TO THE SECTOR BY THE SOCIAL ENVIRONMENT  
(Global Objective to Achieve)



# ORDRE DES ARCHITECTES

- **Connaître**  
*l'Ordre*
- **Exercer**  
*la profession*
- **Travailler**  
*avec un architecte*
- **Découvrir**  
*l'architecture*

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Crédits

## Les architectes au coeur du développement durable

### ■ L'Ordre s'engage

#### La charte d'engagement des architectes

- L'Ordre présente sa charte d'engagement des architectes

#### Le Livre vert

- L'Ordre publie *Les architectes et le développement durable*

#### Débat

- Pétition - Appel de Nancy (sept 2006)
- Faire appel à l'innovation et la créativité plutôt qu'à l'approche technocratique
- L'Ordre des architectes quitte l'association HQE

#### Documentation

- Bibliographie et liens utiles
- Outils d'évaluation
- La construction moderne, c'est la construction écologique

#### Les actions en régions

- Contactez les correspondants développement durable en région
- Discours et réalité sur le développement durable
- Les partenaires du développement durable
- La lettre de Franche Comté

#### Le forum

- Echangez vos opinions et expériences sur le forum consacré au développement durable

### ■ En vue

#### La lettre d'information

Cette quatrième lettre d'info, revient sur la tenue de son congrès de l'Habitat social, à Bordeaux les 19, 20 et 21 septembre derniers, et sur ses réponses aux enjeux du développement durable, qui reprennent, avec une forte résonance, plusieurs volets de notre charte d'engagement en faveur du développement durable...

>> Consultez toutes les lettres d'information des architectes au coeur du développement durable

### ■ Les formations à venir

- > Qualité environnementale et développement durable (6 JOURS) - en 3 modules :
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- > Qualité environnementale et développement durable (6 JOURS) - en 3 modules :
- QEB
- Consultez Toutes les formations Développement durable dans toutes les régions

- Annuaire des architectes
- Outils et documents
- Actualités
- Formations
- Concours
- Petites annonces
- Développement durable
- Forums
- Liens utiles
- Espace architectes



Rechercher par thème

- Recherche avancée
- Plan du site
- Contacts



architectes  
au cœur du  
développement  
durable



ORDRE DES  
ARCHITECTES

# Lettre *d'information*

## AGENDA

- ▶ **ECOBUILDING Performance - Performance énergétique et développement durable des bâtiments**

8 et 9 novembre 2006 – Paris, Porte de Versailles (France)

 [www.ecobuilding-performance.com](http://www.ecobuilding-performance.com)

- ▶ **Salon de l'Habitat sain et des énergies renouvelables**

10 novembre 2006 – Nantes (France)

 [www.exponantes.com](http://www.exponantes.com)

- ▶ **Passion Bâtiment - Amélioration**

## ÉDITORIAL

N° 4 — novembre 2006

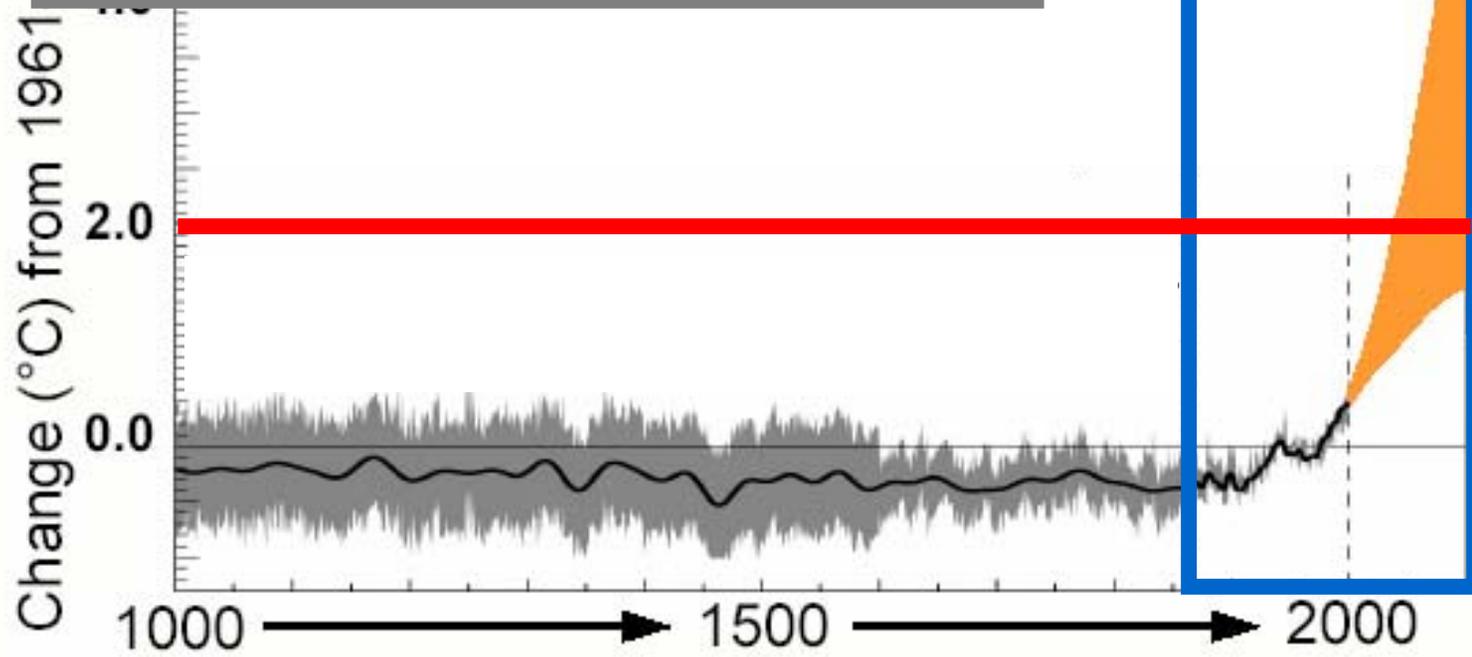
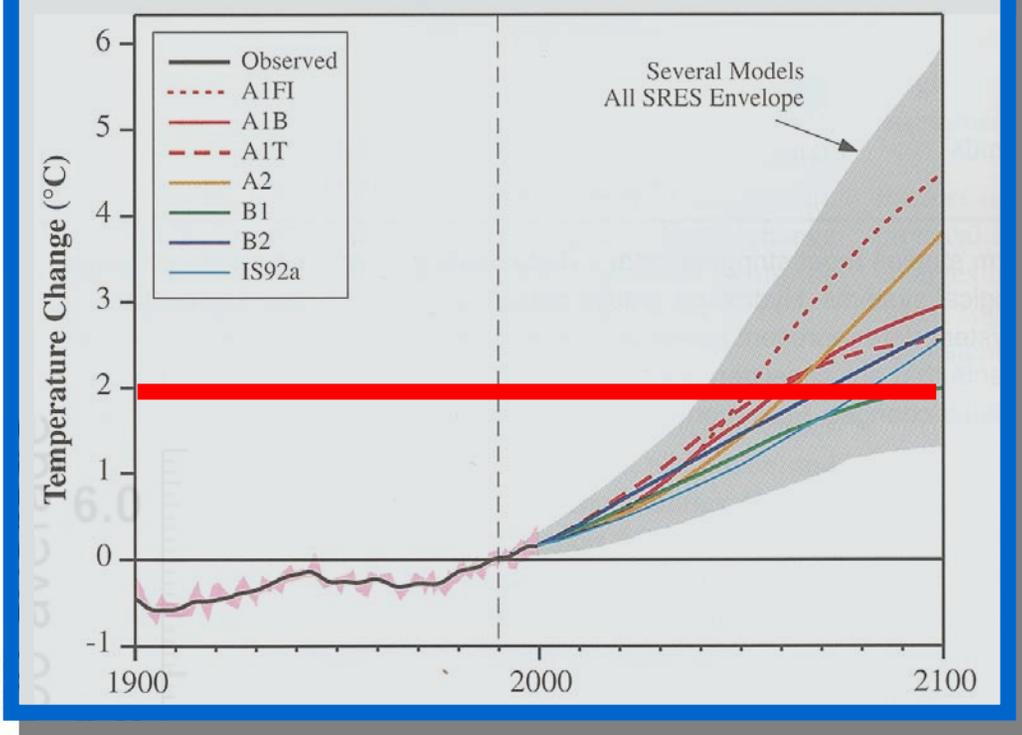
**A**vec la tenue de son congrès à Bordeaux, du 19 au 21 septembre dernier, la réponse de l'Habitat Social aux enjeux de développement durable a fait pleinement son entrée dans le débat des prochaines échéances électorales.

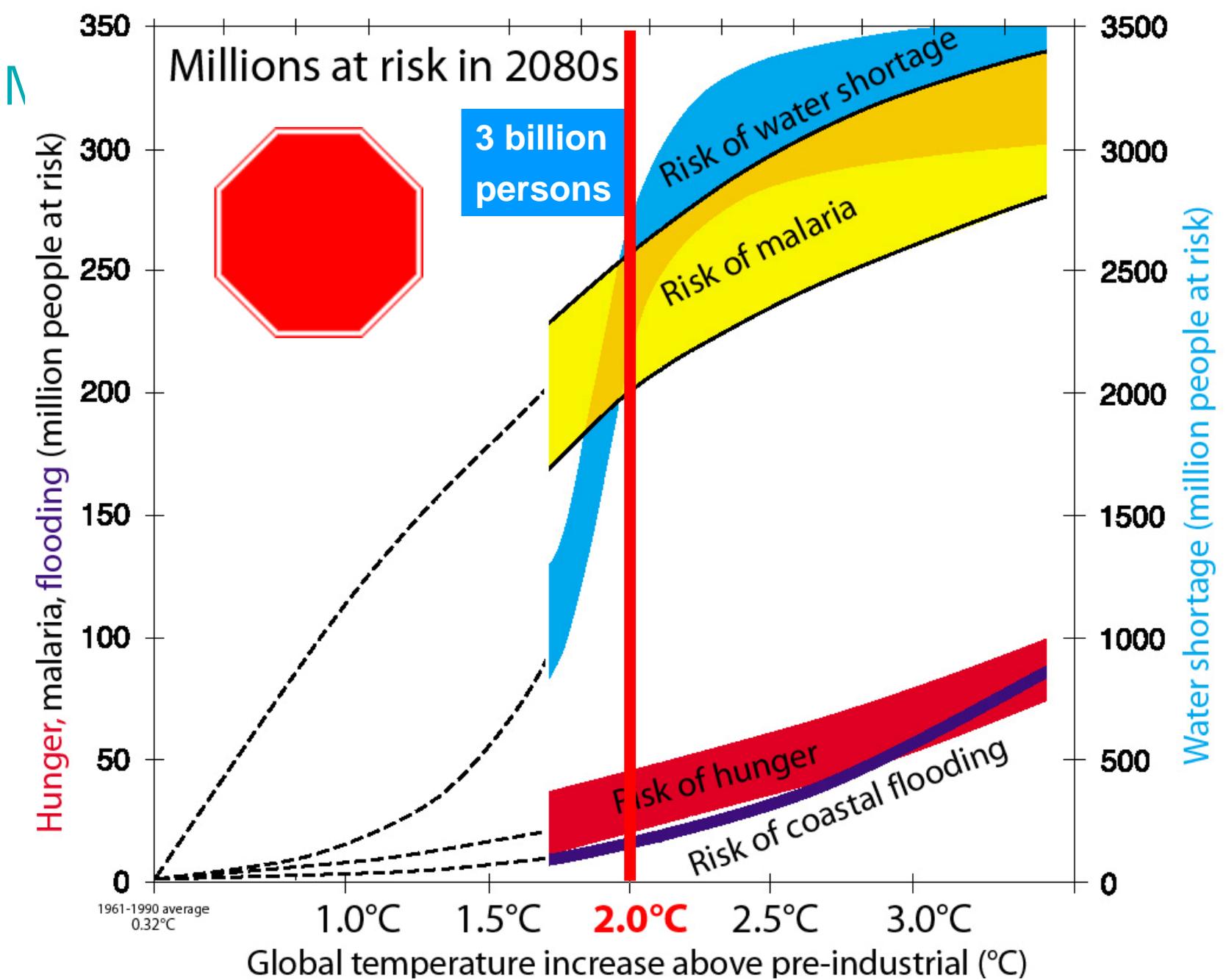
Et c'est bien sous cet angle qu'il est demandé aux politiques de se prononcer : rendre pleinement au logement social sa mission initiale, à savoir le logement des plus démunis, mais également dans un contexte économique rendant difficile l'accès à la propriété, celui des revenus modestes ou des professions intermédiaires. Michel Delebarre le rappelle d'ailleurs, dans son discours de clôture : « la production de 100 000 à 120 000 logements sociaux par an, (...) c'est une réalité qu'il (...) faut programmer pour les prochaines années ».

Et si l'Habitat Social se situe clairement dans une démarche de développement durable – qu'il s'agisse de la



**Why to worry about  
(existing) buildings?**



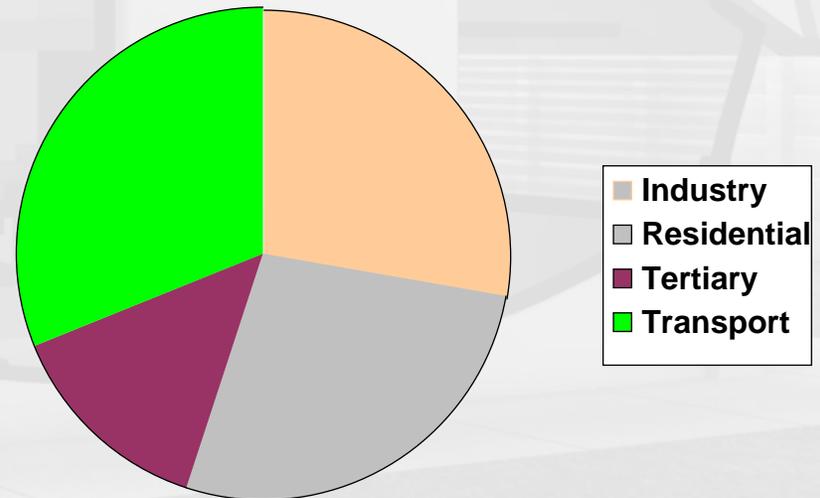


Source : Parry & al. (2001) "Millions at risk", graph adapted by M. Meinshausen, Nov. 2004

# Importance of the building sector

- ❖ Buildings account for 40-45% of CO<sub>2</sub> emissions
  - 2/3 domestic
  - 1/3 commercial
- ❖ Buildings are the single largest end users of energy in the EU
- ❖ Space heating and cooling represents:
  - 70% in homes
  - 50% in commercial buildings

Origins of CO<sub>2</sub> emissions





# Importance of the building sector

## ❖ Action Plan for Energy Efficiency: Realising the Potential (COM(2006)545 final)

- Estimated full potential of cost effective energy use savings potential
  - Residential sector 27%
  - Commercial buildings sector 30%



## Example of long term approach



### *Existing buildings*

Given the rate of renewal of the housing stock, most emissions come from older buildings.

By end 2004, a legislative framework will be put in place to introduce building codes applicable to renovation and rehabilitation<sup>(1)</sup> work.

Major renovation work will be subject to stringent performance objectives closely resembling prevailing regulations for new buildings.

Significant requirements will be imposed for renovation work of smaller scope when the work envisioned includes the replacement of equipment that affects energy consumption. In a similar way to thermal regulations for new buildings, the regulations governing older buildings will be updated every five years, with the overall aim of achieving a fourfold decrease in building-related greenhouse gas emissions by the year 2050.

### *Air conditioning*

The topic of air conditioning is discussed in the chapter on Sustainable Air Conditioning.

Wherever possible, we must avoid using air conditioning, preferring passive cooling solutions and giving greater consideration to summer comfort in building design.

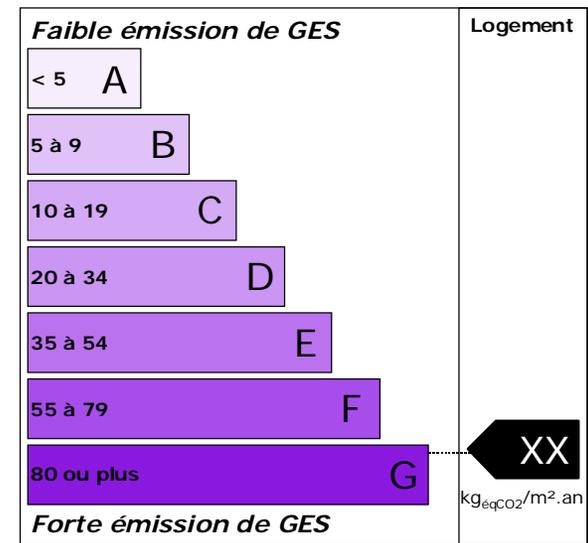
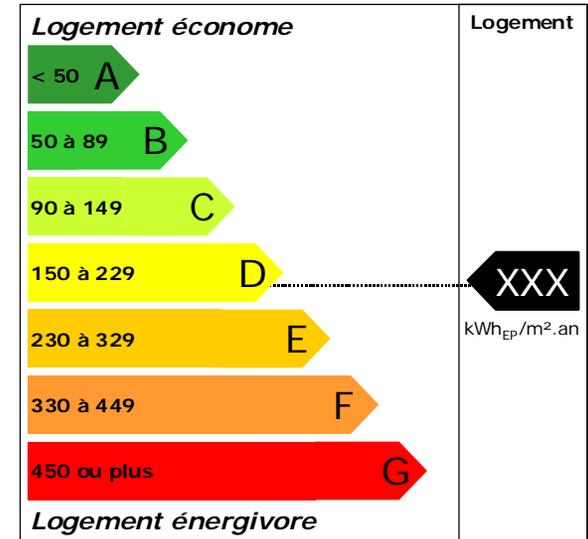
In new constructions, air conditioning must be used only when absolutely essential. Whatever the circumstances, the use of air conditioning shall not increase energy consumption, implying that architectural and technical designs must keep energy use for air conditioning as low as possible. Regulations applicable to new construction will include stipulations on major renovation work to existing tertiary buildings.

## « Factor 4 », an ambitious strategy implemented in France

- **To cut by a factor of 4 total GHG emissions between 2005 and 2050**
  - 3 % reduction per year over 45 years on all economic sectors
- **Official target already introduced in**
  - National Strategy for a Sustainable Development (June 2003)
  - Climate Change Programme (July 2004)
  - Programme Law for Energy Policy Orientations (July 2005)
- **Building sector : already identified as a key-actor for reaching this goal**
  - large possibilities to use conventional and renewable energy sources
  - possible mixing of different energy sources in the same building
  - possible conversion of energy sources during the building lifetime
  - user behaviour not subject to radical change
  - retrofitting possible in different steps over many years
  - energy efficient buildings more valuable on the market

## A priority in France : the existing building stock

- Absolute necessity to enhance the global energy performance
- Built pre-mandatory stock could represent in 2050 between 60 to 75 % of the total building stock
- Actual retrofit trend insufficient to reach the Factor 4 goal
  - 100 % buildings to be totally retrofitted but now only 11 % partly retrofitted each year
  - 200 €/m<sup>2</sup> < cost for complete retrofitting < 400 €/m<sup>2</sup> but now only 25 €/m<sup>2</sup> in average
- Extensive actions to be implemented, based on energy labelling
  - at the organisational level
  - at the technological level
  - at the financial level
- **Mandatory retrofitting for all buildings in the future ?**
- To be accompanied by strong evolutions in the designing of new buildings
  - passive buildings
  - “energy positive” buildings





# Flemish Region : Strategic objectives

(under discussion)

The general strategic objective for an energy renovation programme in the dwelling sector, is formulated as follows :

- **“There will be in the Flemish Region in 2020 no longer energy wasting dwellings”**



# Flemish Region : Operational objectives (under discussion)

- ❖ The energy renovation programme will achieve the following objectives:
  - All dwellings have in 2020 **roof and attic insulation**;
  - All single glazing will in 2020 be replaced by at least **high efficiency glazing**;
  - All **central heating systems** have in 2020 a water side seasonal efficiency of at least 90%;
  - All **individual heating furnaces** have in 2020 a seasonal efficiency of at least 90%
- ❖ In addition, the energy renovation programme will support:
  - Insulation of opaque facade components
  - Insulation of floor insulation;
  - Replacement of electrical resistance heating.
- ❖ The programme also aims to limit the use of active cooling.

**Major challenge :**

**upgrading existing building stock  
where in principle no measures are  
normally foreseen**



**Hotels**



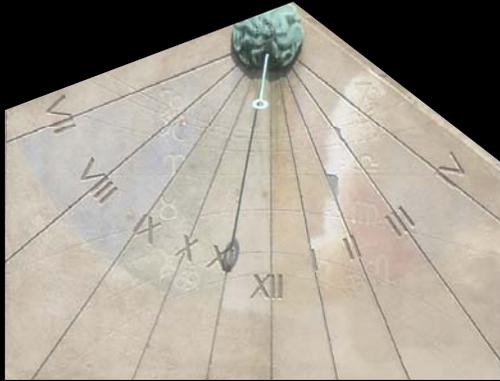
## Existing office buildings





**Large existing  
social housing**





**Existing  
Individual  
dwellings**