

WEC Africa workshop on energy
efficiency

Addis Ababa, June 29-30 2009

Labelling, standards and energy savings obligations

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Enerdata

Regulations to increase the energy efficiency of appliances and buildings

- Several types of regulatory measures are applied in the household and service sectors to promote energy efficiency.
- The regulatory approach is all the more relevant as in the household sector energy efficiency measures have to modify the behaviours of millions of consumers, that lack information and resources to act.
- The main regulations are
 - Mandatory labelling of new appliances
 - Minimum energy efficiency standards (MEPS) for new appliances
 - Mandatory standard on the energy performance of buildings
 - Interdiction of inefficient appliances (e.g. lamps)
 - Obligation for energy utilities to make energy savings with their consumers (“energy savings obligation”)
 - Obligation of maintenance (e.g. obligation of inspection of boilers and air conditioners in the EU.

Which appliance to prioritise in the regulations?

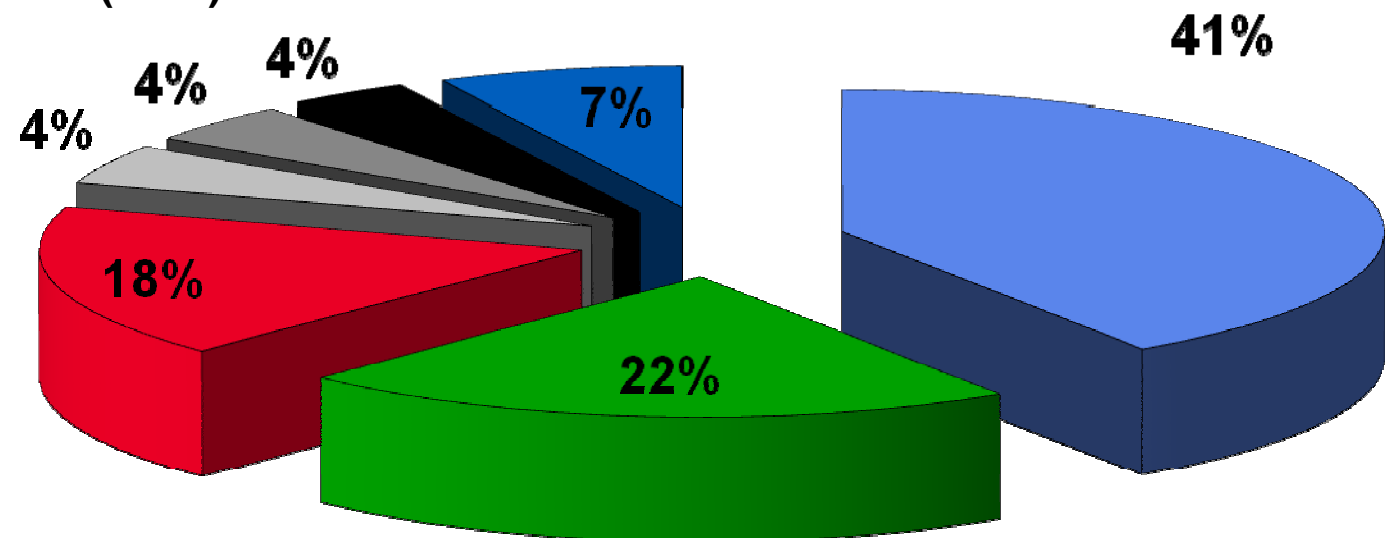
Refrigerators

TV

Lighting

Air conditioning

Electricity consumption by type of equipment in Tunisia (2004)



■ Refrigerators
 ■ TV
 ■ Lighting
 ■ AC
 ■ Water heating
 ■ Heating
 ■ Other

Labelling of electrical appliances

- Objective: influence the consumers when they buy a new appliance with a well designed and informative coloured label that displays the energy efficiency of each appliance on sale
- Introduced in the EU and some other OECD countries
- Adapted in many non OECD countries

EU

Energy + Efficiency

Manufacturer Model	Logo ABC 123
More Efficient	
A	
B	
C	
D	D
E	
F	
G	
Less Efficient	
Energy Consumption kWh/year <small>(based on standard test results for 24h) (Actual energy consumption will depend on how the appliance is used, and where it is located)</small>	575
Fridge/Freezer Refrigerator Freezer	*(*)***)
Storage Volume Fresh Food Frozen Food	150 L 125 L
Noise	62 dB (A)

A fiche giving details is contained in product brochures.
Norm EN153 May 99
Refrigerator label directive Nº 94/10/EC

Thailand (Australian model)

ระดับประสิทธิภาพ
ฉลากแสดงระดับประสิทธิภาพอุปกรณ์ไฟฟ้า
ประเภท : ตู้เย็น

ประสิทธิภาพ 240.08 ลบ.เดซิเมตร/หน่วย
ค่าไฟฟ้า 683.35 บาท/ปี
ใช้พลังงานไฟฟ้า 270.10 หน่วย/ปี

ตู้เย็น SHARP รุ่น SJ-JX59A
ขนาด 167 ลิตรแบบแช่แข็ง (5.9 ตัวบ่งชี้)

ร่วมมือประชคมลดอัตราภาษี
ร่วมใจประหยัดไฟฟ้า

Brazil (EU model)

Energia (Elétrica) REFRIGERADOR

Fabricante Marca Tipo de degelo	ABOCCF XYZ ABC Automático
Modelo /tensão(V)	IPQR/220V
Mais eficiente	G
A	
B	
C	
D	
E	
F	
G	
Menos eficiente	
CONSUMO DE ENERGIA (kWh/mes) <small>(dados referem-se ao mês)</small>	XYZ
Volume do compartimento refrigerado (ℓ)	000
Volume do compartimento do congelador (ℓ)	000
Temperatura do congelador (°C)	*** **

INMETRO - INSTITUTO NACIONAL DE METROLOGIA, QUALIDADE E PESAGEM

PROCEL PROGRAMA DE COMBATE AO DESPERDÍCIO DE ENERGIA ELÉTRICA

INMETRO

IMPORTANTE: A REMOÇÃO DESTA ETIQUETA ANTES DA VENDA, ESTA EM DESACORDO COM O CÓDIGO DE DEFESA DO CONSUMIDOR

Iran (EU model)

انرژی
تولید کننده
مدل

علامت تجاری نام نوع	
پایزه	۱
	۲
	۳
	۴
	۵
	۶
	۷
کم پایزه	
مصرف انرژی (کیلو وات-ساعت در سال) (روماني نتایج آزمون استاندارد در ۳۳ ساعت)	XYZ
مجموعه فریزر و یخساز در مجموعه فریزر و یخساز (لیتر) حجم قسمت یخساز (لیتر) حجم قسمت فریزر (لیتر)	XYZ XYZ *** **
ایجاد صدا (دسیبل)	XY

معاونت انرژی - وزارت نیرو
۱۳۷۷

Energy labels for household appliances in Africa (2009)

Algeria

Refrigerator : P
 Air conditioning : P
 Lamps : P

Tunisia

Refrigerator : Yes
 Washing machine : P
 Air conditioning : Yes
 Lamps : P
 Water heaters : Yes

Senegal No

Egypt: refrigerator, washing machine, AC

Ghana

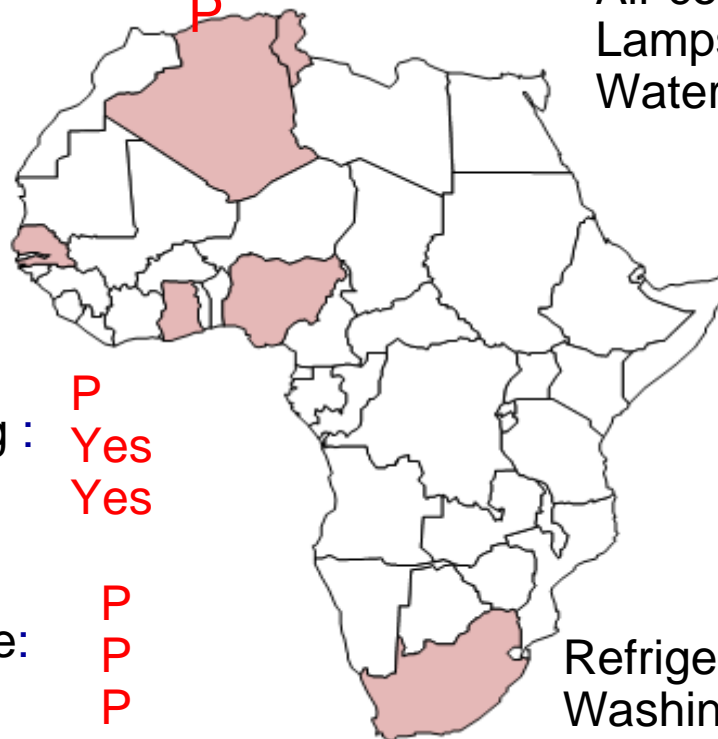
Refrigerator : P
 Air conditioning : Yes
 Lamps : Yes

Nigeria

Refrigerator : P
 Washing machine : P
 Air conditioning : P
 Lamps : Yes
 Water heaters : Yes

South Africa

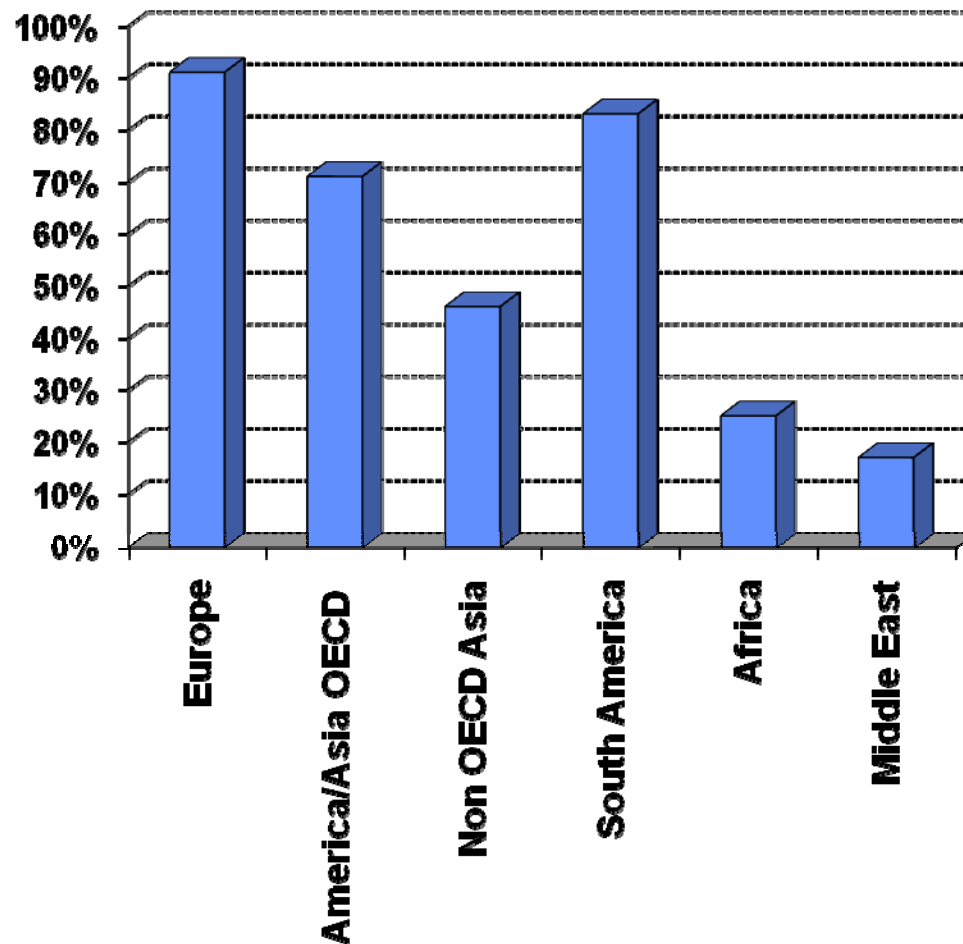
Refrigerator : Yes
 Washing machine : P
 Air conditioning : P
 Lamps : P
 Water heaters : P



P: Planned

Diffusion of labelling on electrical appliances

Refrigerators (2007)



✓ **Mandatory labelling** of main appliances in all European countries

✓ **Labelling** well developed for refrigerators in Latin America

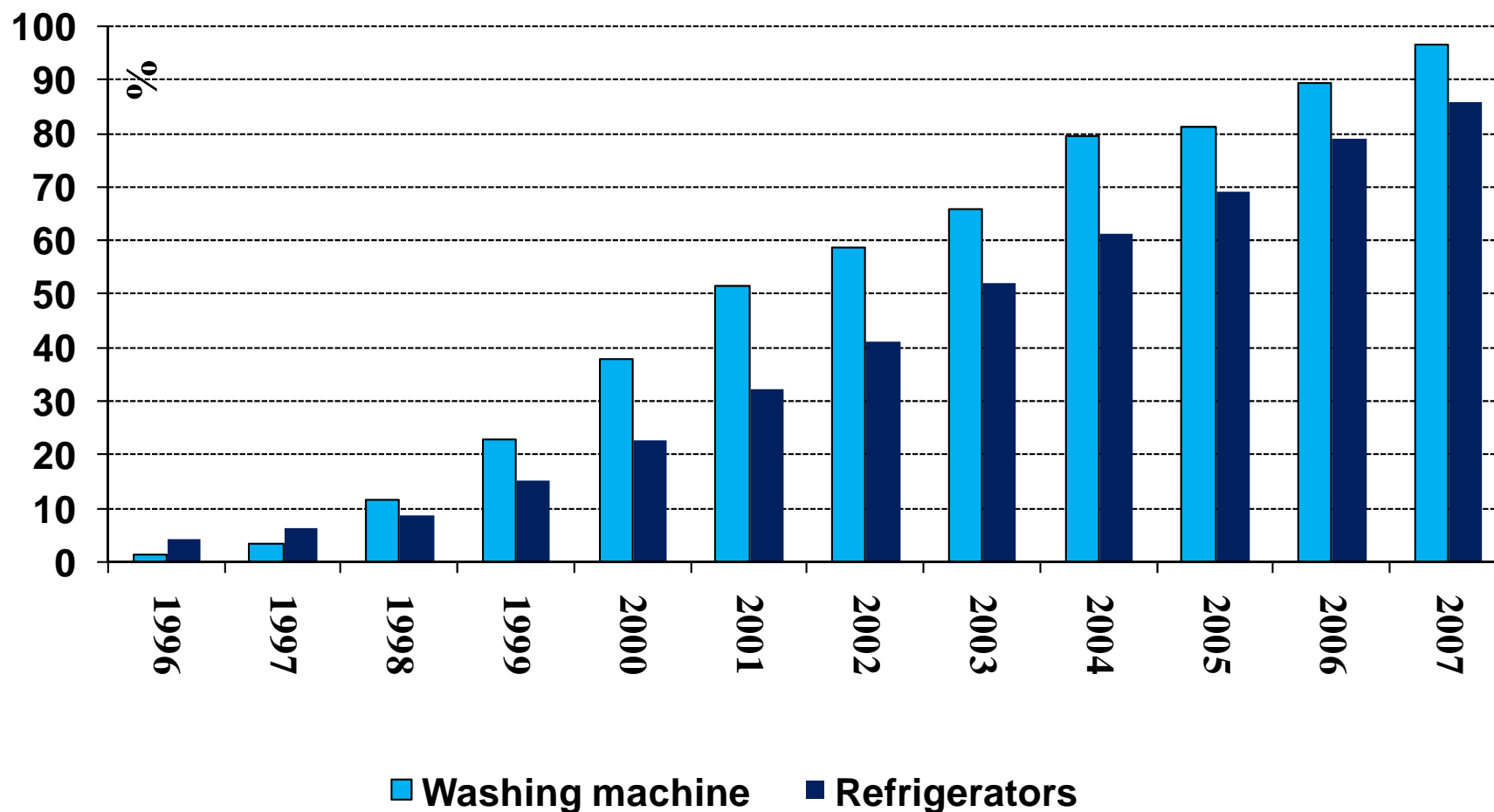
✓ In **Africa & Middle East**, labelling of refrigerators not well spread

✓ **Labelling for air conditioning** in 40% of countries (all America/Asia OECD, 1/3 of countries in Middle East)

Source WEC survey (2007)

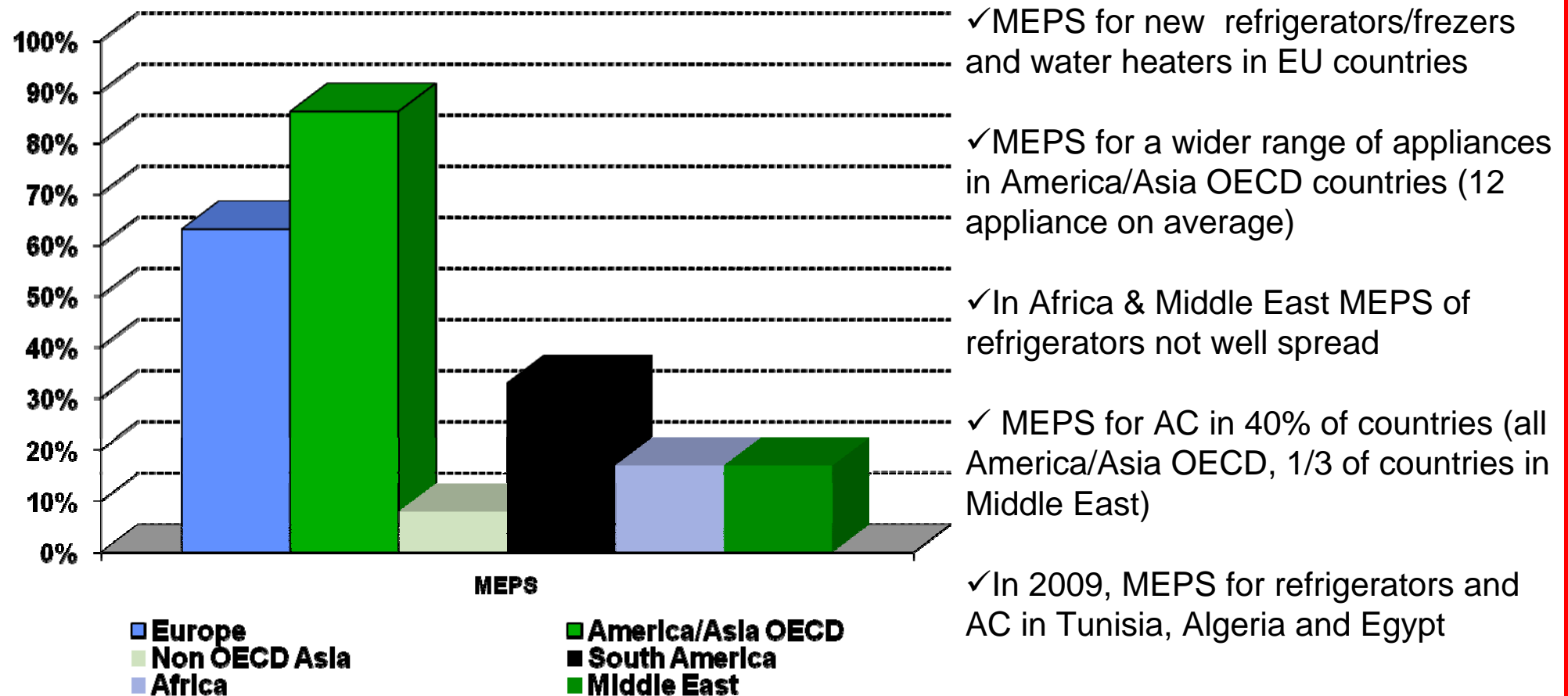
Impact of the EU Directive on labelling on the market penetration of efficient new refrigerators and washing machines

Share of labels A/A+ in new appliance sale



Diffusion of efficiency standards (MEPS)* for new electrical appliances

Refrigerators (2007)

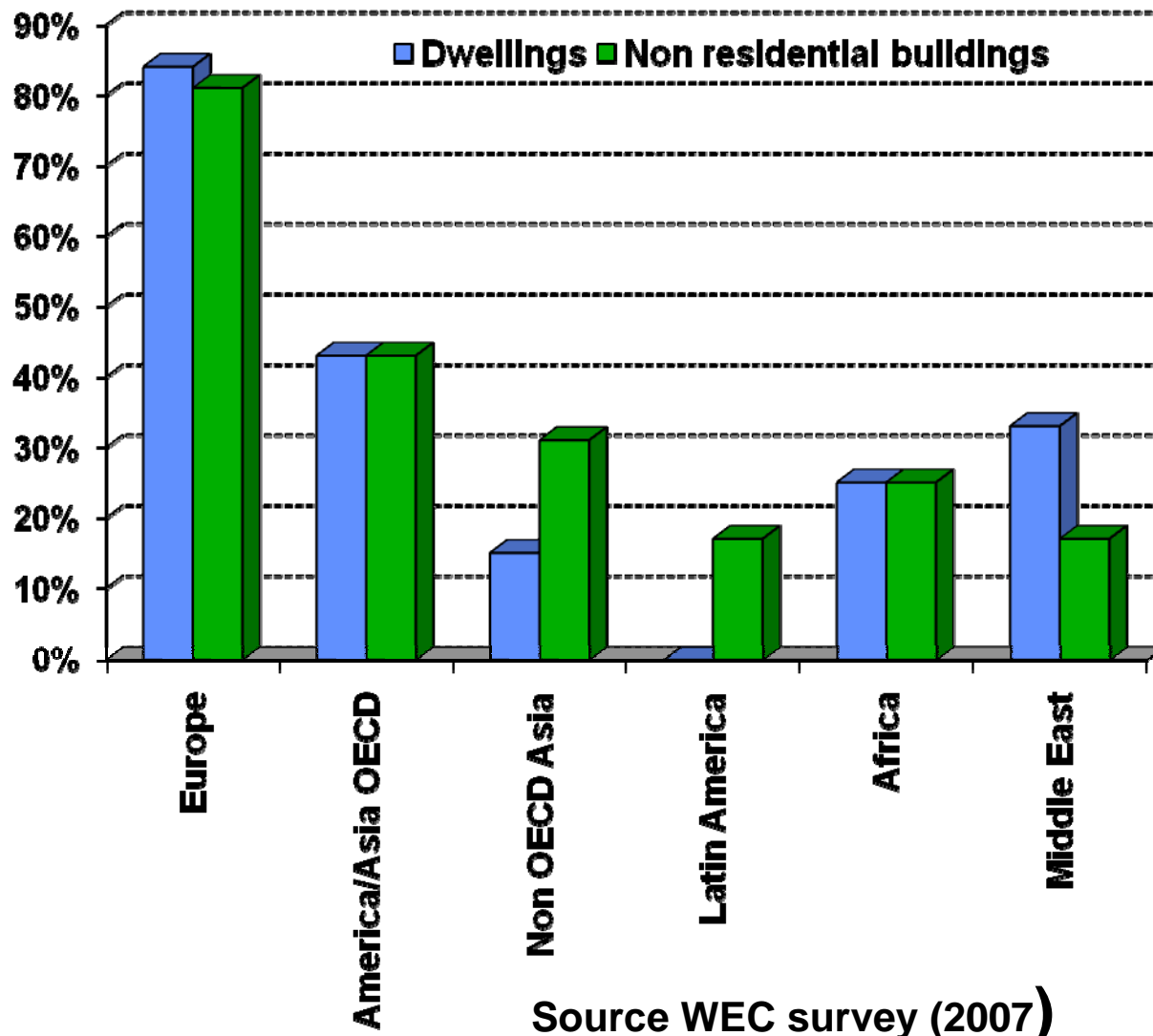


*MEPS: Minimum Energy Performance Standard; AC: Air Conditioning

Lighting

- Lighting: ~20% of the household consumption of electricity at world level, in the EU or Tunisia;
- Diffusion of energy efficient lamps (CFL) in the place of incandescent lamps → savings between 75 and 80% (consumption 4 to 5 times less)
- Several countries have decided or are engaged in the prohibition of the sale of incandescent lamps, in general between 2011 and 2015 (effective prohibition in Cuba since 2007):
 - Australia and New Zealand among the first
 - Followed by many countries or States (France, the U.K., Ireland, Portugal, Belgium, the Netherlands, Canada, California, the USA, Ghana and Thailand);
 - European directive in preparation
- In general progressive prohibition according to the types of lamps

WEC survey : Building regulations



•Europe

- ✓ Mandatory efficiency standards for new dwellings or buildings) in more than 80% of countries, close to 100% now
- ✓ Mandatory revisions every 5 years in the EU
- ✓ Extension to large existing buildings that undertake major renovations (>1000 m² to be lowered soon);
- ✓ Obligation of certificate of energy performance for existing buildings for renting or sales

•Other regions

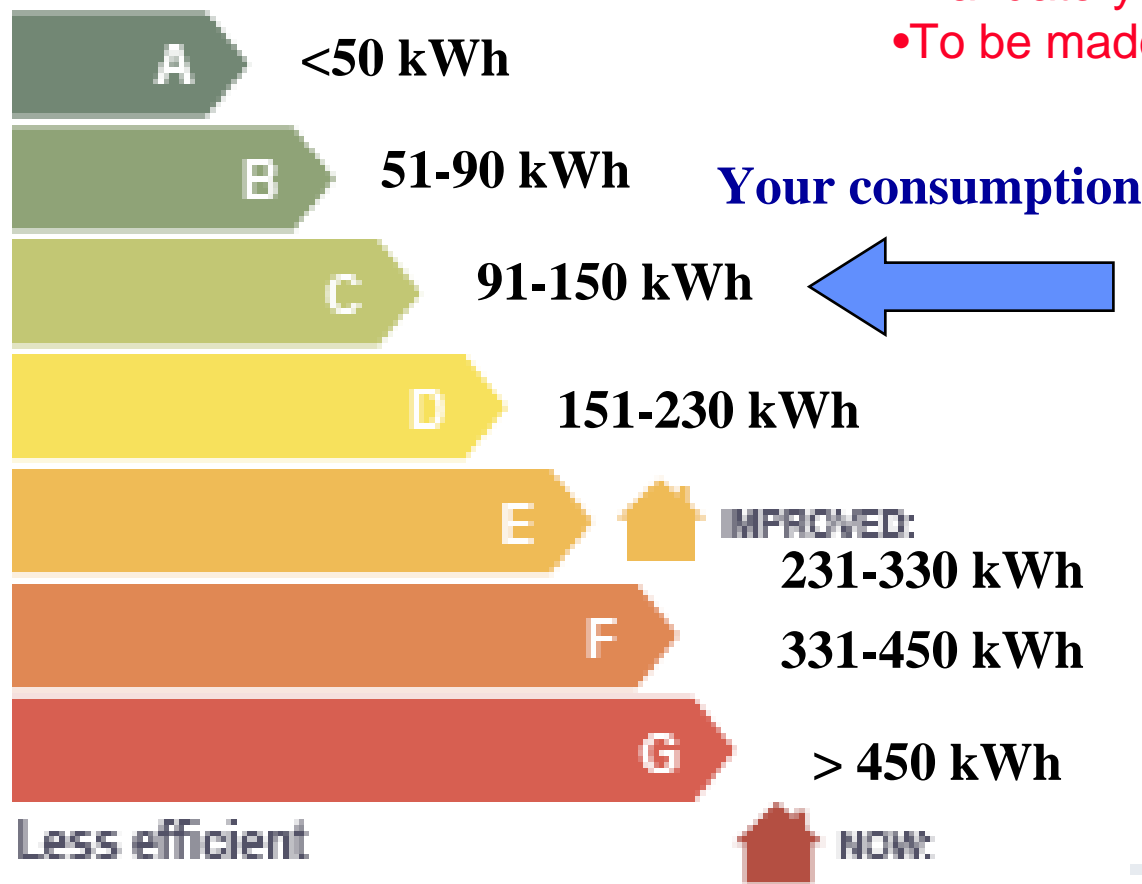
- ✓ Increase of the number of countries with standards for new dwellings (only Non OECD Asia and Latin America have less for dwellings)
- ✓ Often voluntary standards

Certificate of energy performance for buildings: case of the EU

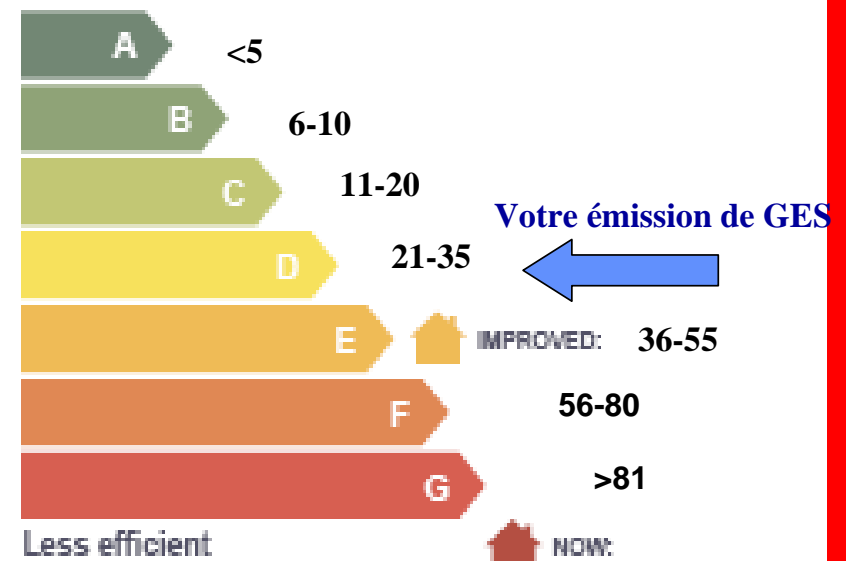
Certificate in France

- New and innovative measures
- Mandatory in all EU member countries
- To be made by certified professionals

More efficient



More efficient



kg CO₂/m²

Standards for new buildings in Africa (2009)

Algeria

Residential/ Public / Commercial : 2005, mandatory, ~ 35%

Tunisia

Residential : 2009, mandatory, ~ 30%
Public / Commercial : 2010, mandatory, ~ 30%



Senegal: Planned

Ghana: No

Nigeria: No

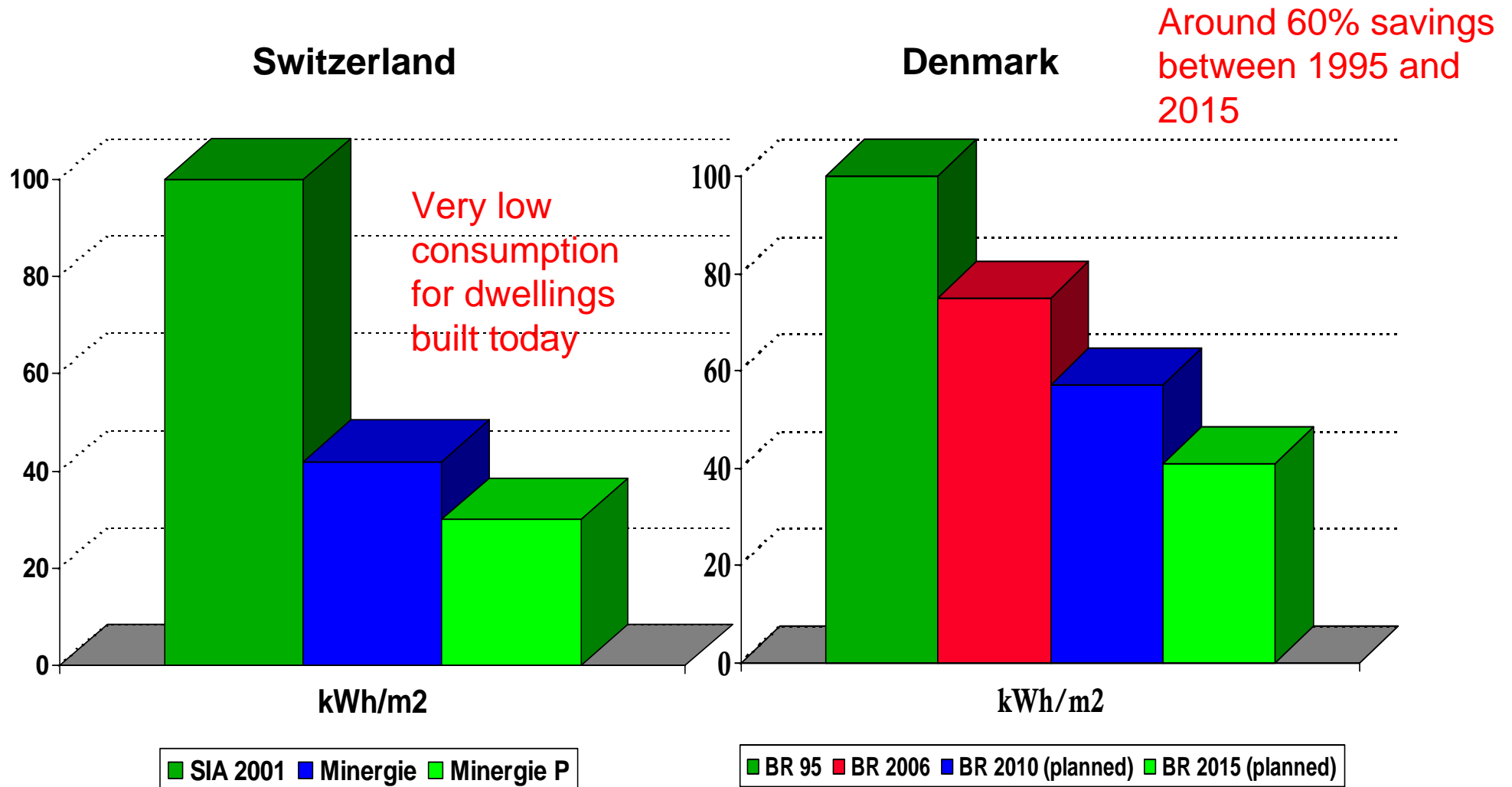
South Africa:

Residential : 2008, voluntary
Public / Commercial : 2008, voluntary

Energy efficiency standards for new buildings

- In most EU countries, about 70% savings in new dwellings built now compared to dwellings built in the 70,s, but...
 - Slow impact due to the low progression of the stock of dwellings (new dwellings about 1% of the stock in the EU (dwellings built after 1990 only represent now less than 20% of the total stock)
 - Real savings maybe well below the expected savings because of:
 - ✓ no compliance;
 - ✓ insufficient quality of construction
 - ✓ and change in household behaviour (rebound effect)
- Best experience in Europe: Switzerland and Denmark
- Extra cost of upgrading the standards usually small - around 2-3 % due to learning effects)

Reduction in energy requirement of new buildings according to regulation: case of Switzerland and Denmark



Energy Savings Obligations

- New approach imposing energy savings obligations to **energy companies** (starting in UK and now spread to 5 other EU countries):
- Savings to be obtained from their consumers (in customers' premises);
- Target of energy savings:
 - in annual saving or cumulated savings over the life time of the investment
 - in primary or final energy
- Target related to “volume” supplied/distributed/residential numbers ;
- If no compliance penalty according to the amount of savings not reached
- Way of having private actors(the companies) taking the initiative in promoting energy efficiency
- Address some of the barriers to energy efficiency in the household sector (information, financing)
- Possibility of trading in some countries → “white certificates”

Energy Efficiency Obligations in the EU (2007)

- Main sector targeted: households
- Volume of savings of the obligation generally fixed by government
- Control by regulators or governments

Country	Obligated Distributors	Eligible Customers
Belgium (Flanders)	electricity	Residential, non energy intensive industry and services
France	electricity, gas, oil & heat	All except energy intensive industries
Italy	electricity & gas	All
UK	electricity & gas	Residential only
Ireland	electricity	All except transport
Denmark	electricity, gas & heat	All except transport

Energy Efficiency Obligations in the EU (2007)

Country	Saving target	Target	Discounting of savings	Penalty	Trading
Belgium	Annual primary energy	0.58 TWh/year	No	10€/MWh	No
France	Lifetime primary energy	54.7 TWh over 3 years	Yes (4%)	20€/MWh	Yes
Italy	Cumulative primary energy	33.7 TWh over 5 year	No		Yes
UK	Lifetime final energy	62 TWh over 4 years	Yes (3.5%)		Limited
Ireland	Lifetime final energy	0.24 TWh/year	No		n/a
Denmark	Lifetime final energy	0.12 TWh/year	Yes	n/a	n/a

Lessons learned with energy saving obligations

- Saving obligations work in both monopoly or liberalised electricity markets; and on electricity supplier or distributor
- Savings measured as deemed savings to keep administration and verification costs of the “authority” low (few %)
- Cost ultimately paid by consumers – typically 1-2% of energy bill & does not come out of Governmental expenditure
- Potential for developing countries?
 - Saving obligations are simple to implement
 - Need to adapt deemed savings in local circumstances
 - No cost for public budget

Conclusions

- Labelling is an innovative measure to inform consumers about the energy efficiency performance of the equipment they are going to buy... However the impact depends on the size of the market for new equipment (versus second-hand)
- To remain effective, regulations need to be regularly revised and enforced
- Energy saving obligations for utilities is a promising market based instruments both for industrialised and developing countries

Thank you

For more information:

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- **For world energy data and indicators: www.enerdata.fr**
- **For energy efficiency indicators in the EU: www.odyssee-indicators.org**
- **For energy efficiency measures in Europe: www.mure2.com**
- **For energy efficiency activities at WEC: www.worldenergy.org**