

The implementation of an energy-saving society contributes to the environment, people and economy

The example of France in the building sector - Ideas for Japan

RIETI BBL Seminars

November 01, 2011

MAG-ISOVER K.K.
http://www.isover.co.jp/

MAG
ISOVER SAINT-GOBAIN

Energy performance for new buildings

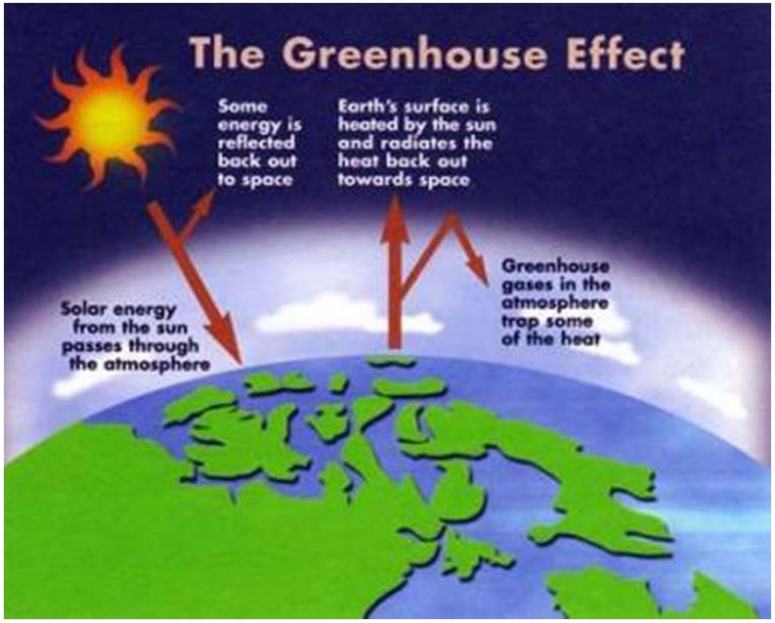
Why did the EU choose to impose a binding regulation?

What is at stake?
1. The environmental challenge

➤ The consumption of large amounts of energy in all sectors (buildings, transport, industry ... ..) emits greenhouse gases

➤ The greenhouse effect is necessary for life on earth, but the current global warming pace is harming the planet and human beings

➤ The rise of a few degrees of temperature leads to disorders such as accelerated melting of ice and desertification



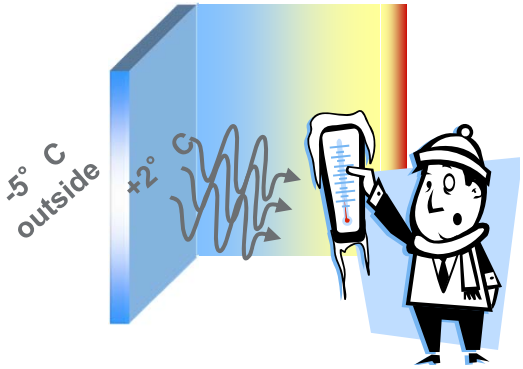
What is at stake?
2. The economic/security challenge

- World energy consumption increases
  - More and more hungry consumers in emerging markets
  - The use of energy increases (heating, hot water, lighting, ventilation, auxiliary, electronic media etc…)
- World fossil energy resources dwindle
  - Oil, gas, coal, uranium ... are not inexhaustible, and are imported mostly from unstable countries
  - Energy prices increase
- Emissions of greenhouse gases are rising because of human activities, CO_2 concentration is growing too fast

To preserve our resources ...
... we must save energy

What is at stake?
3. Social challenges: increase indoor thermal comfort with a lower energy cost

➤ Most important question for people: combine quality of life with a low environmental impact



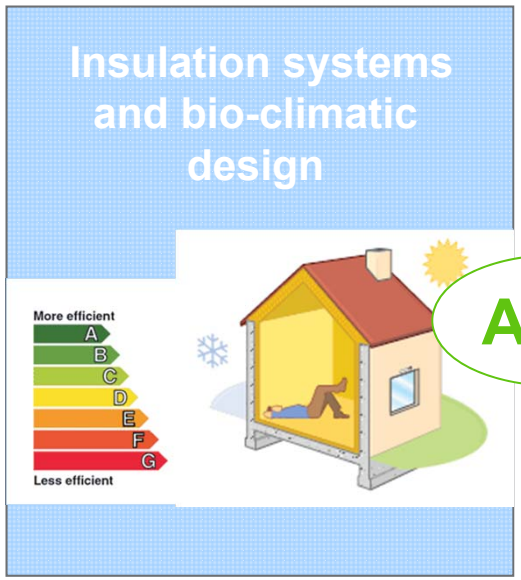
E.g. with no or little insulation = cold walls = 'cold sensation':

↳ Human body feels cold due to wall radiation.

↳ Dissatisfaction…

= Comfort + reduced energy bill + feeling of becoming a better citizen of the world

The EU approach :
from a logic of “OR” to a logic of “AND” (=Trias energetica)



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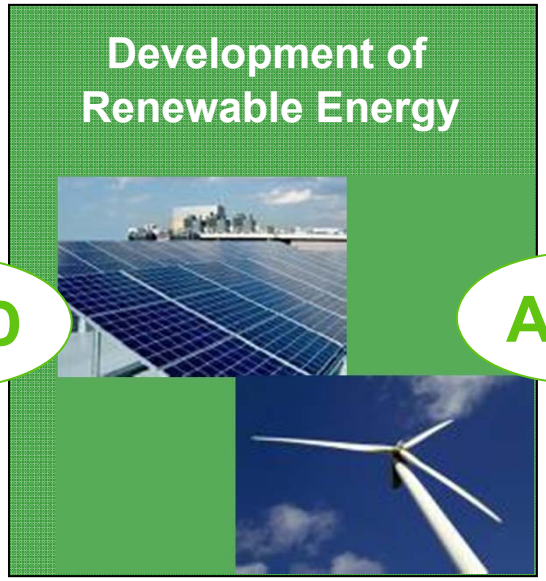

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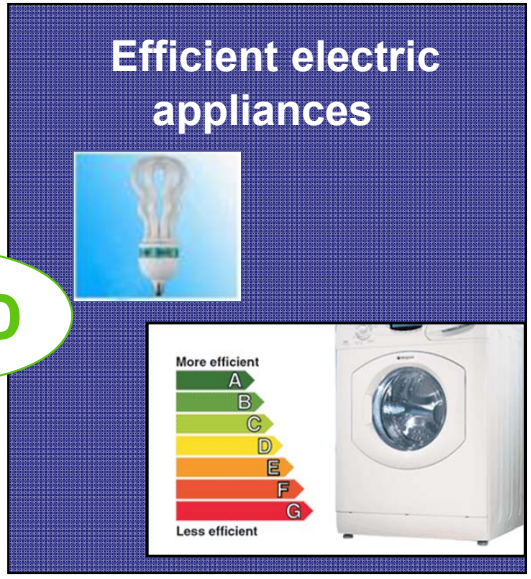


1. A house that is built and runs with as little energy needs as possible:
(Recycling materials, insulation, mechanical ventilation, air tightness)

+

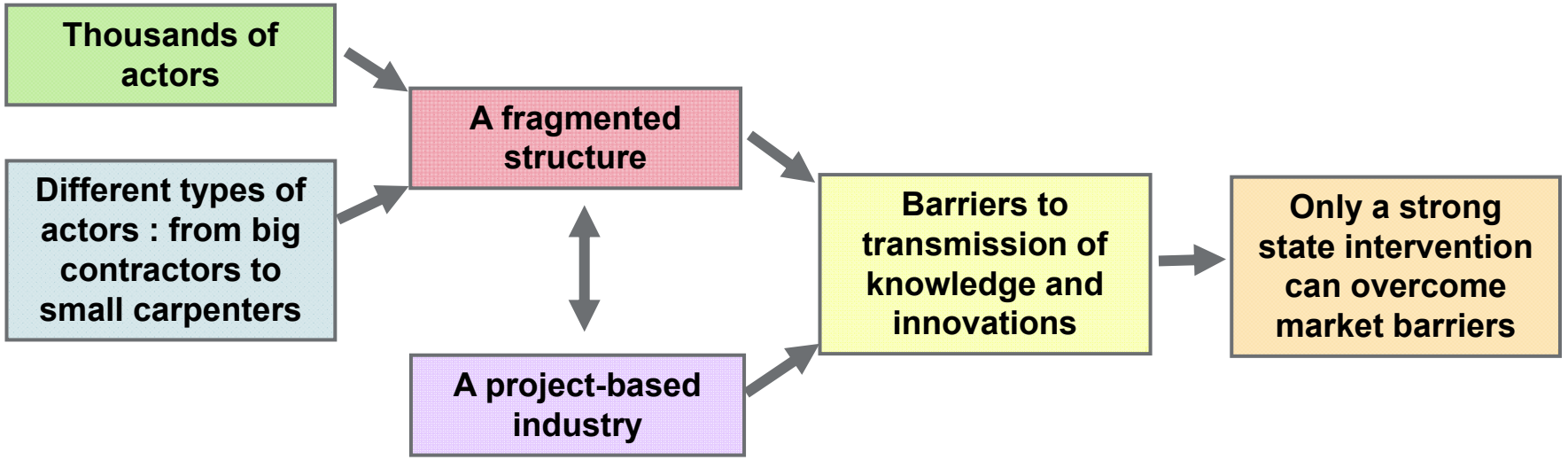
2. Use renewable sources of energy
(PVs, solar panels…)

+

3. Energy efficient equipments

A realistic approach of the construction market

➤ A conservative industry

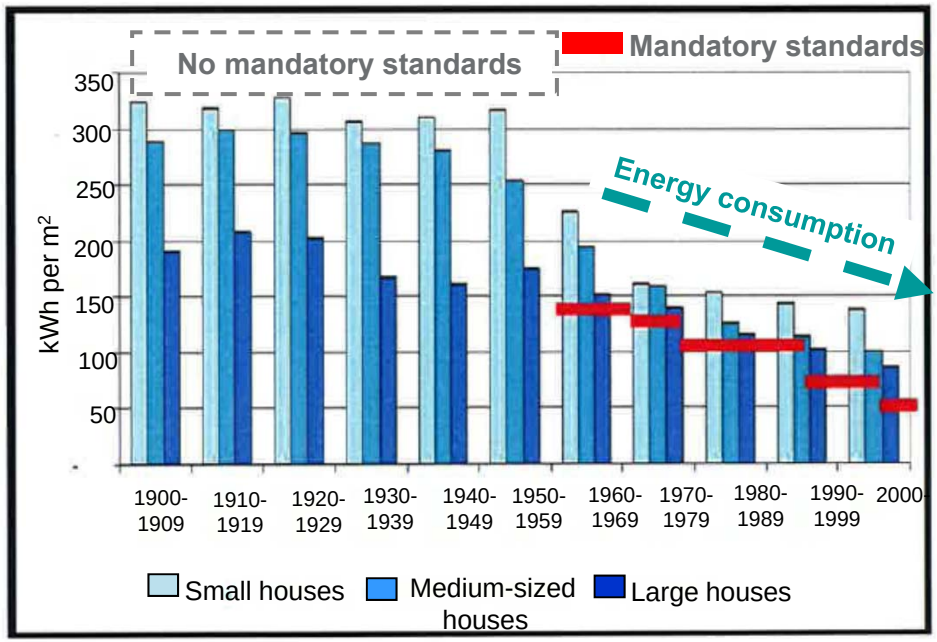


To change the market…
Need for mandatory standards

The EU approach:
Mandatory standards to pull the market

➤ Mandatory standard is the most influential tool to improve energy efficiency in buildings

➤ Example from Denmark

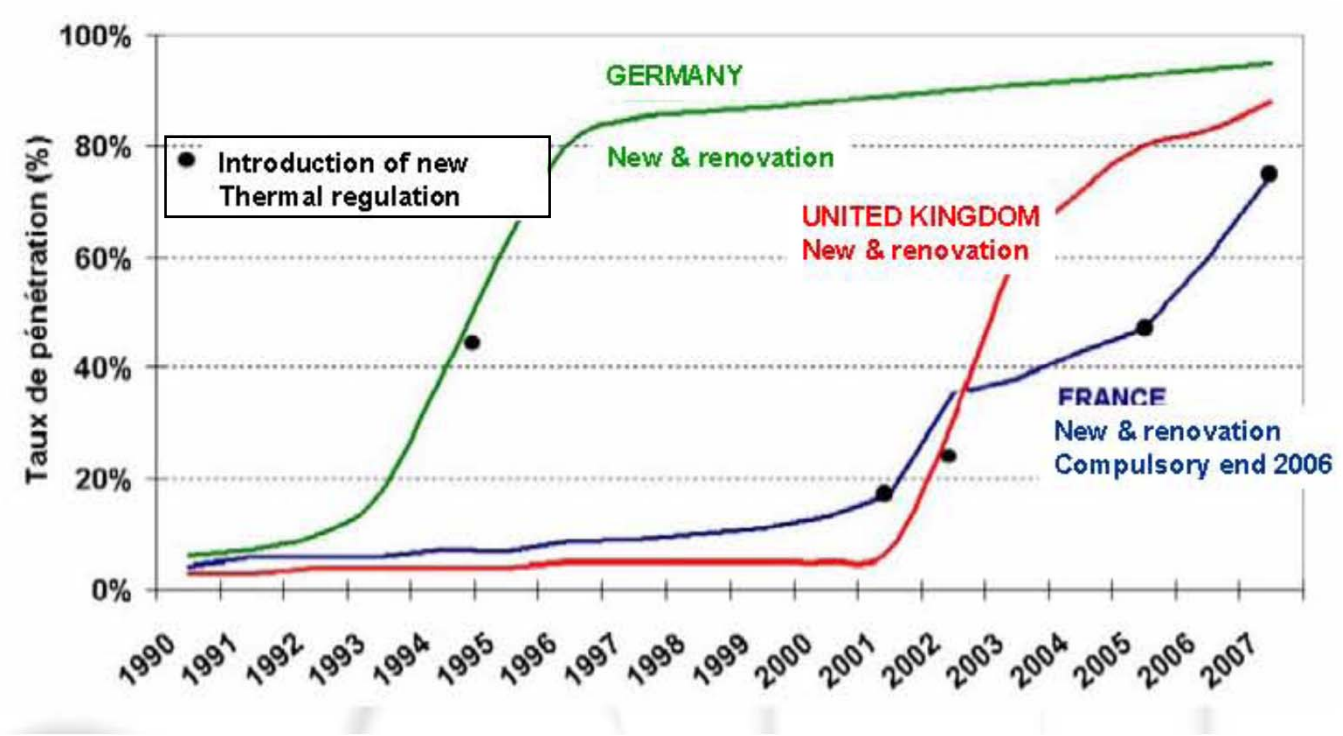


Source: The National Building Research Institute in Denmark

Impact of mandatory standards

➤ Example from U_{window}

Penetration rate of Low-E windows in Germany, France and the UK



Announcement and introduction of new mandatory standards drove market change

Source: Saint-Gobain, 2008

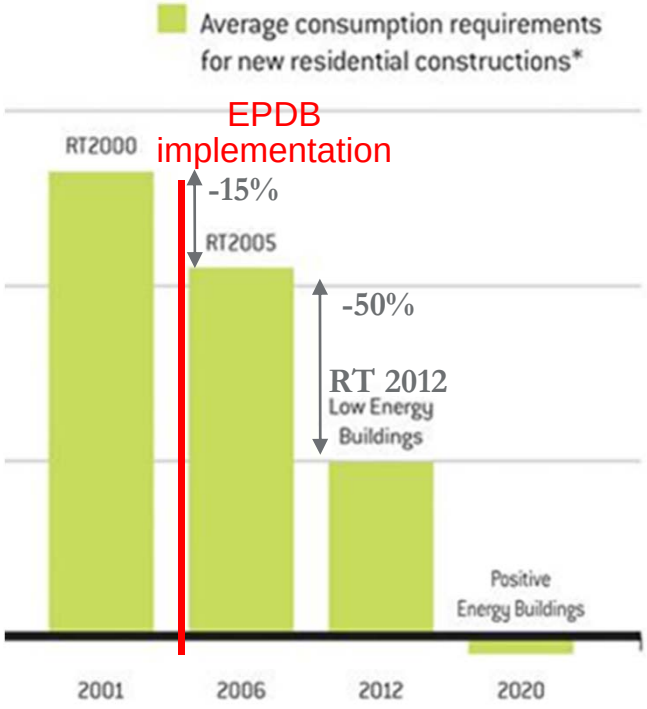
Energy performance requirements: indicators from country to country

Country	Indicators for Energy performance of buildings						Change in the requirements	
	Energy demand	U value envelop	U values envelop elements	Air tightness	Building energy consumption	Building CO_2 emissions	Last	Next
England & Wales	heating						2006	2010 +2013?+ 2016
Ireland	heating						2008	2010 + 2013
Austria	heating				heating/cooling, hot water		2008	2010 + 2012
Germany	heating		Reference values		heating/cooling, hot water, ventilation		2009	2012?
Netherlands			R values		EPC heating/cooling, hot water, ventilation , lighting		2008	2011 + 2015 + 2020?
France (2012)	Heating, cooling, lighting				heating/cooling, hot water, ventilation , lighting		2006	2012 + 2020
B _Walloon Reg.					heating/cooling, hot water		2007	2010 + 2015
B _Flanders					heating/cooling, hot water		2007	2010 + 2012
B _Brussels Reg.					heating/cooling, hot water		2009	?
Denmark					heating/cooling, hot water, ventilation , lighting		2008	2010 + 2015 + 2020?
Sweden					heating/cooling, hot water, ventilation		2008	2012?
Finland							2008	2010 + 2012
Poland					heating/cooling, ventilation		2009	2012 + 2015 + 2018 + 2021
Czech Republic					heating/cooling, hot water, ventilation , lighting		2007	2011
Italy					EPi heating, EPe cooling		2009	2012 ?

Energy performance requirements before/after EPBD

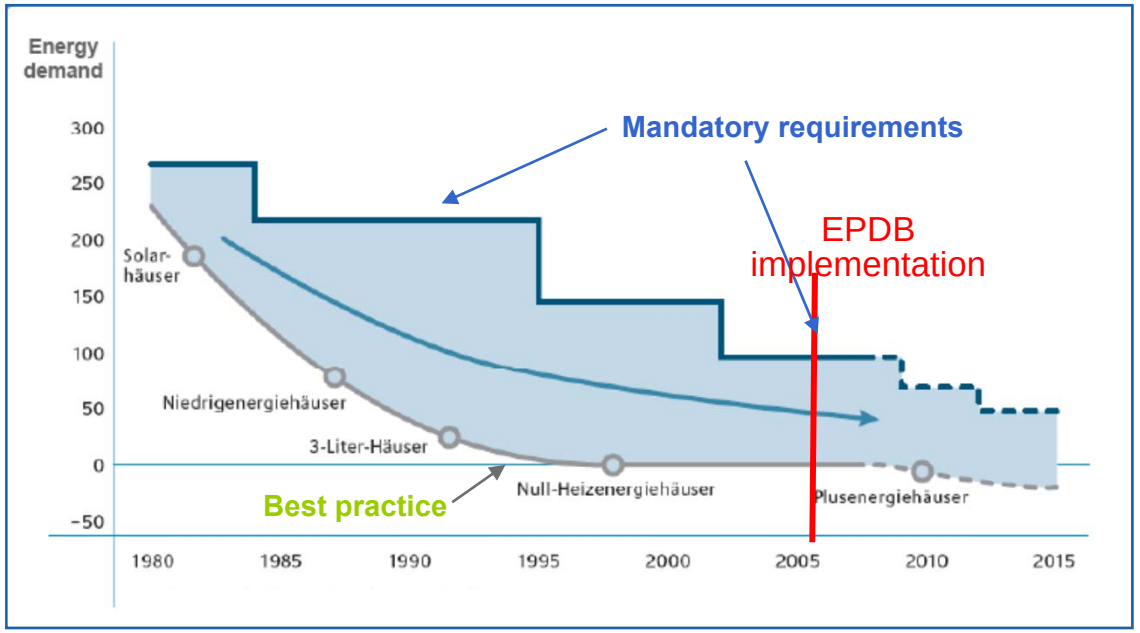
France

RT 2012: 1/3 compared to RT 2000



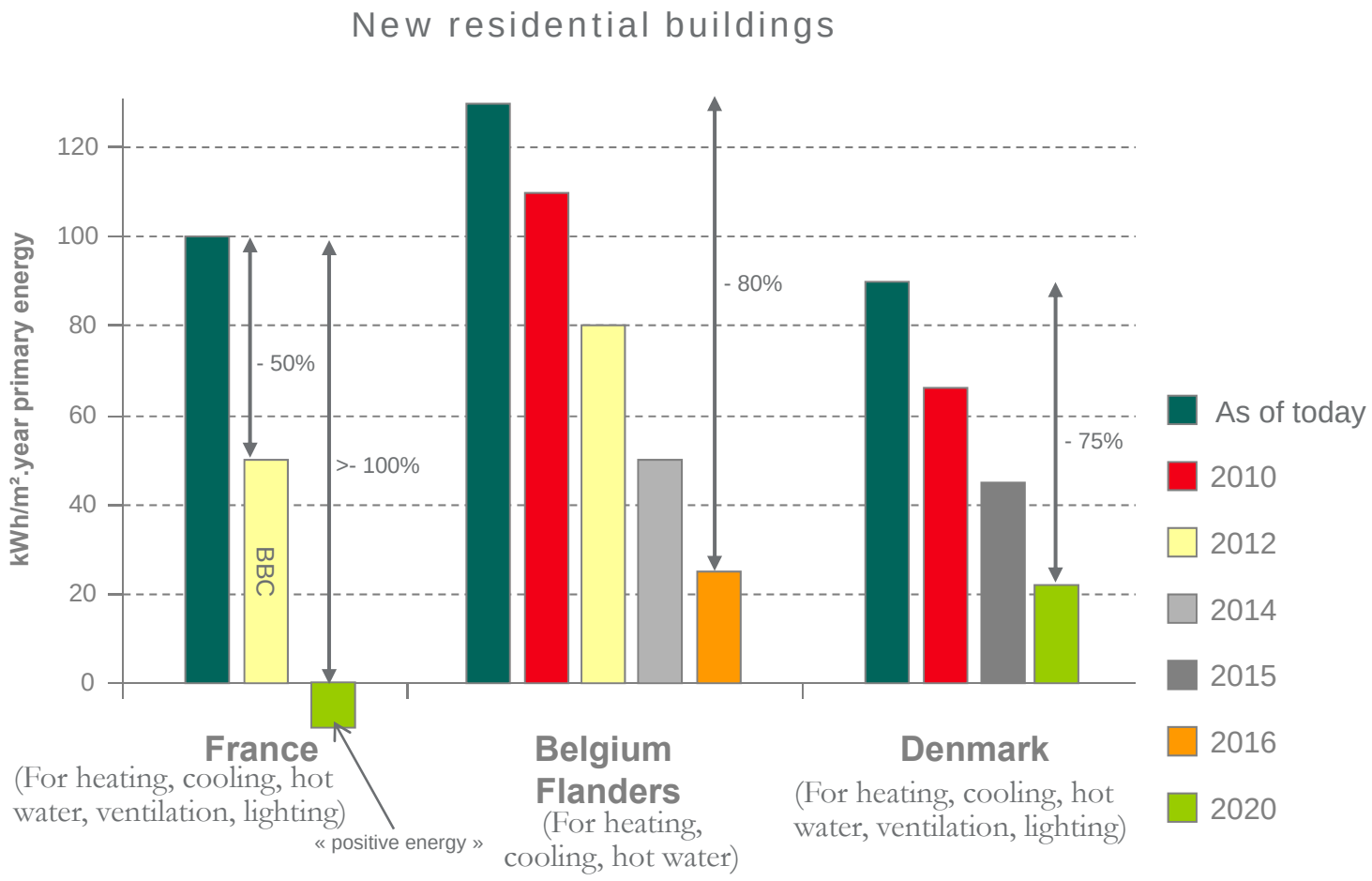
* For heating, cooling, hot water, ventilation, lighting

Germany

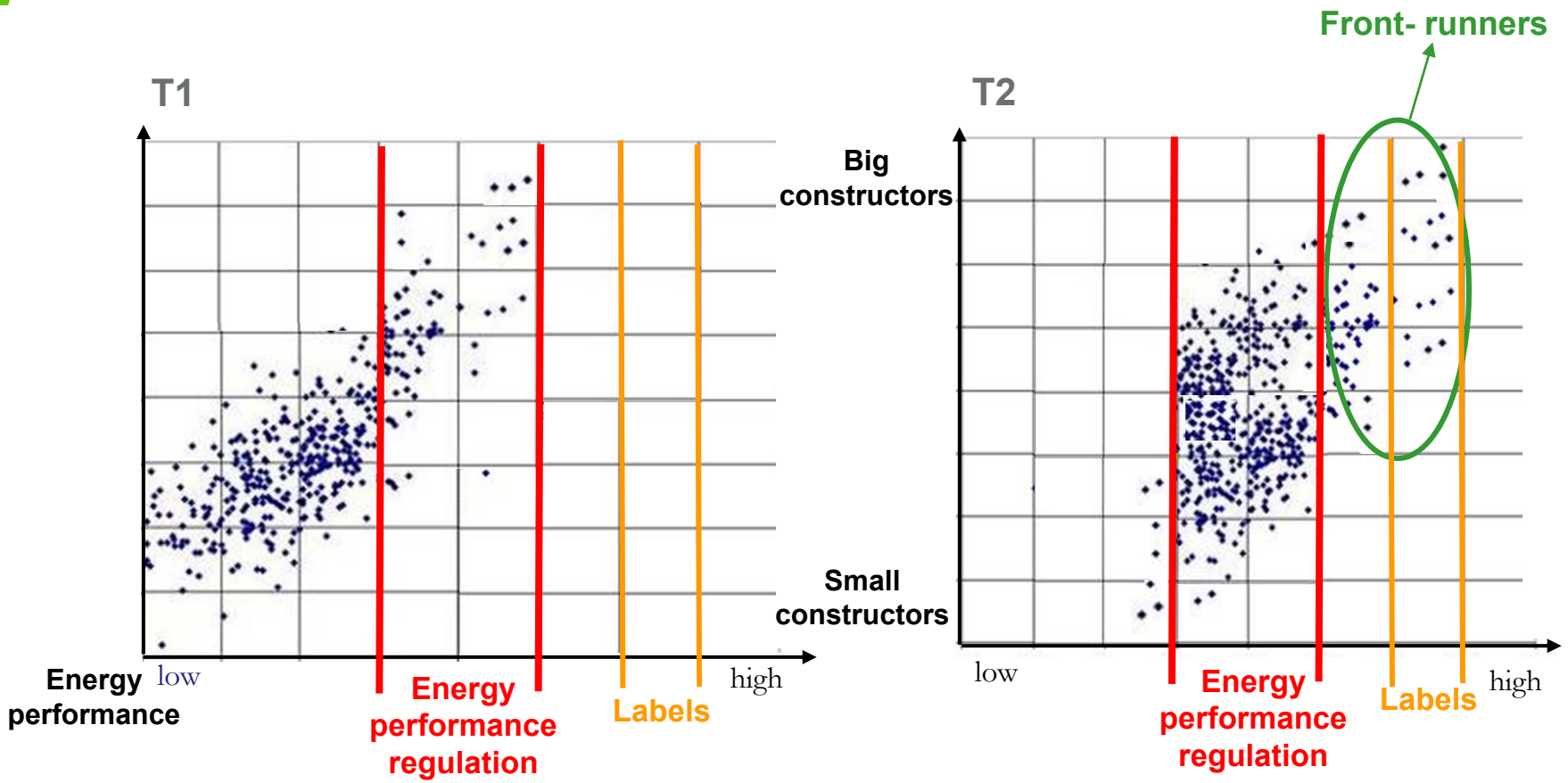


Source: CO2 Building Report, 2007, German Federal Ministry of Transport, Building and Urban Affairs

House energy consumption
examples of tightened mandatory requirements

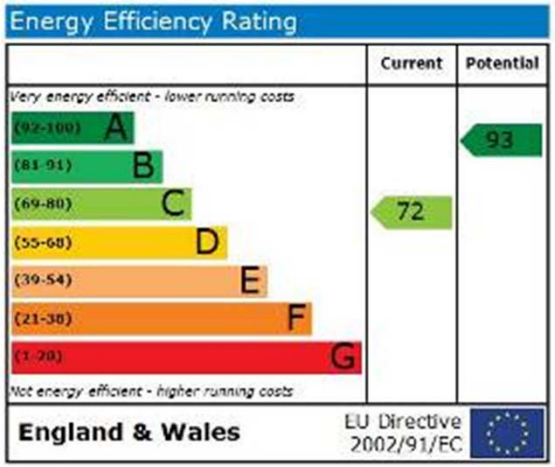


Actual impact of binding regulation on energy performance of new constructions

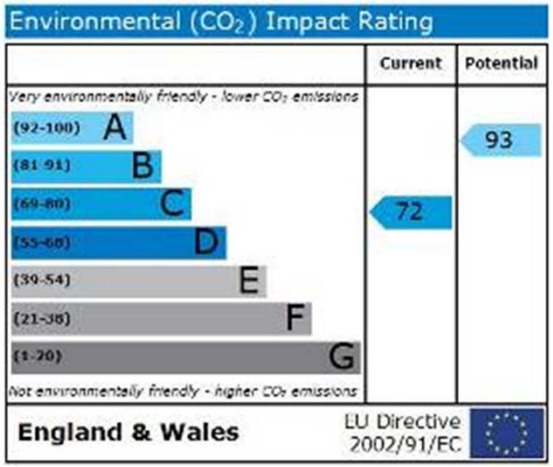


Complementary action to mandatory requirements: The Energy Performance Certificate (EPC)

➤ EPC : A tool to **make energy efficiency more visible** and to contribute to decision-making for tenants, buyers, owners.



The energy efficiency rating is a measure of the overall energy efficiency of a home.



The environmental impact rating is a measure of a home's impact on the environment in terms of CO_2 emissions

Positive side-effect

➤ **Employment effect**: green jobs

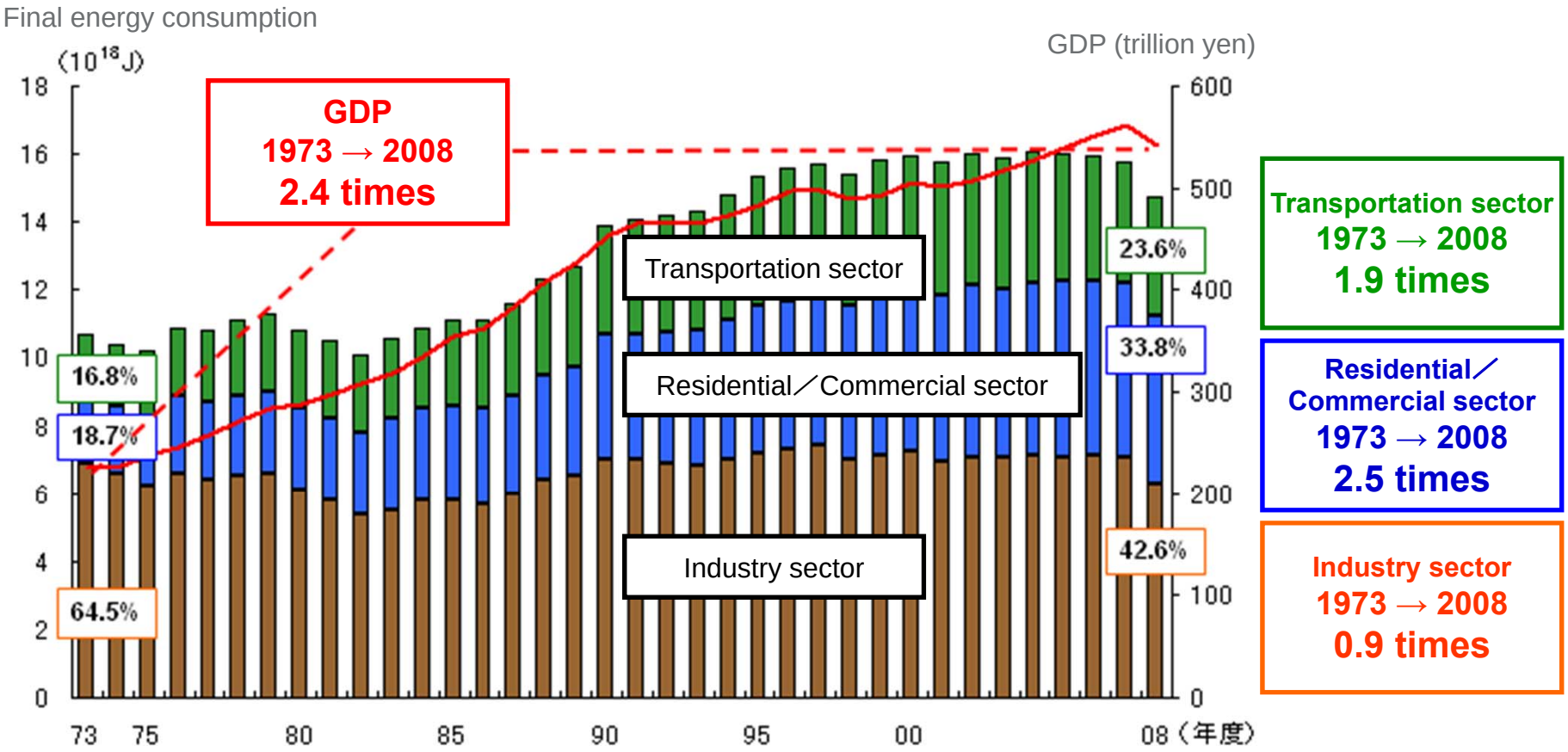
- Domestic jobs
- More qualified jobs

Brand new Isover plant in Chemille, France

➤ **More competitiveness and know-how** for the construction business at national and international levels.

Energy consumption in Japan

Trends of energy consumption by sectors in Japan



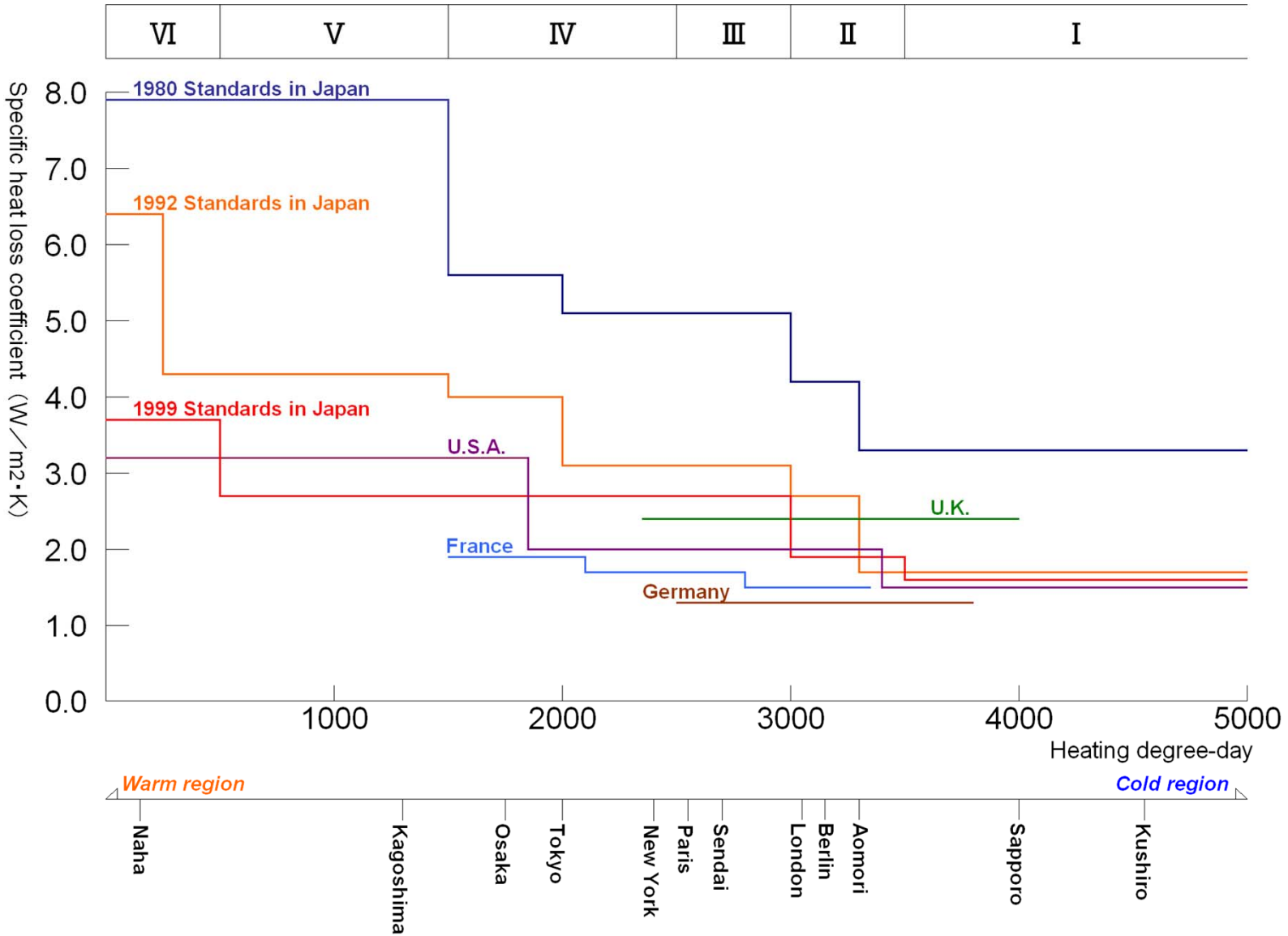
Energy conservation measures in Japan housing sector still have significant opportunities for improvement

- **Japan is at the leading edge in many sectors**
  - Environmentally friendly energy equipments
  - Automotive industry
  - Electronics
  - Environmental awareness

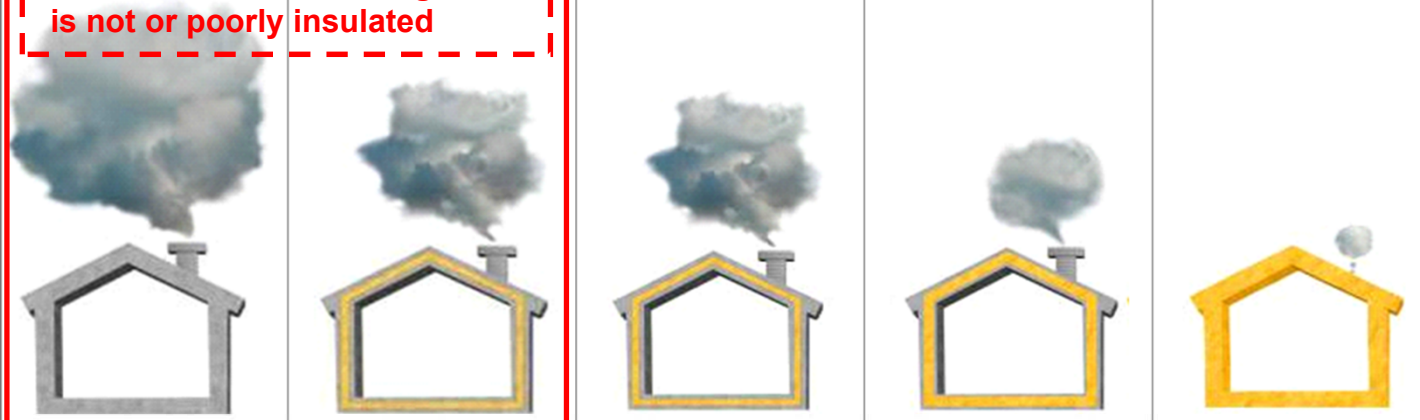
And in the housing sector?

Energy conservation standards for residential buildings in Japan

Comparison of Energy Efficiency Standards



Japanese housing sector is causing a huge energy-consuming

Energy conservation standards	NONE	Japan 1980 Reference	Japan 1992 Reference	Japan 1999 Standard	France low energy house
Energy consumption ※1 (MJ/m2/yr) (kWh/m2/yr)	over 1030	1030 286	800 222	460 127	below 180 below 50
CO2 Emissions (Image)	About 70% of the existing stock is not or poorly insulated 				
Percentage of existing housing - Stock at the time of 2009 ※2	55%	21%	19%	5%	-
Percentage of new housing - Construction in 2010 ※3		8%	45%	47%	

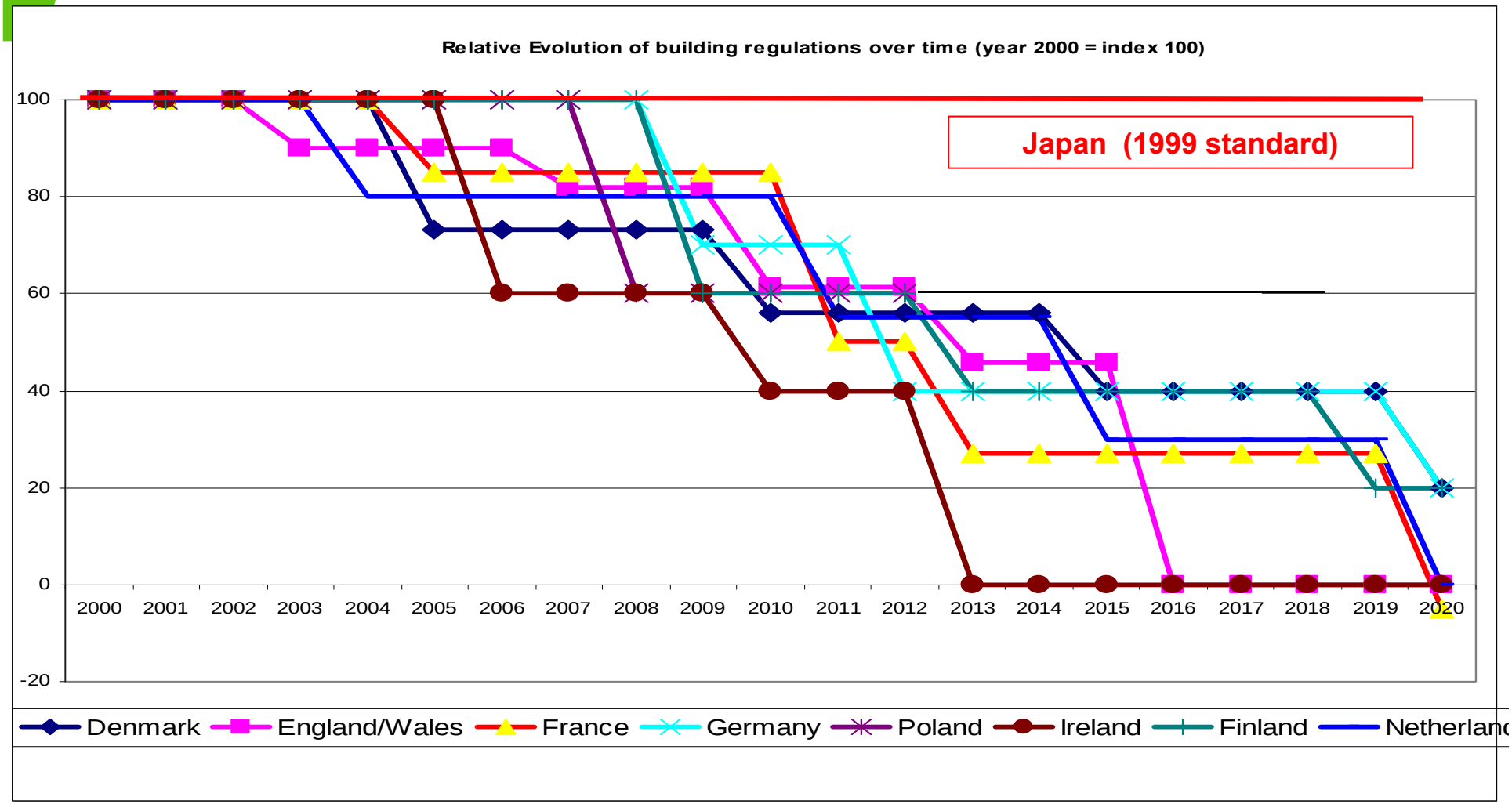
※1 Validation in Ⅳ regions (Tokyo,Nagoya,Kyoto,Osaka,etc...) 1 kWh = 3.6 MJ

※2 Existing housing stock : 47 million homes (Source:MLIT)

※3 Estimation of MAG-Isover

Only about 50% of new housing are built according to 1999 standards

Evolution of energy efficiency criteria - New residential buildings



Source: Saint-Gobain, 2008

By 2020, the energy saving standards will be mandatory

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新築建物に省エネ義務

断熱・太陽光発電を推進

国交省、20年度まで段階導入

国土交通省は不動産・建築業者に対し、住宅やビルなど全ての建築物を新築する際に、一定の省エネルギー基準を満たすよう義務付ける方針だ。建築物ごとにエネルギー消費量の上限を定め、断熱材などを使って冷暖房の効率を高めるよう求める。2020年度以降は基準を満たさなければ建築を認めない。義務化までは、基準を満たした業者や個人に対して税を優遇する。二酸化炭素（CO_2）など温暖化ガスの排出抑制につなげる狙いだ。（建築物の省エネ基準は3面「きょうのことば」参照）

国交省は10月にも業界関係者や学識経験者が参加する会議を開き、義務化に向けた具体策を協議する。省エネ基準を定める省エネルギー法を13年中にも改正する方針で、経済産業省、環境省などと細部を詰める。

建築物の省エネ基準は現在もある。住宅は省エネ法に基づいて1999年に定めたが、義務化は見送った。この基準に基づいた住宅を建てるコストは通常より1割前後高いため、基準を満たす新築住宅は全体の4割弱にとどまる。

まず年内にも新基準を固める。具体的には建物の用途や大きさごとに、冷暖房や照明などで使うエネルギーの上限を定める。地域ごとに基準の内容を変え、寒冷地などにも配慮する。

新基準は、省エネが不十分な住宅よりエネルギー消費量が2～3割少ない水準に設定する。基準を満たすため、壁や天井に断熱材を入れるなどを求める。太陽光発電を導入する場合は、その発電量はエネルギー消費量から差し引く。

建築物が基準を満たしているかどうかの認定制度を12年度にも始める。業者が新築を申請する際に、市町村が建材の種類をチェックする。

省エネ基準を満たす住宅を建築した業者に対しては、省エネ効果が高い建材の費用を課税所得から差し引く方向。個人に対しては住宅ローン減税の減税幅を広げるなどの優遇策を検討する。

周知が必要なため実際の義務化は20年度ごろになる。先行して認定制度や税優遇を導入し、省エネ基準を満たす建材の普及につなげる。

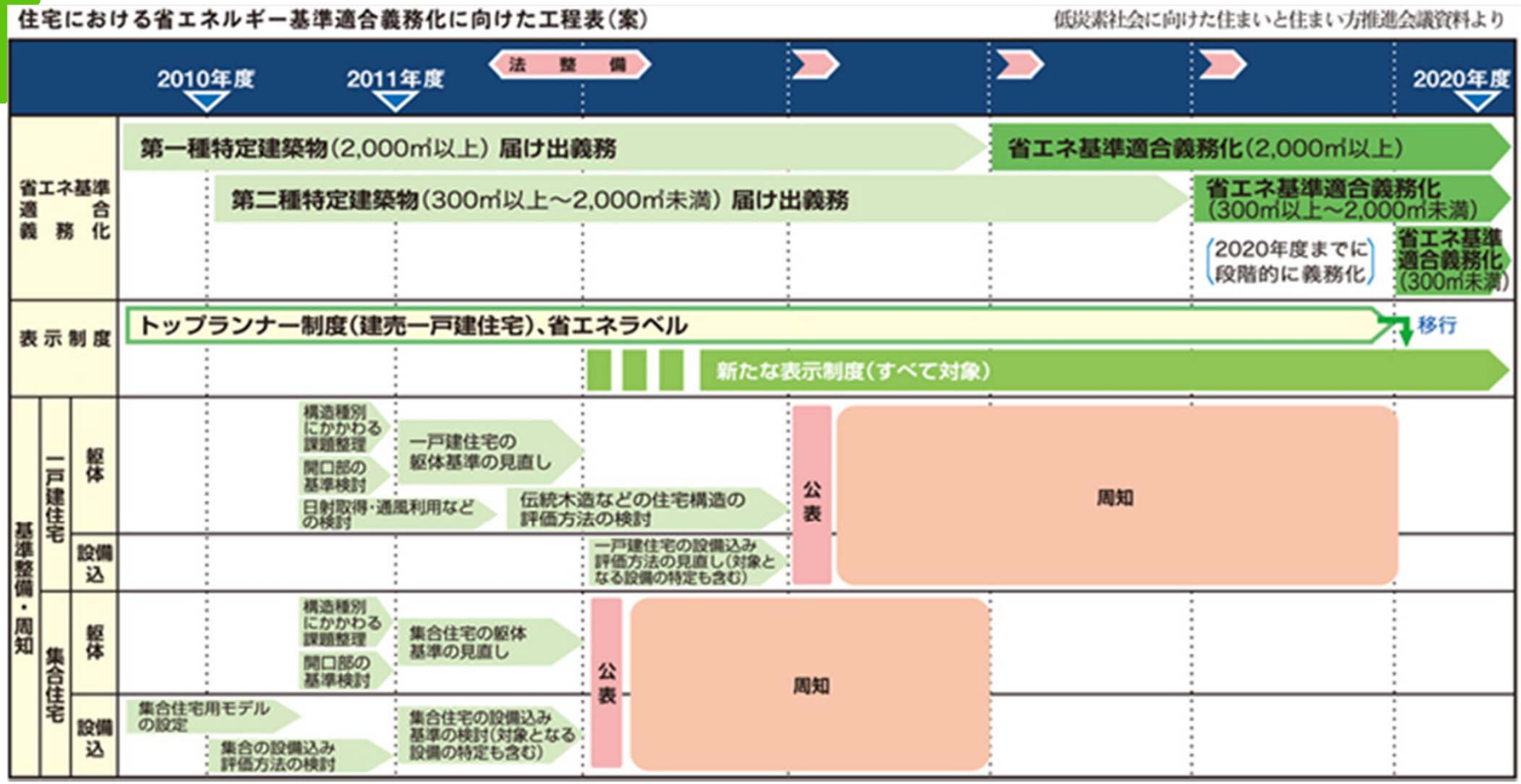
既存の建築物については義務付けを見送る。検査に莫大な手間がかかるうえに、改修を義務付ければ反発を招く恐れがあるためだ。ただ省エネ改修を怠れば、売買価値が新築に比べて相対的に低くなるため、国交省は結果的に改修が進むとみている。将来は既存住宅に省エネ性能の表示を義務付ける構想もある。

国交省によると、建築物から出るCO_2の排出量は日本全体の3割超に達する。

新制度のイメージ

General
Packaging
Industry

By 2020, the energy saving standards will be mandatory



At last, Japan is considering to adopt mandatory energy conservation standards.
Mandatory energy conservation standards will be implemented gradually, first to large buildings and then to all residential buildings by 2020.

The direction is good, but…..

- Why so late? (2020)
- Why the 2000/300 m2 threshold ?

And

- What new standard ?
- 次世代基準 reflects the vision of 1999.

次世代基準 has to be updated

➤ Other countries have continuously updated their standards (France RT 2000, RT 2005, RT 2012)

And, most important：

➤ Energy supply is no longer considered easily available.

Proposal

- 次世代基準 (1999) mandatory
  - As soon as possible. (2015?) (2020 is late)
  - Applicable to all buildings, whatever the surface.
  - No incentive necessary if mandatory.

- 次次世代基準 to be defined.
  - as soon as possible.
  - Showing a strong improvement. (= French RT2012)
  - Helped by incentives, to become later the next mandatory standard.

The increase in thermal insulation demand results in an increase of new industry and employment.

MAG-ISOVER

Isover in Japan

- Establishment : 1 April 1987
- Sales volume in 2010 : 19.8 billion Yen
- Employees : 371
- Business details
  1. Glass fiber products (glass wool) sales and manufactures - for thermal insulation materials, acoustic insulation materials and other building materials -
  2. Glass wool for thermal and acoustic insulation materials, Construction design, Supervision and technical guidance

明野工場（茨城県）

土浦工場（茨城県）

垂井工場（岐阜県）

本社

To meet the growing demand for insulation

Decision to build the 4th New Manufacturing Plant:
Tsu Plant is being constructed to meet the increasing demand in the building insulation area .

◆Brief outline of Tsu Plant

Beginning of operations：Expected to operate at the end of 2013

Production capacity：60,000 tons per year.

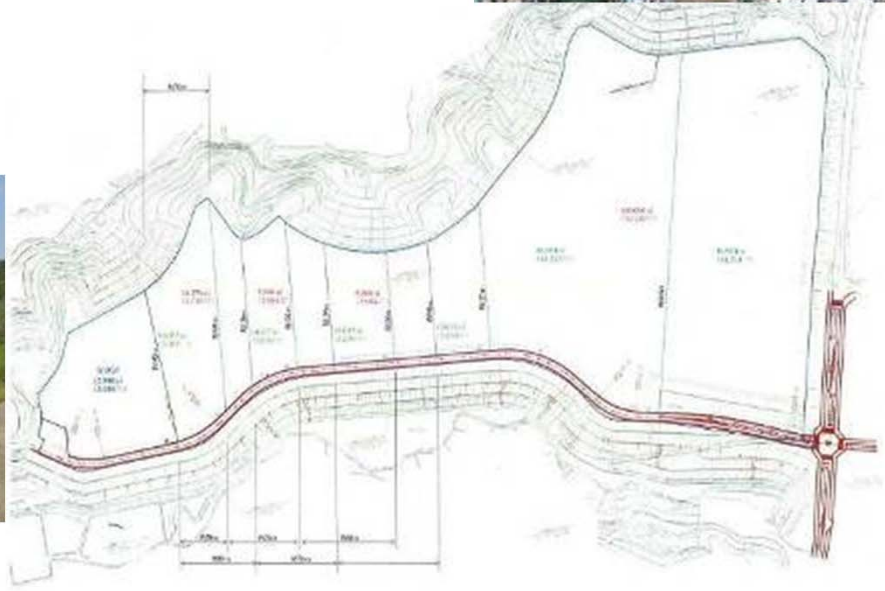
Production item：Residential construction insulation glass-wool

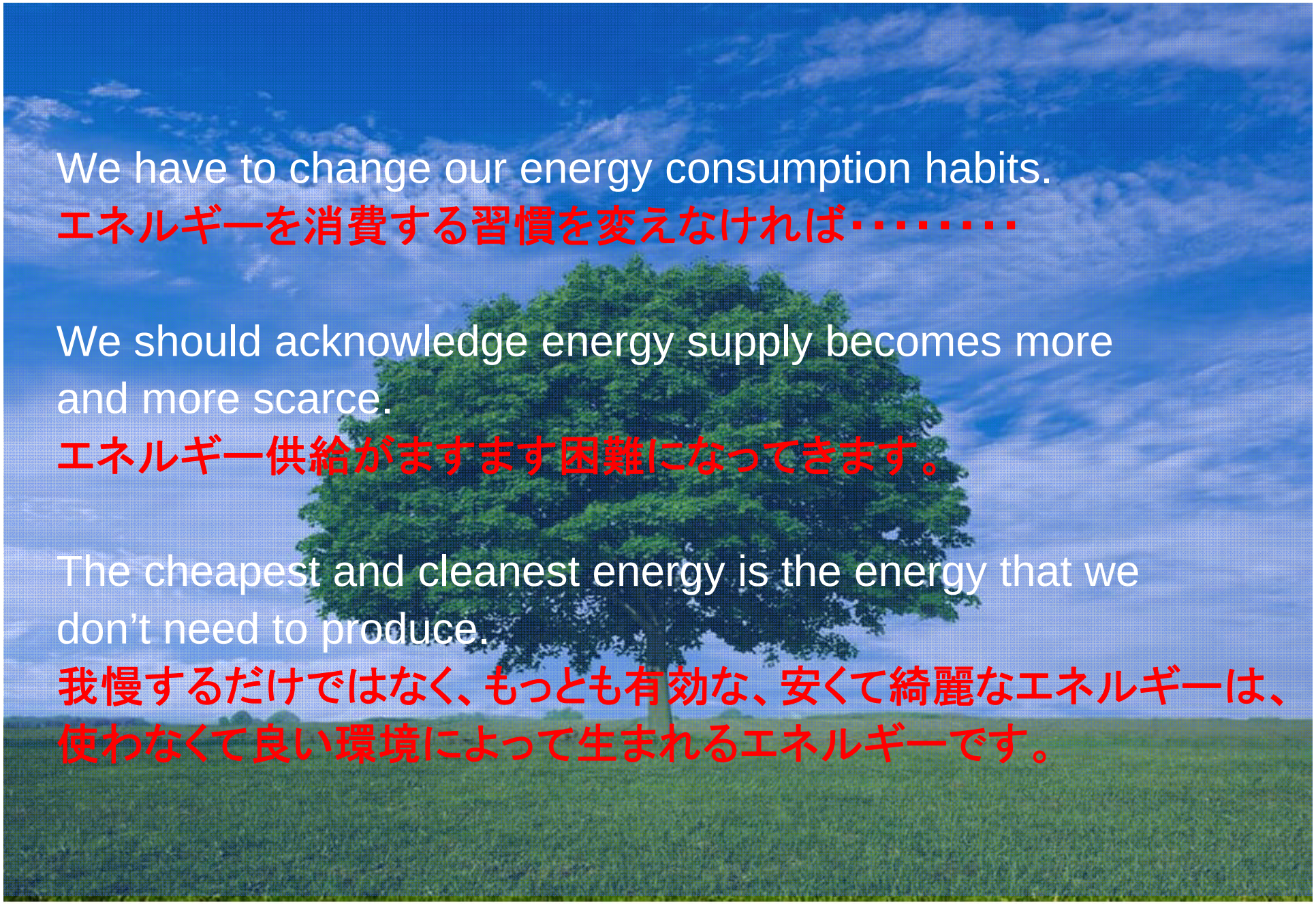
Payroll number：About 100 employees

Aggregate investment ：About 15 billion yen

Location：Ikeuchi Morimachi Tsu Mie

Site area：137,030 square meters




We have to change our energy consumption habits.
エネルギーを消費する習慣を変えなければ・・・・・・・
We should acknowledge energy supply becomes more and more scarce.
エネルギー供給がますます困難になってきます。
The cheapest and cleanest energy is the energy that we don’t need to produce.
我慢するだけではなく、もっとも有効な、安くて綺麗なエネルギーは、使わなくて良い環境によって生まれるエネルギーです。

Appendix

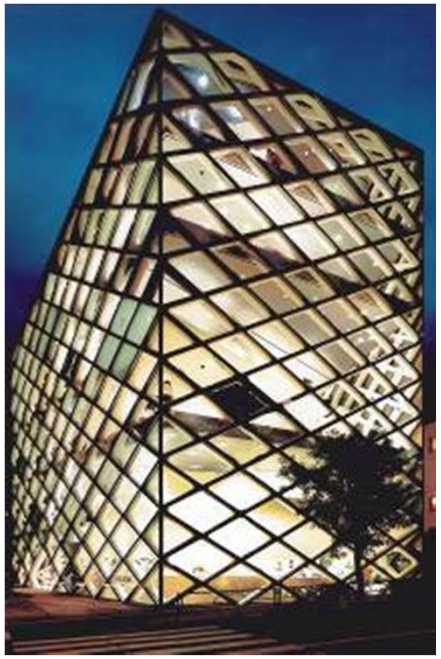
Saint-Gobain Group

Saint-Gobain Group

ベルサイユ宮殿 鏡の間

World leader on housing and construction markets

- Establishment : 1665, France
- Sales volume in 2010 : 4.035 trillion Yen
  (rate: 1 Euro=108 Yen on 7 September 2011)
- 4 business areas:
  1. The innovative materials sector
     (flat glass division - High-Performance materials division)
  2. The construction products sector
  3. The building materials distribution sector
  4. The glass containers sector



プラダビル（表参道）

サンゴバン本社（パリ）

中国国家大劇院（北京）

ISOVER

SAINT-GOBAIN INSULATION LOCATIONS IN THE WORLD

クリール研究所

Present in 40 countries - 9,500 employees