

Joint Research Centre (JRC)

**EU Sustainable
Energy Week**

11-15 April 2011

**Conference “Boosting Renewable Energy
Supply and In-Store Energy Efficiency”**

Energy sustainability: EC policies and concrete studies

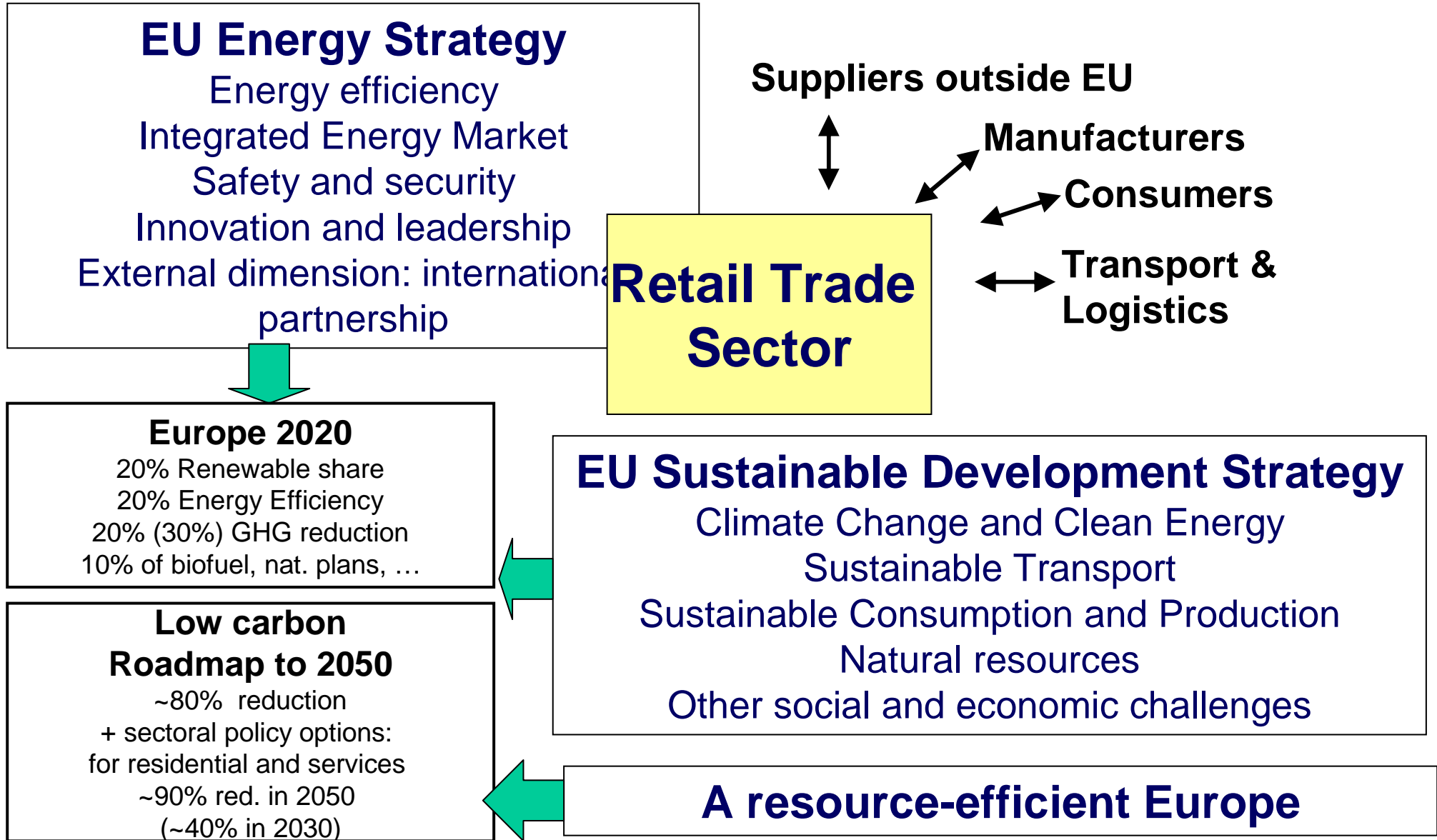
Dr. Harald Schönberger / Dr. Jose Luis Galvez Martos

IPTS - Institute for Prospective Technological Studies

Seville - Spain

<http://ipts.jrc.ec.europa.eu/>

1. The **Policy Context** of energy efficiency and environmental performance of retailers
2. The **Improvement Potential** of the energy performance of retailers
3. The **Reference Document** on best environmental management practice of the retail trade sector
4. Options to **reduce** the energy demand
5. Options to be **more energy efficient**
6. Options to use **better energy sources**



All the policy instruments identify retailers as the activity with high influence on consumers

Therefore, retailers are essential for the implementation of many environmental initiatives, regulations or directives, for example:

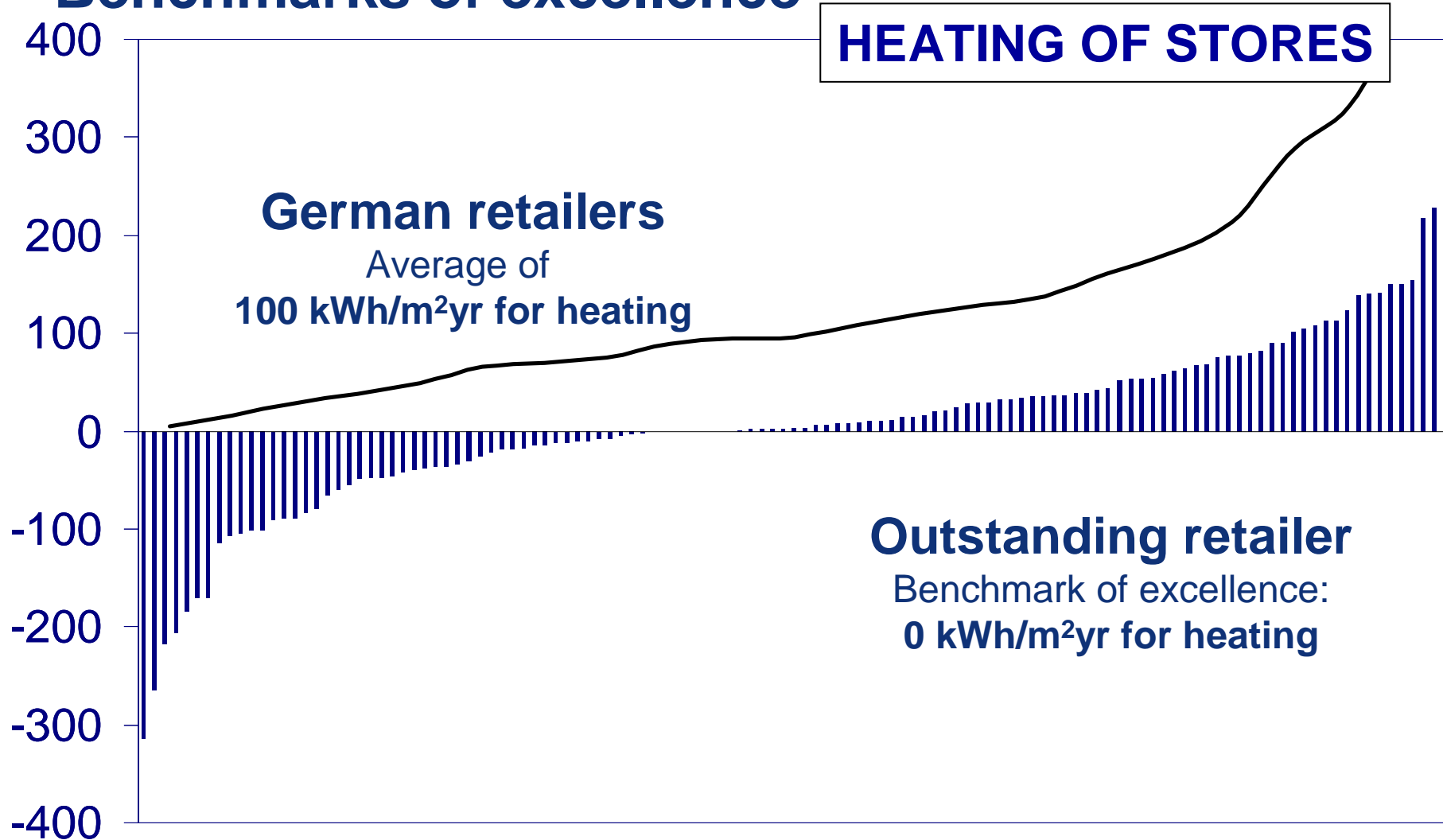
- Offer of Ecolabeled products
- Waste policy: WEEE, National plans, etc.
- Choice editing of energy efficient equipment, mandatory (e.g. ecodesign) or voluntary
- ...

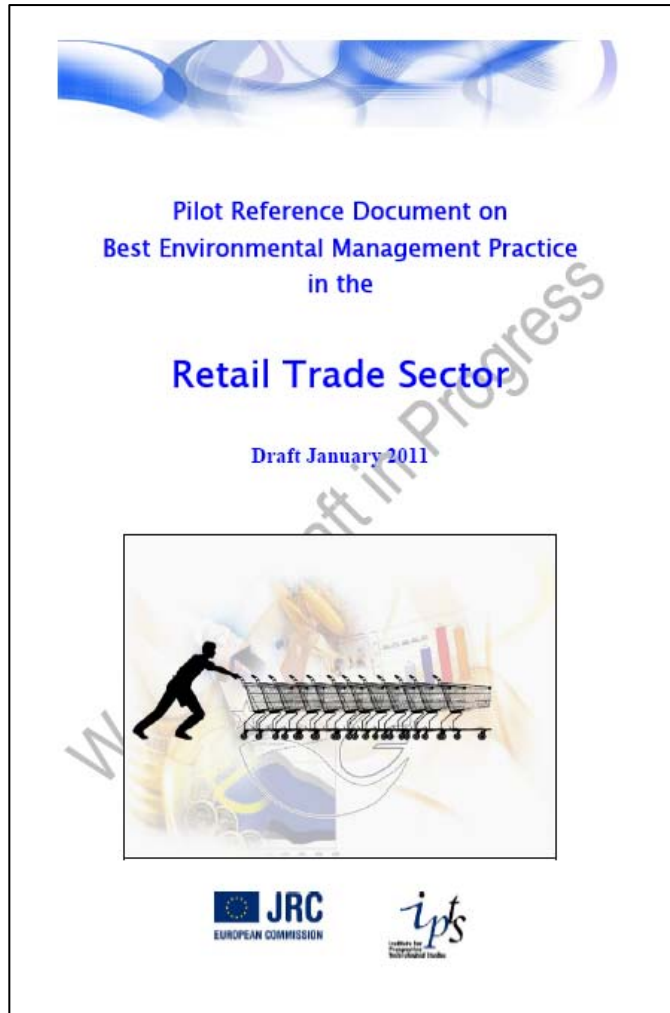
All the policy instruments identify retailers as the activity with high influence on consumers

As well, many initiatives are driven for / by retailers:

- Retail Forum
- European Food SCP Round Table
- Priority sector for the development of **Reference Document on Best Environmental Management Practice** under EMAS regulation (but going beyond EMAS)

Benchmarks of excellence

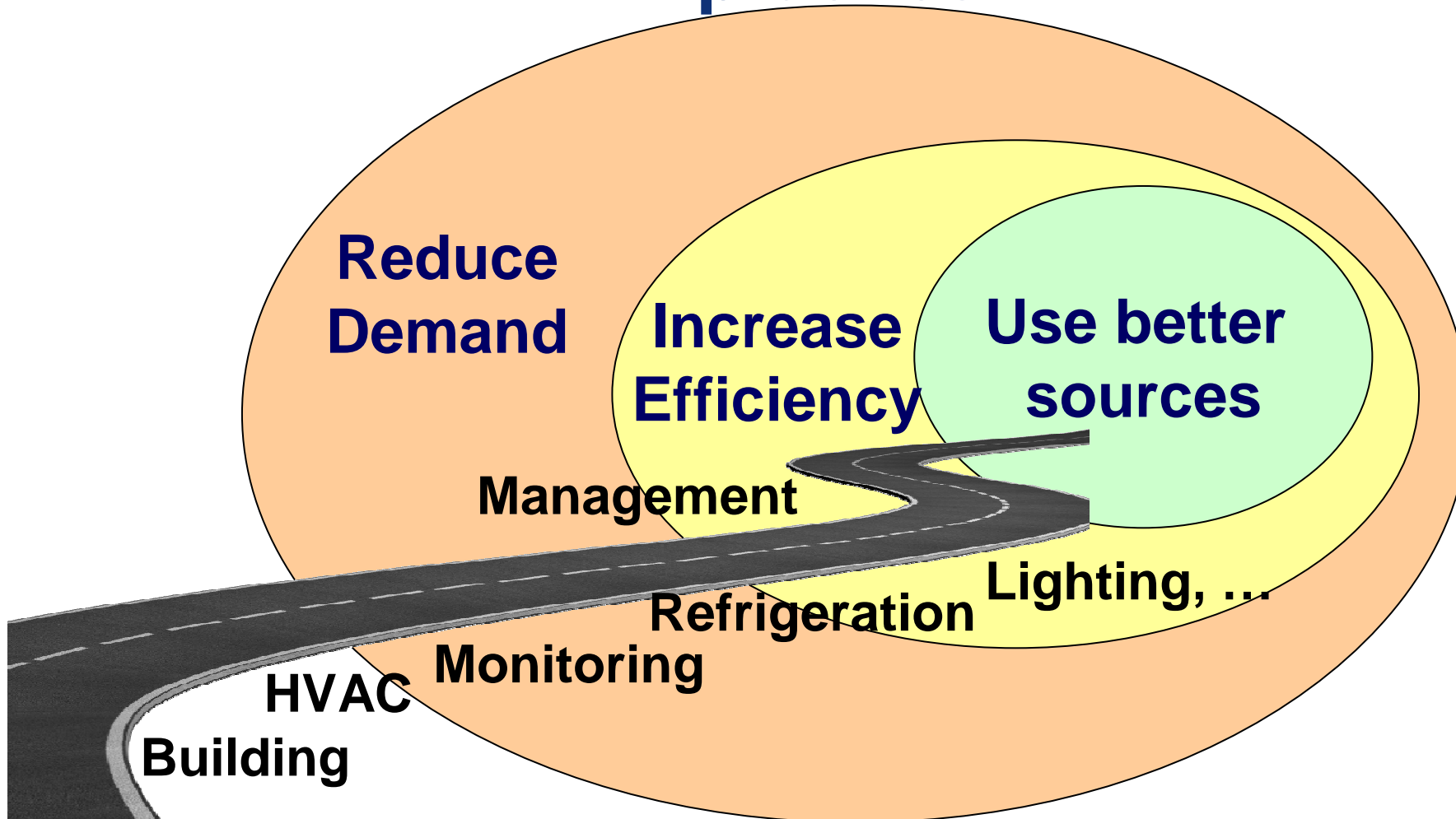




- Collects best environmental management practice of the sector (*What can be done?*)
- Covers the whole chain under the umbrella of EMAS but not only for EMAS (*For everybody*)
- Proposes indicators and benchmarks of excellence (*Which is the achievable performance?*)

<http://susproc.jrc.ec.europa.eu/activities/intro.htm>

Prioritisation of best energy management practice

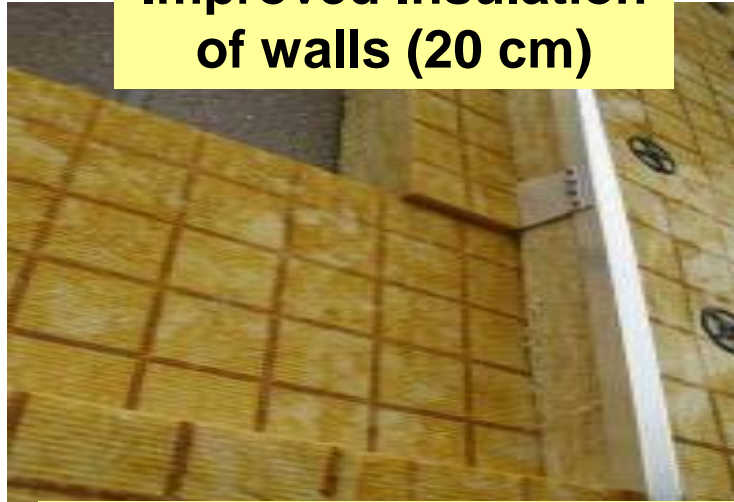


BUILDING

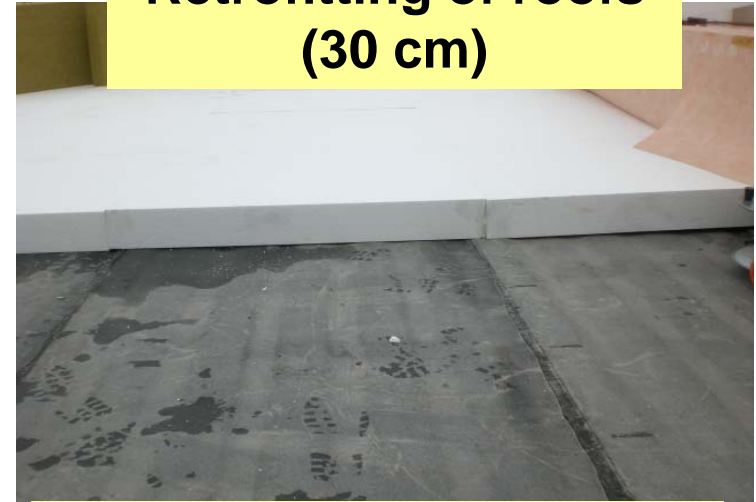
Envelope
(ground floor, walls, roof, windows, doors)

Heating, Ventilation and Air Conditioning (HVAC)

Improved Insulation of walls (20 cm)



Retrofitting of roofs (30 cm)



Exhaust air heat recovery



Under demand control



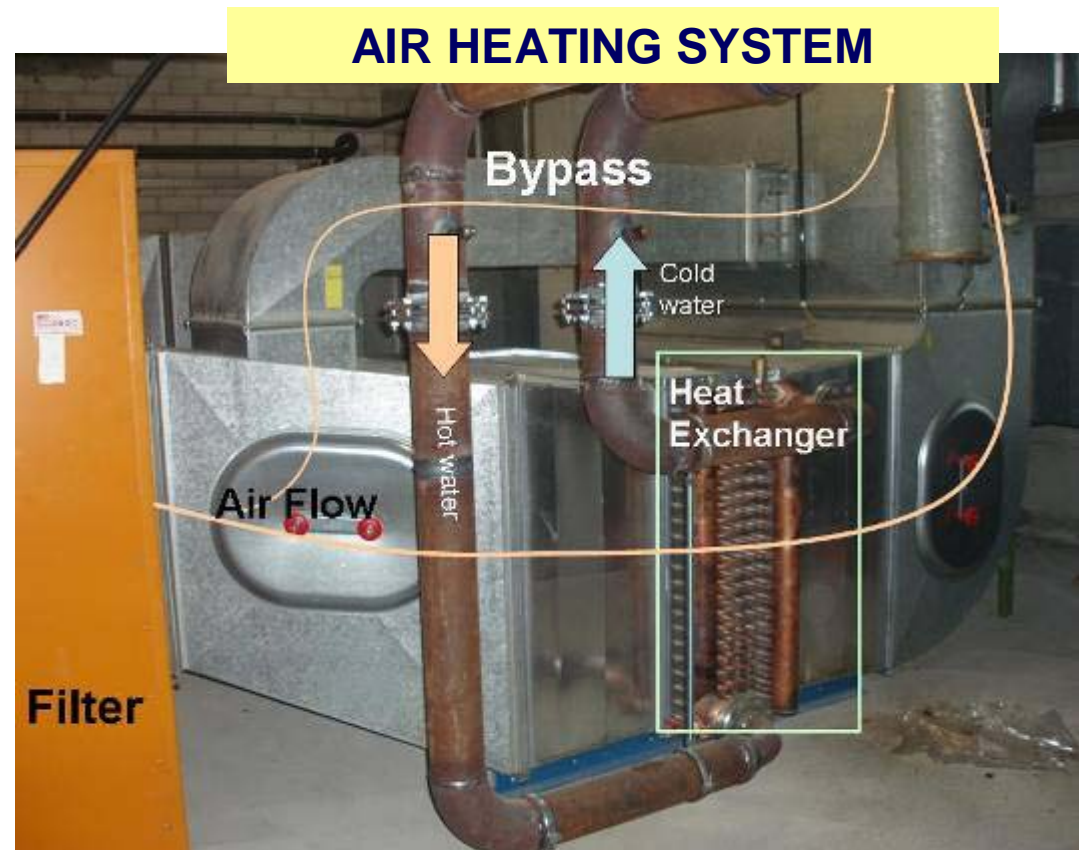
WASTE HEAT RECOVERY

-Heat recovery from refrigeration will:

- Reduce the fossil fuel demand

- If the building envelope is well insulated, there would be no need for a heating system

- Net, saleable heat is produced under certain circumstances



ENERGY MONITORING

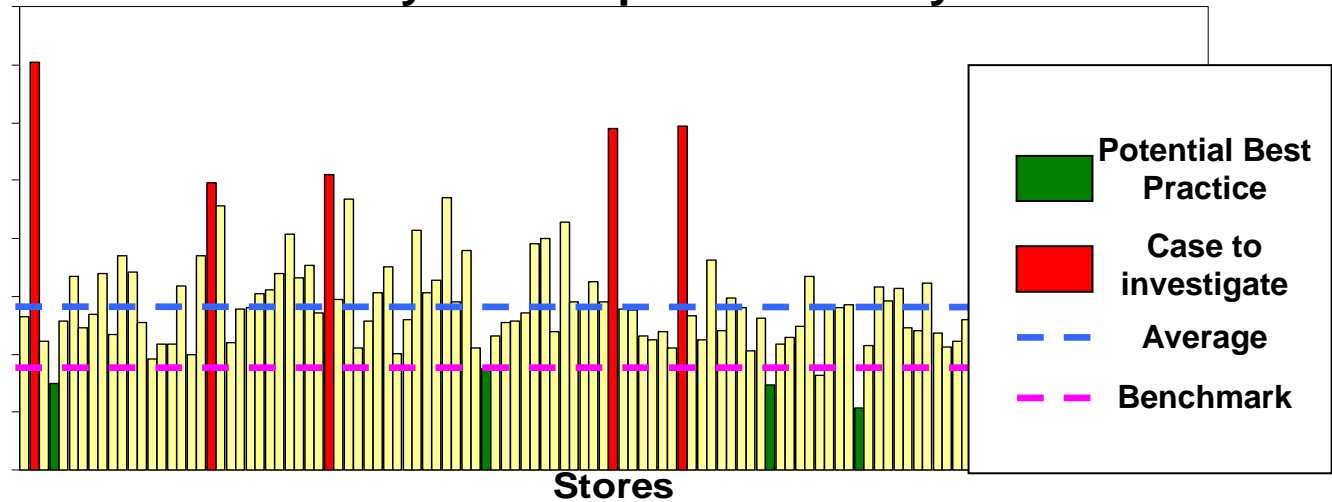
Performance measurement of implemented practices

Monitoring performance indicators

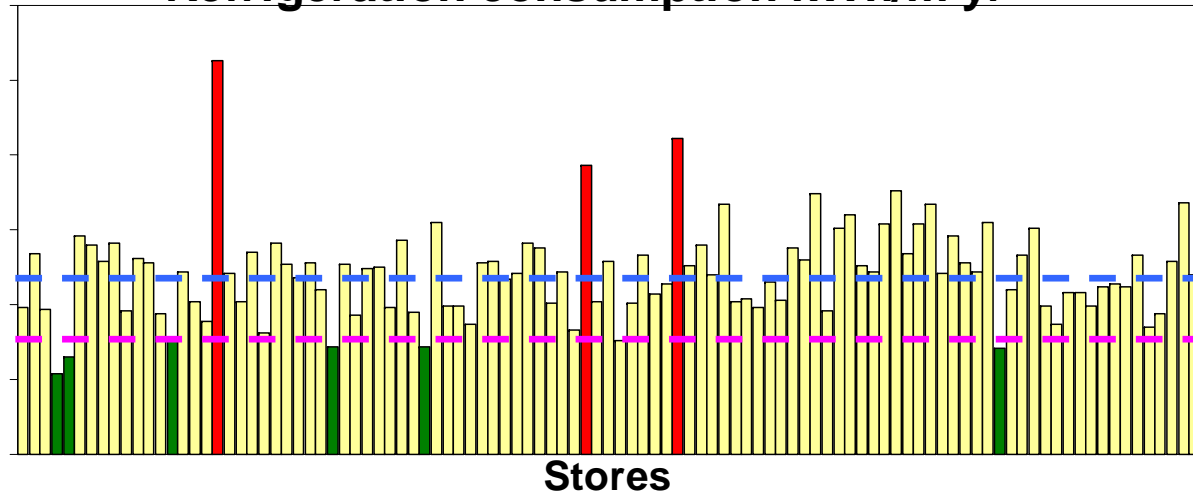
Best/Bad practices detection

Benchmarking

Electricity consumption kWh/m² yr



Refrigeration consumption kWh/m yr



REFRIGERATION

The CO₂ compression cycle for freezing (and refrigeration)

Closing display cases for freezing (and refrigeration)

LIGHTING

Better lighting strategies

Use of natural light

Better devices

CO₂ compressors



Closed display cases for refrigeration

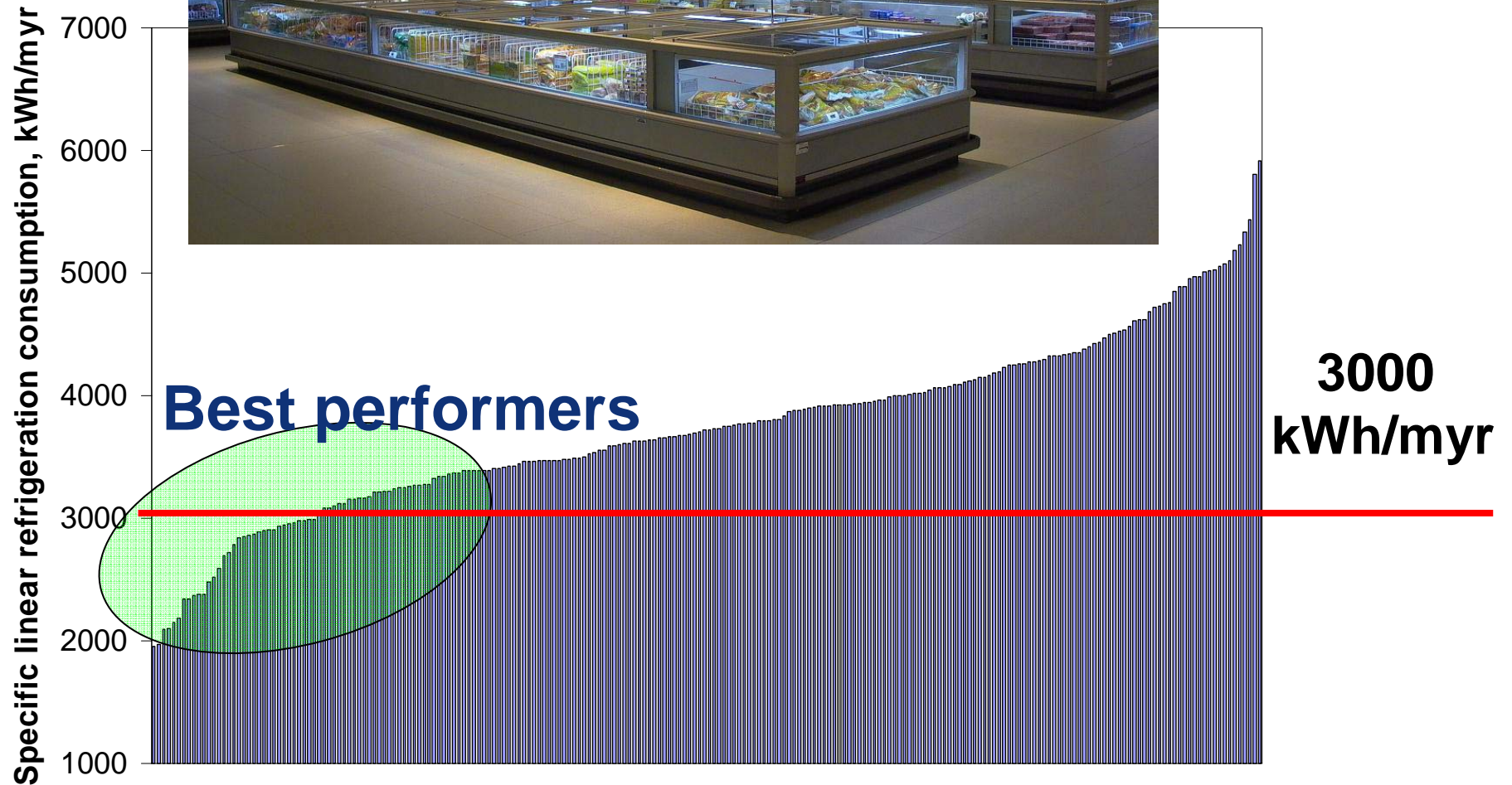


LEDs in freezers



Daylight



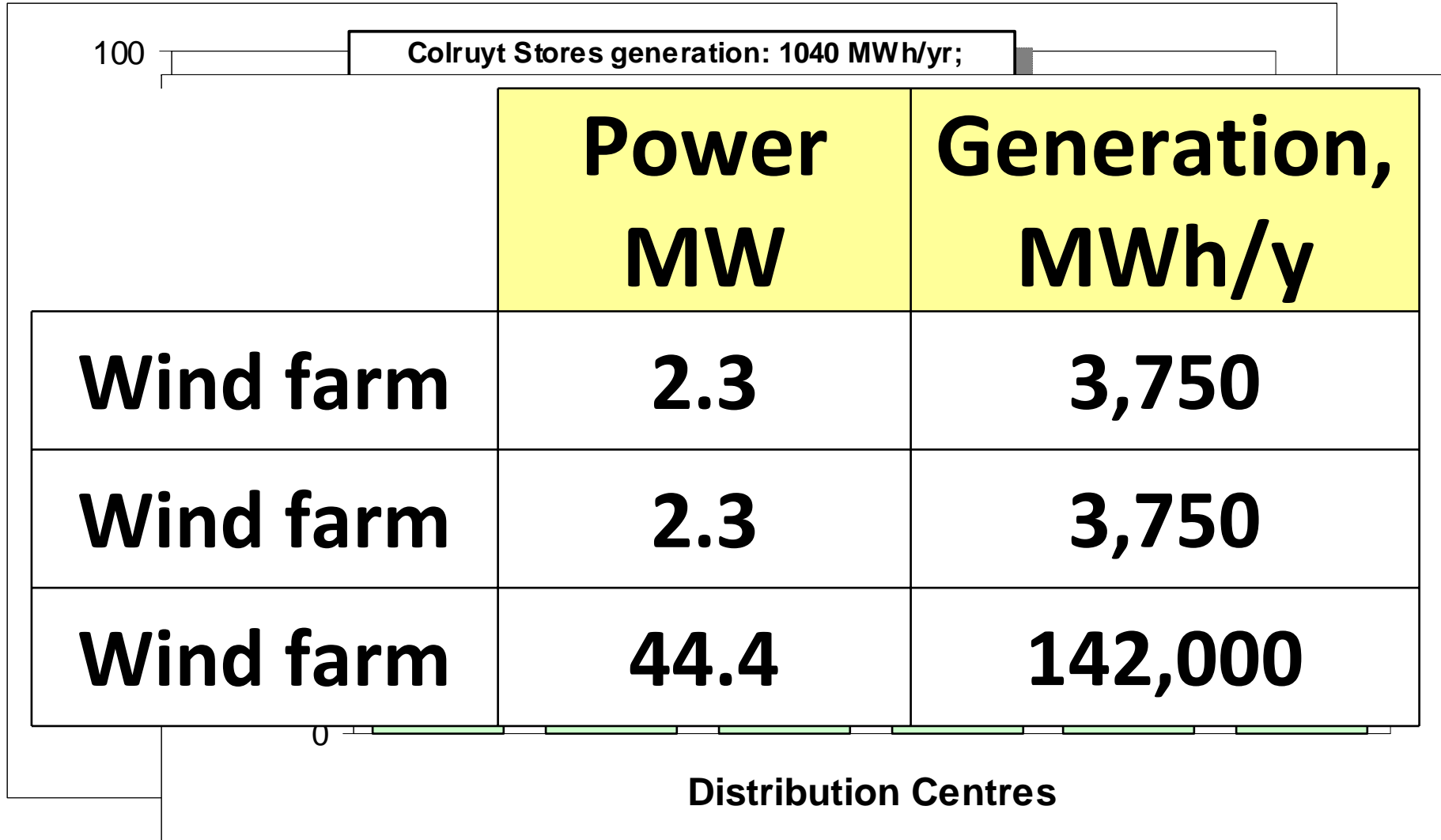


$$4300 \frac{\text{kWh}}{\text{m}(\text{display case}) \text{ yr}} \times 7250 \text{ km of display cases in EU 27} \times 1000 \frac{\text{m}}{\text{km}} \times 1 \frac{\text{GWh}}{1\,000\,000 \text{ kWh}} \approx 31200 \text{ GWh}$$

$$3000 \frac{\text{kWh}}{\text{m}(\text{display case}) \text{ yr}} \times 7250 \text{ km of display cases in EU 27} \times 1000 \frac{\text{m}}{\text{km}} \times 1 \frac{\text{GWh}}{1\,000\,000 \text{ kWh}} \approx 21750 \text{ GWh}$$

Achievable savings in EU27 = 9.4TWh/yr

**1.2 average German nuclear reactors,
1.4 average French nuclear reactors**



ACTIVE GENERATION

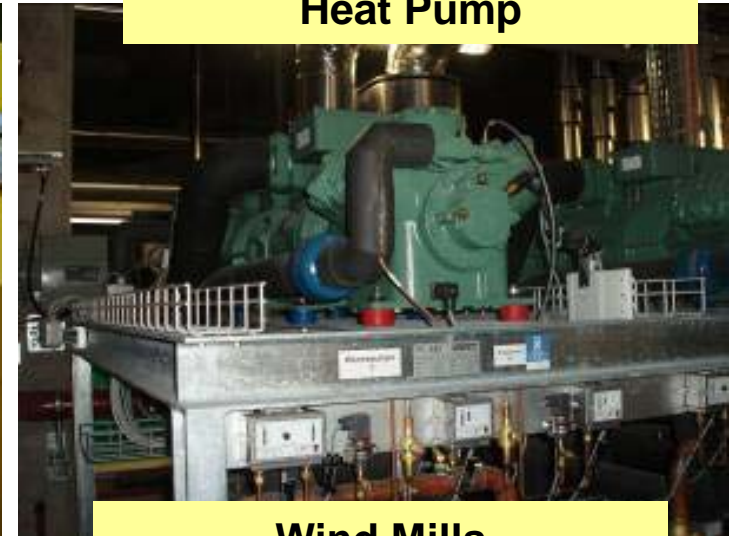
Renewable integration with other measures (ZEB, LC-ZEB,...)

Investment on new renewable generation (not green purchasing)

Biomass



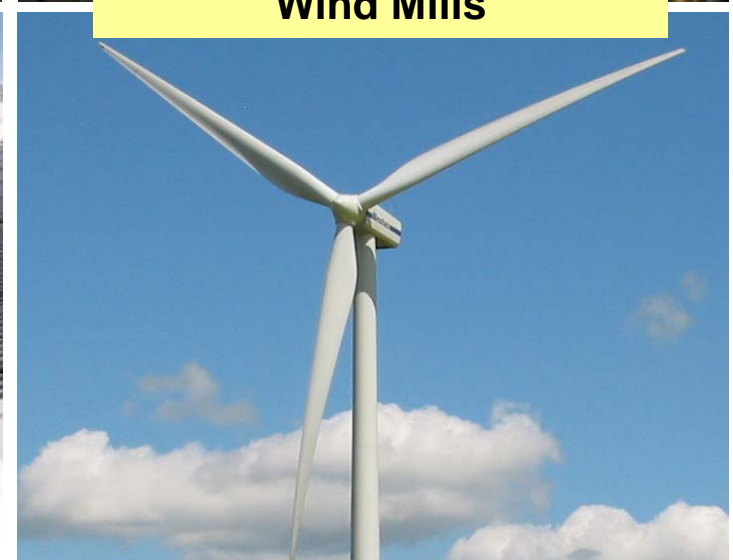
Heat Pump

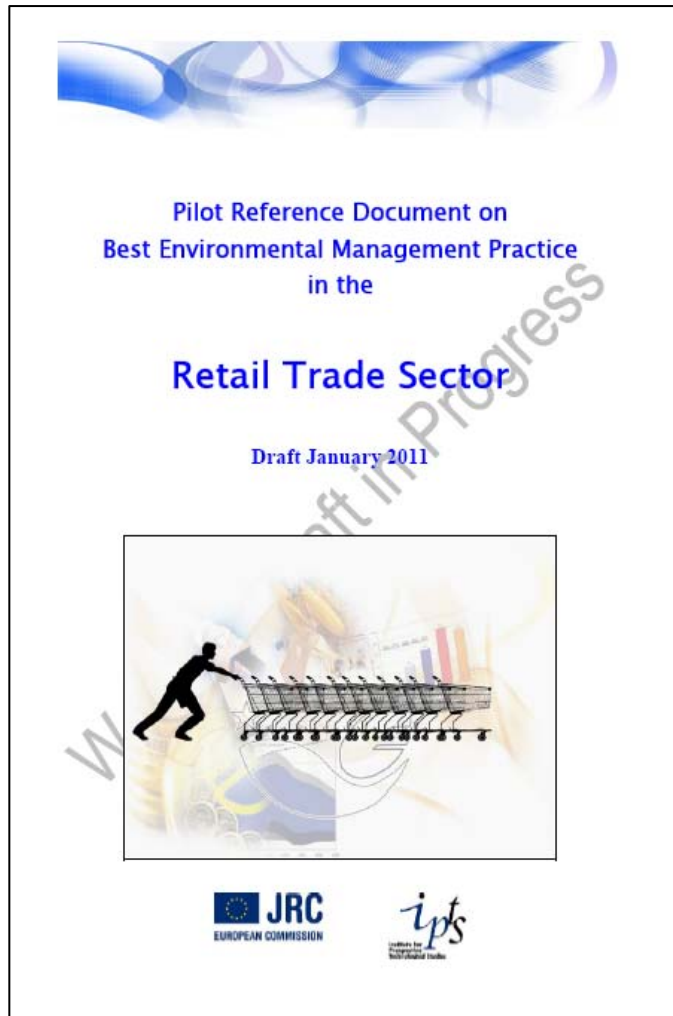


PV



Wind Mills





- Greening supply chain
 - Transport and Logistics
 - Waste Management
 - Water and materials management
 - Influence on consumers
- Technical background,
economics, applicability, driving
forces, benchmarks, etc.

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THANK YOU FOR YOUR ATTENTION!