

# Demand Side Management (DSM)

A renewed tool for sustainable development

*A survey of the concept, development and application*

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DSM is universal and does not only apply to utilities, electricity or monopolies!!

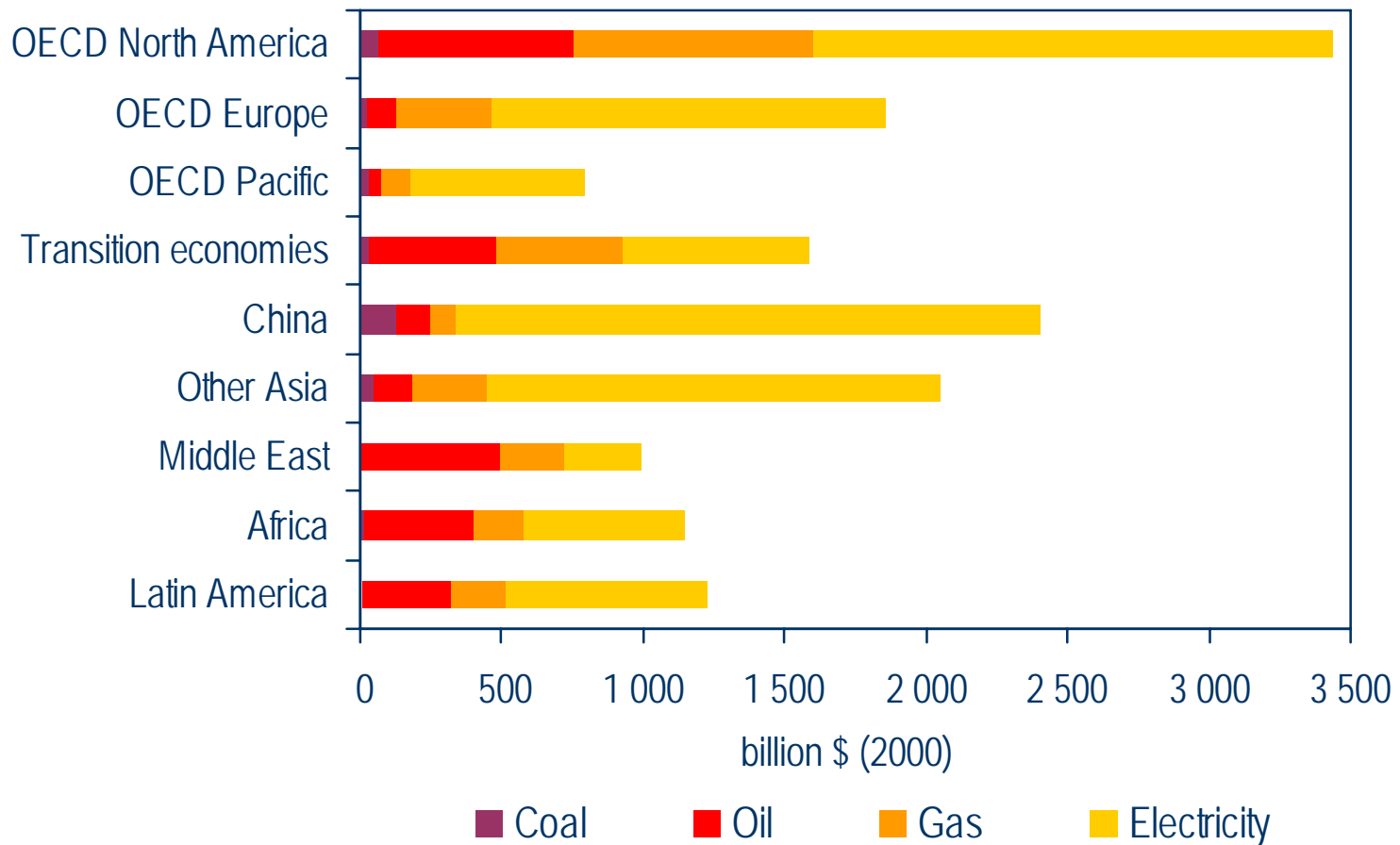
*“The planning and implementation of those (**utility**) activities designed to influence the customer use of **electricity /energy** in ways that will produce desired changes in the (**utility’s**) load shape - i.e. changes in the pattern and magnitude of a (**utility’s**) load.”*

# The problem is not one but several!

- **LOAD LEVEL** (Too much supply for a wasteful demand)
- **LOAD SHAPE** (high peaks, little reserve capacity, bottlenecks in transmission and distribution)
- **MARKET RESPONSIBILITIES** (who is the owner of the problem?)

# Cumulative Energy Investment 2003-2030

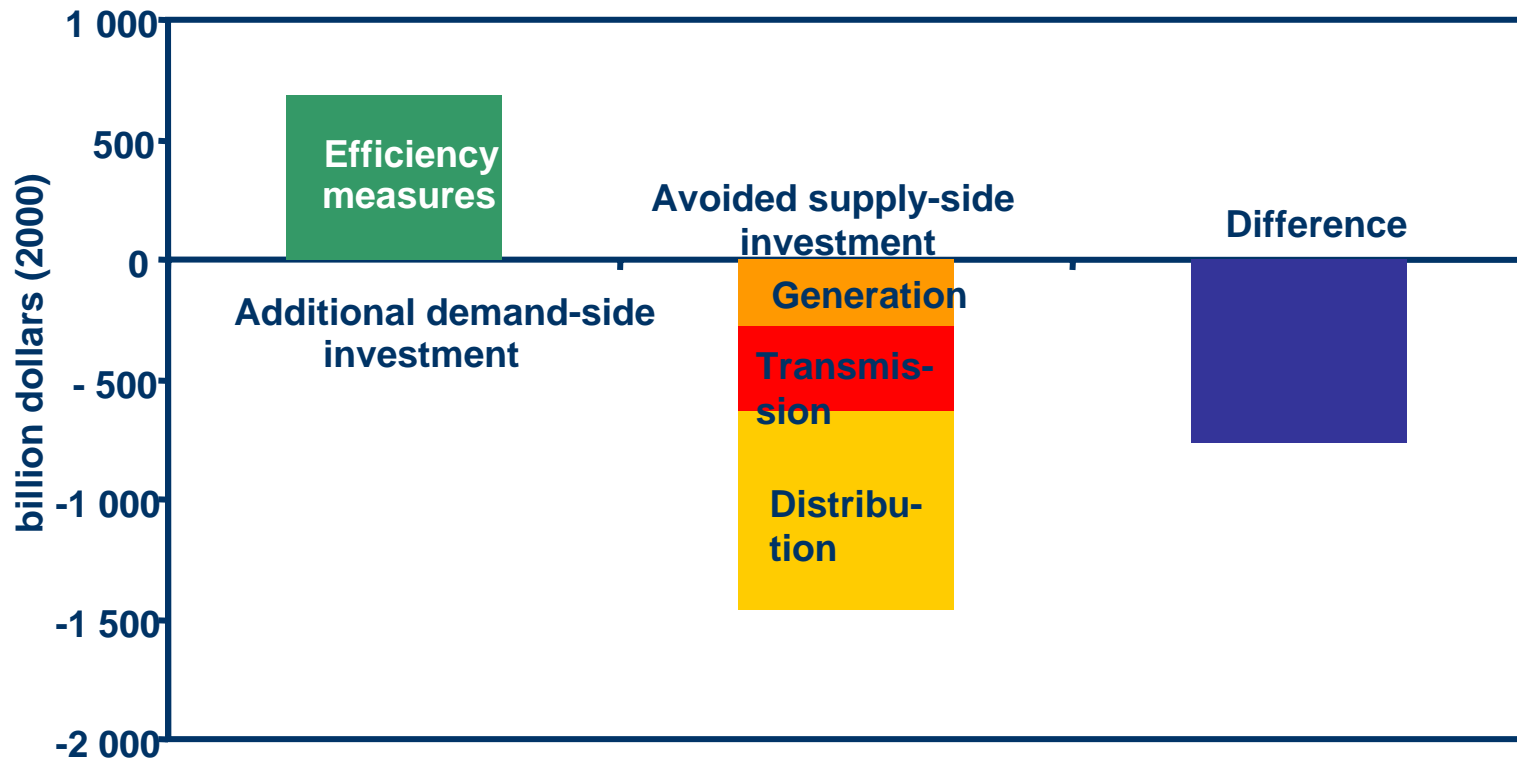
## Sixteen (16) Trillions USD!!



**Power sector absorbs 62% of global energy investment in the period 2003-2030**

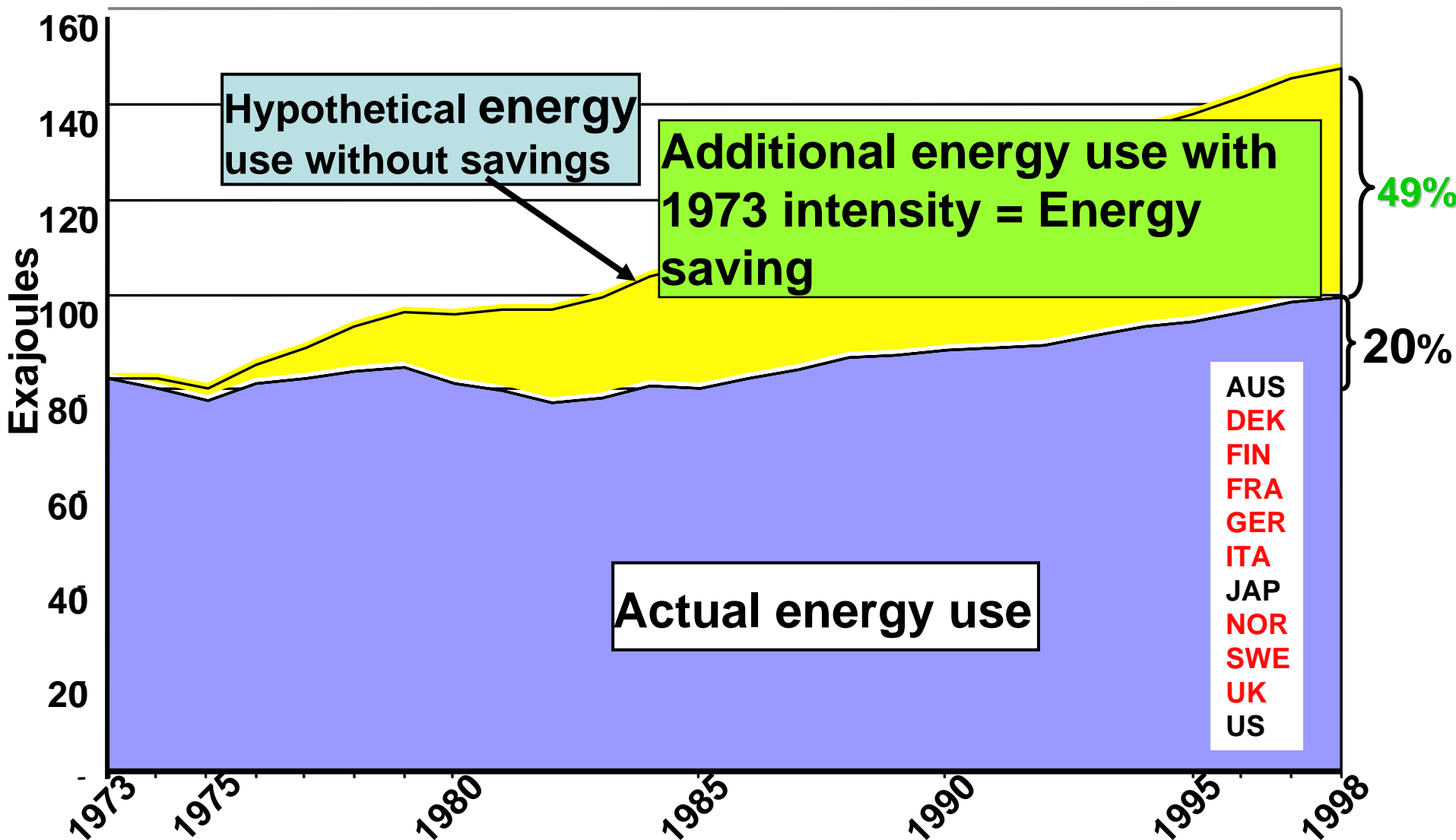
Source WEO 2004

# Difference in Electricity Investment in the Alternative vs. Reference Scenario 2003-2030



**Additional investments on the demand side are more than offset by lower investment on the supply side**

# Energy-use in the IEA-11



The rise in welfare depends more on energy efficiency improvements than on growth in energy use!



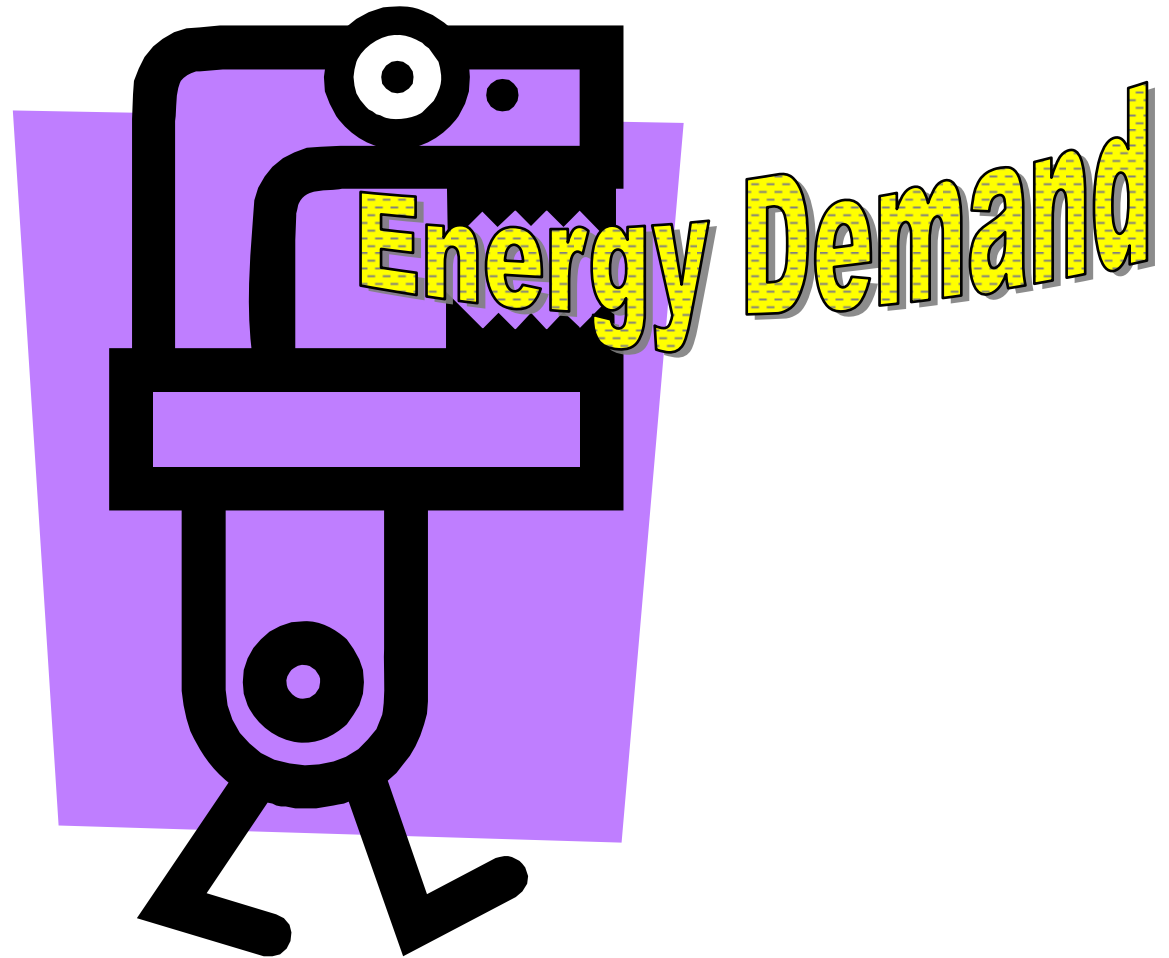
# Energy Efficiency has multiple dividends



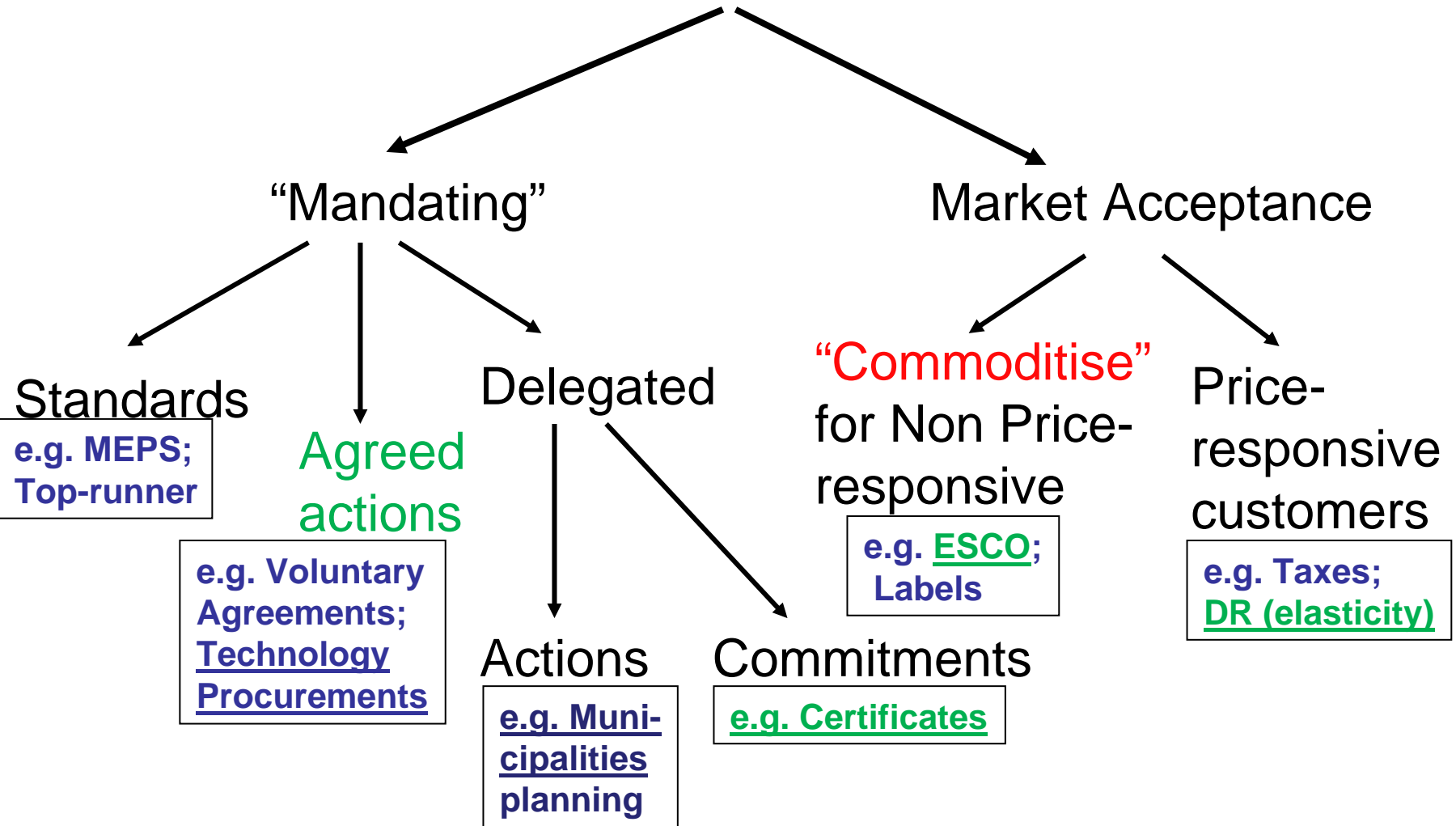
- **Cost**
- **Environment/Climate**
- Employment
- Industrial development
- Poverty alleviation
- Holds back prices in supply
- Reduces pressure on supply reserves



DSM is a tool to make large scale energy efficiency possible

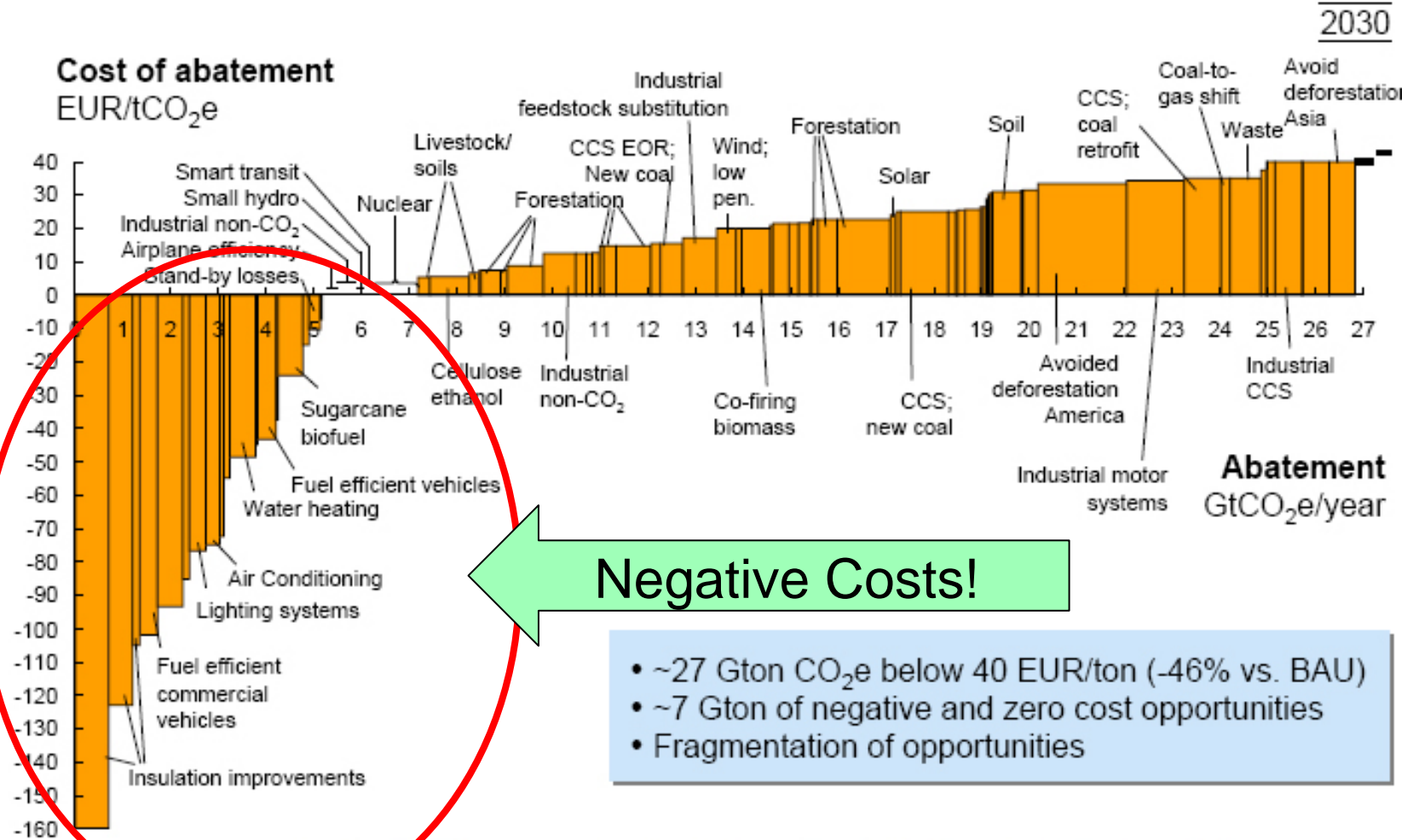


# LARGE-SCALE ENERGY EFFICIENCY



# Energy Efficiency is the cheapest resource

## Global cost curve of GHG abatement opportunities beyond business as usual



# DSM nowadays

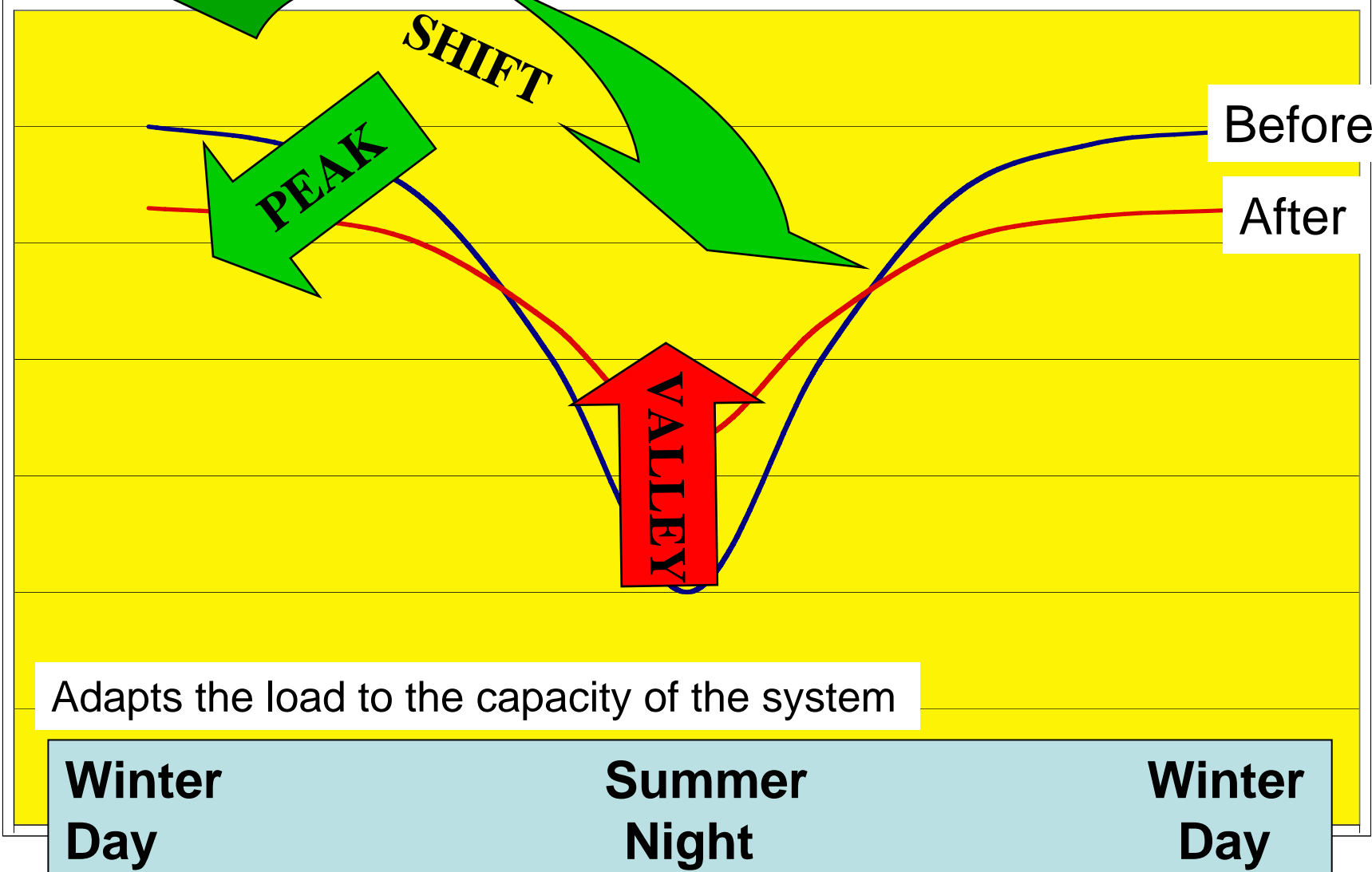
- Is more complex and more comprehensive
- Involves more stakeholders
- Gives more opportunities with new technologies



# The Mechanics of DSM

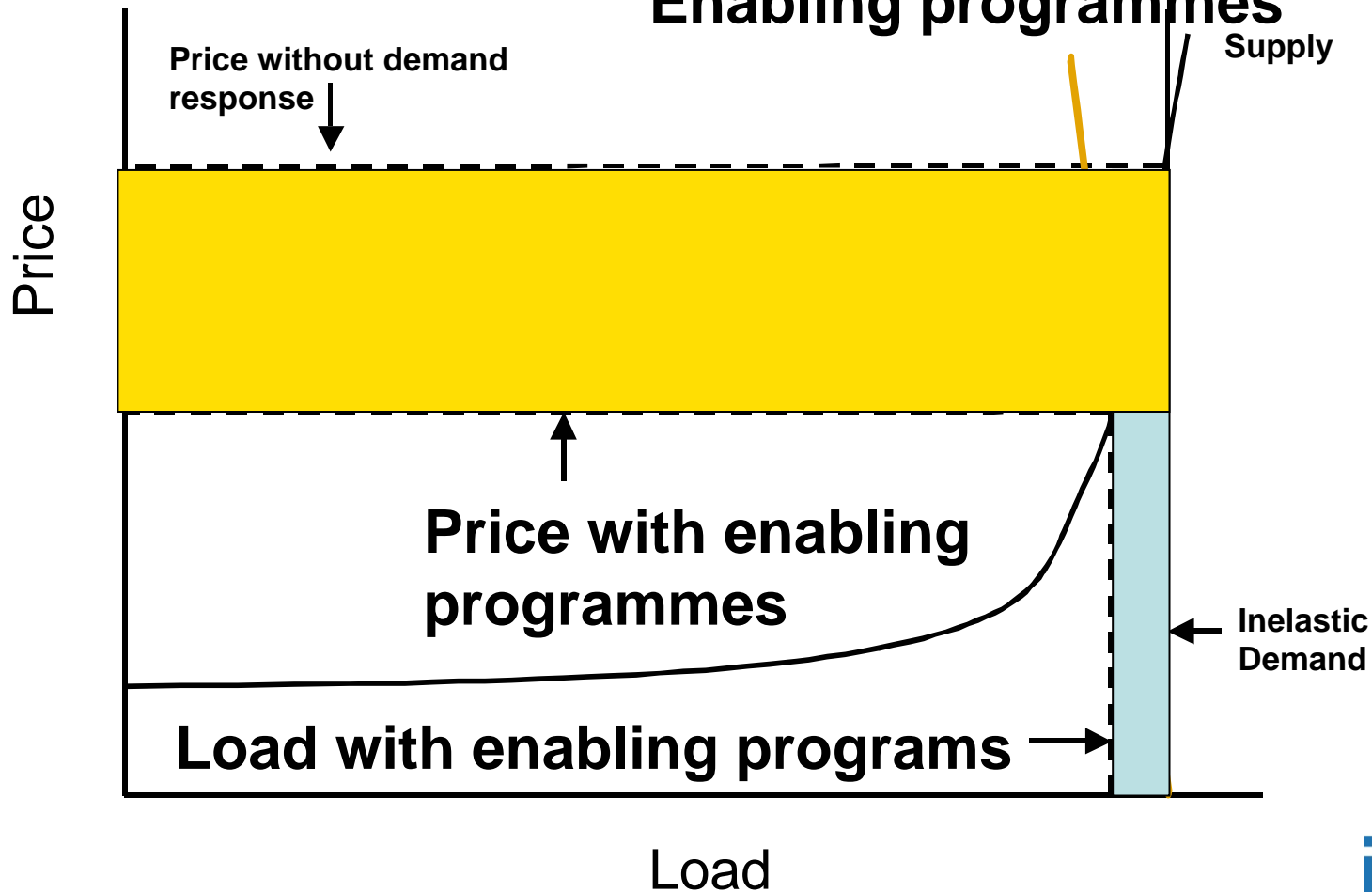


# DSM can Change the LOAD SHAPE



# DR and price volatility

## Demand with Enabling programmes



# Load Shape Technology

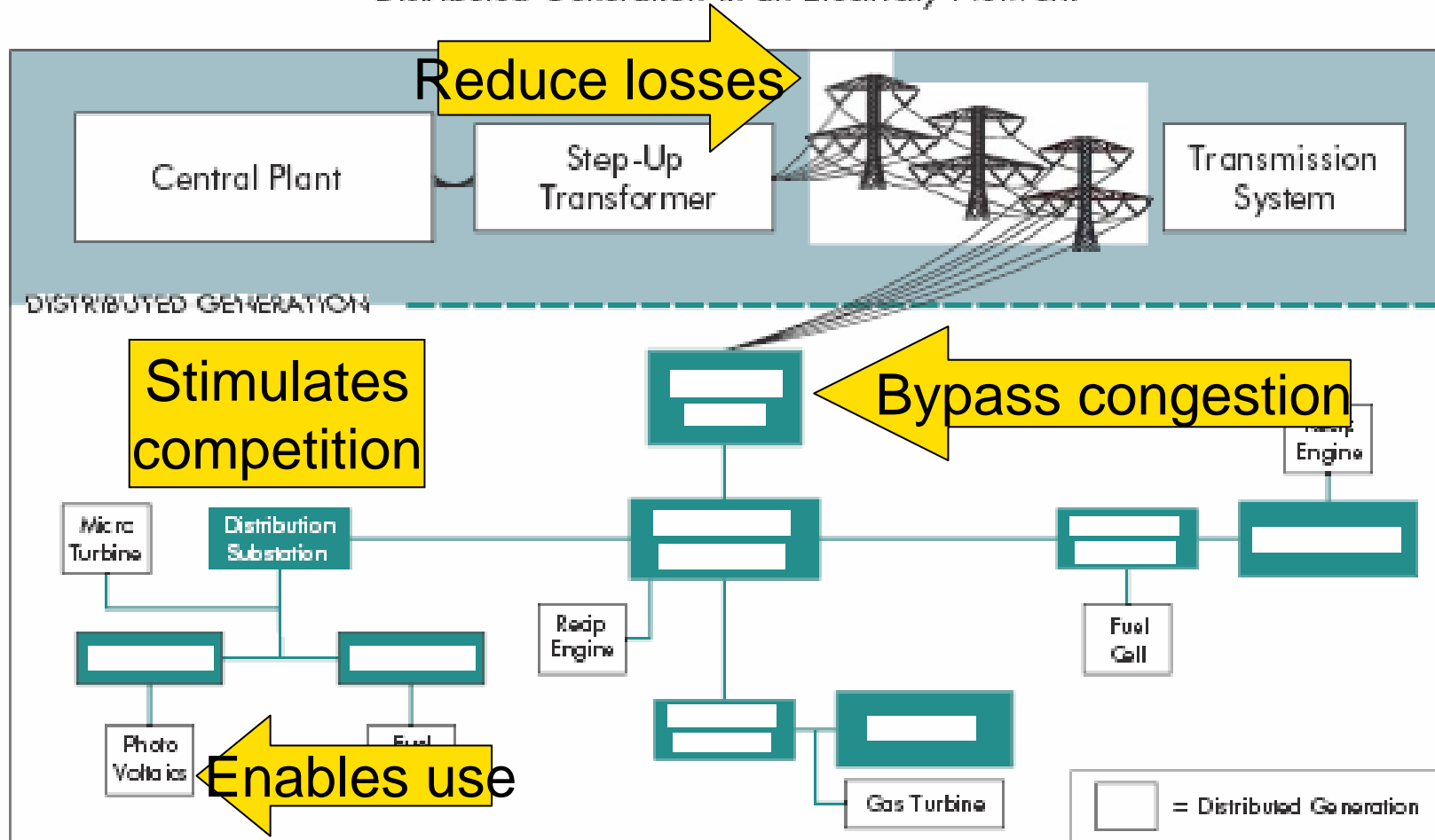
- Meters .....BUT ALSO...
- Communications .....AND
- Software for calculation, billing, verification, settlement .....AND
- Pricing structure.....AND
- Institutional models.....AND
- End use capacity to accommodate (e.g. Storages)



# New paradigms – Distributed Generation

Figure 1

*Distributed Generation in an Electricity Network*



# DSM can change the LOAD LEVEL

**To This**

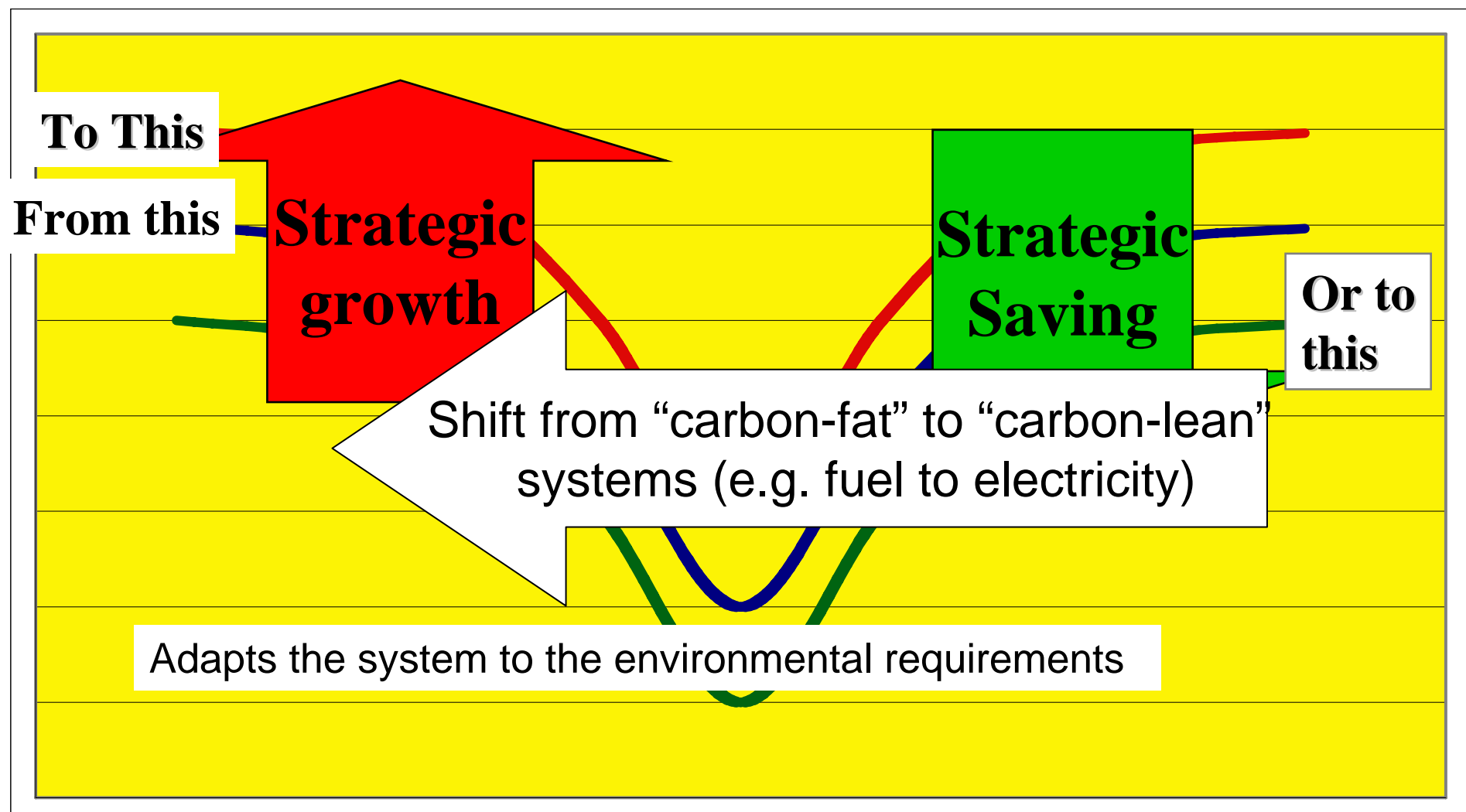
**Strategic  
growth**

**Strategic  
Saving**

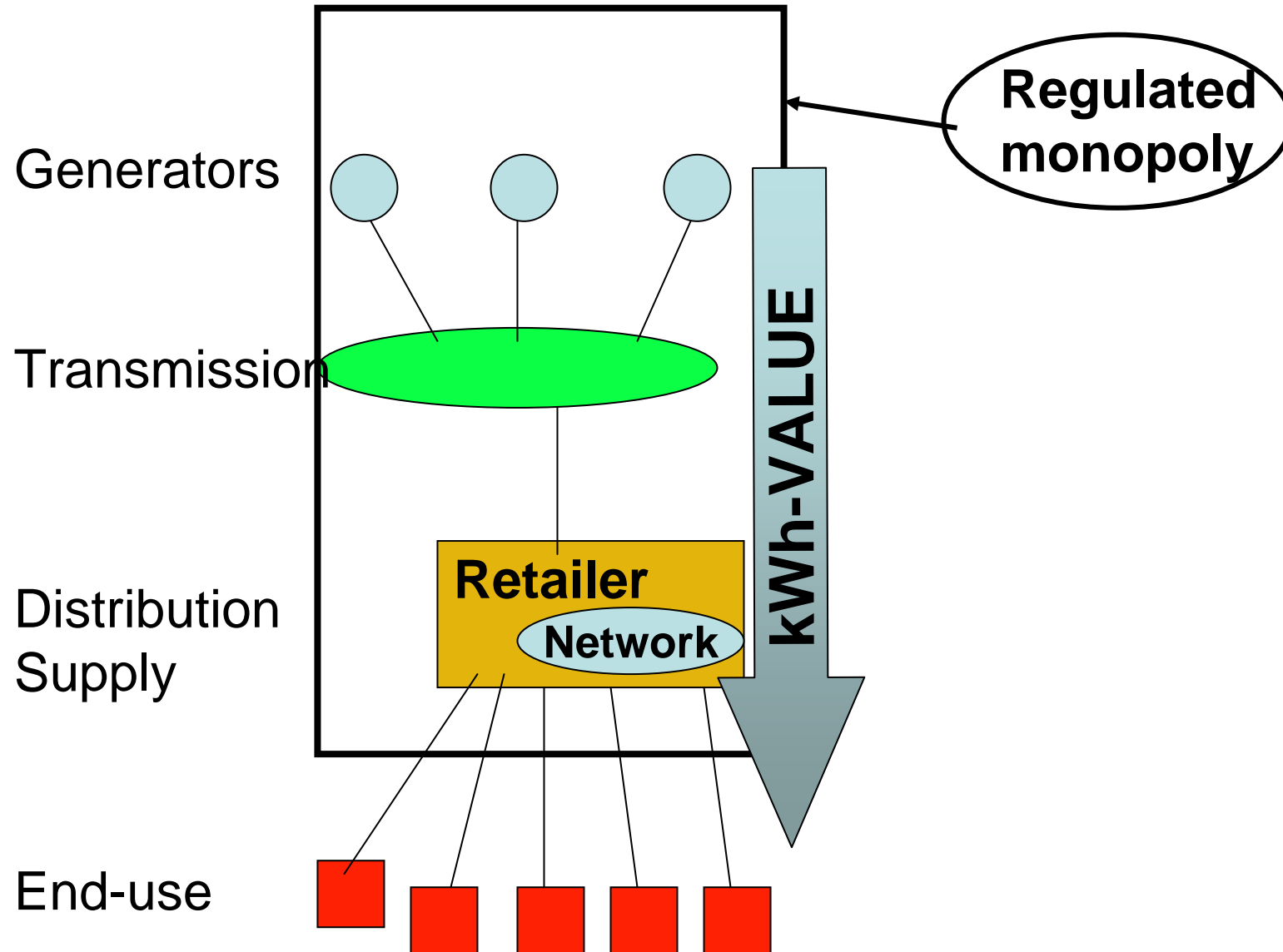
**Or to  
this**

Shift from “carbon-fat” to “carbon-lean”  
systems (e.g. fuel to electricity)

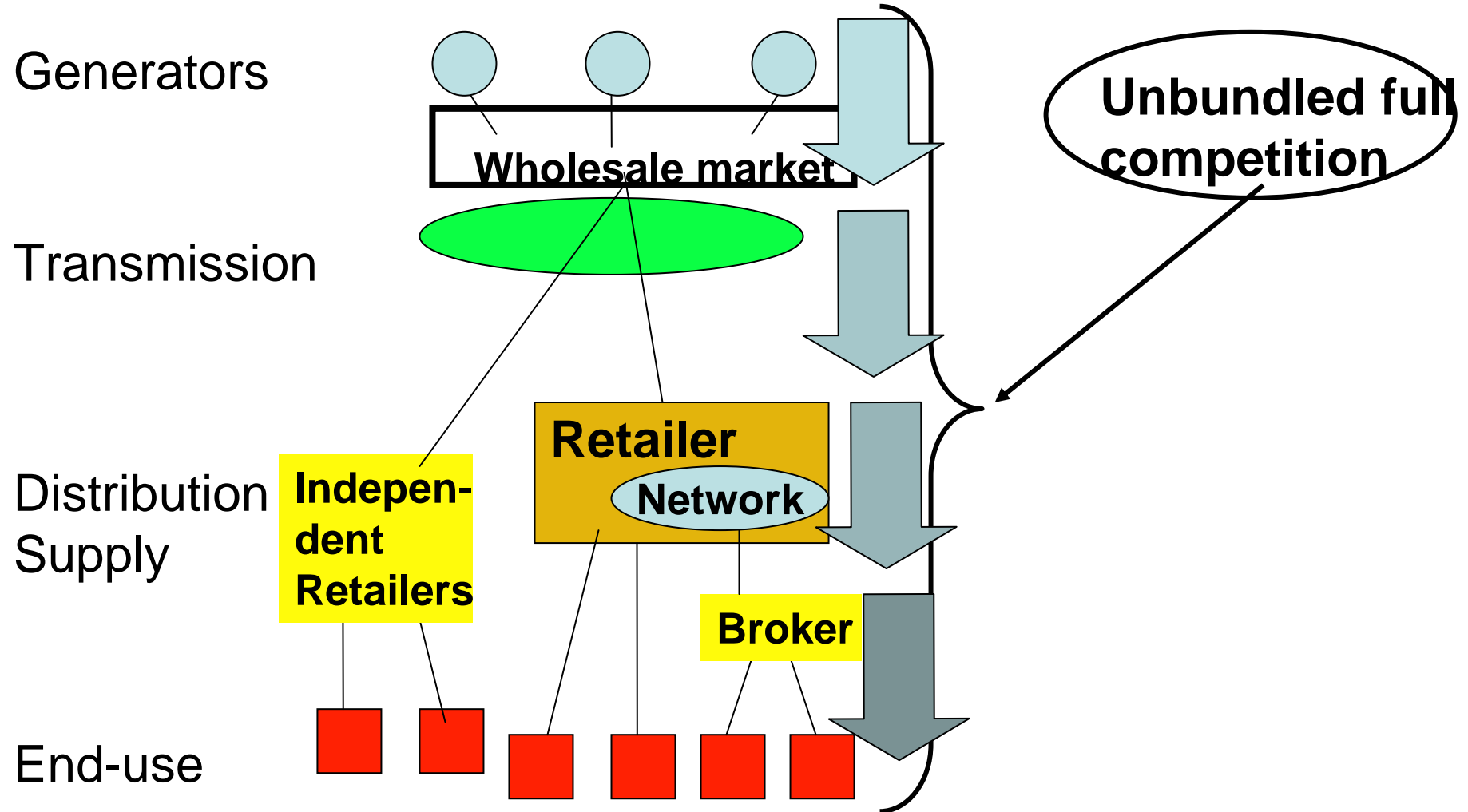
Adapts the system to the environmental requirements



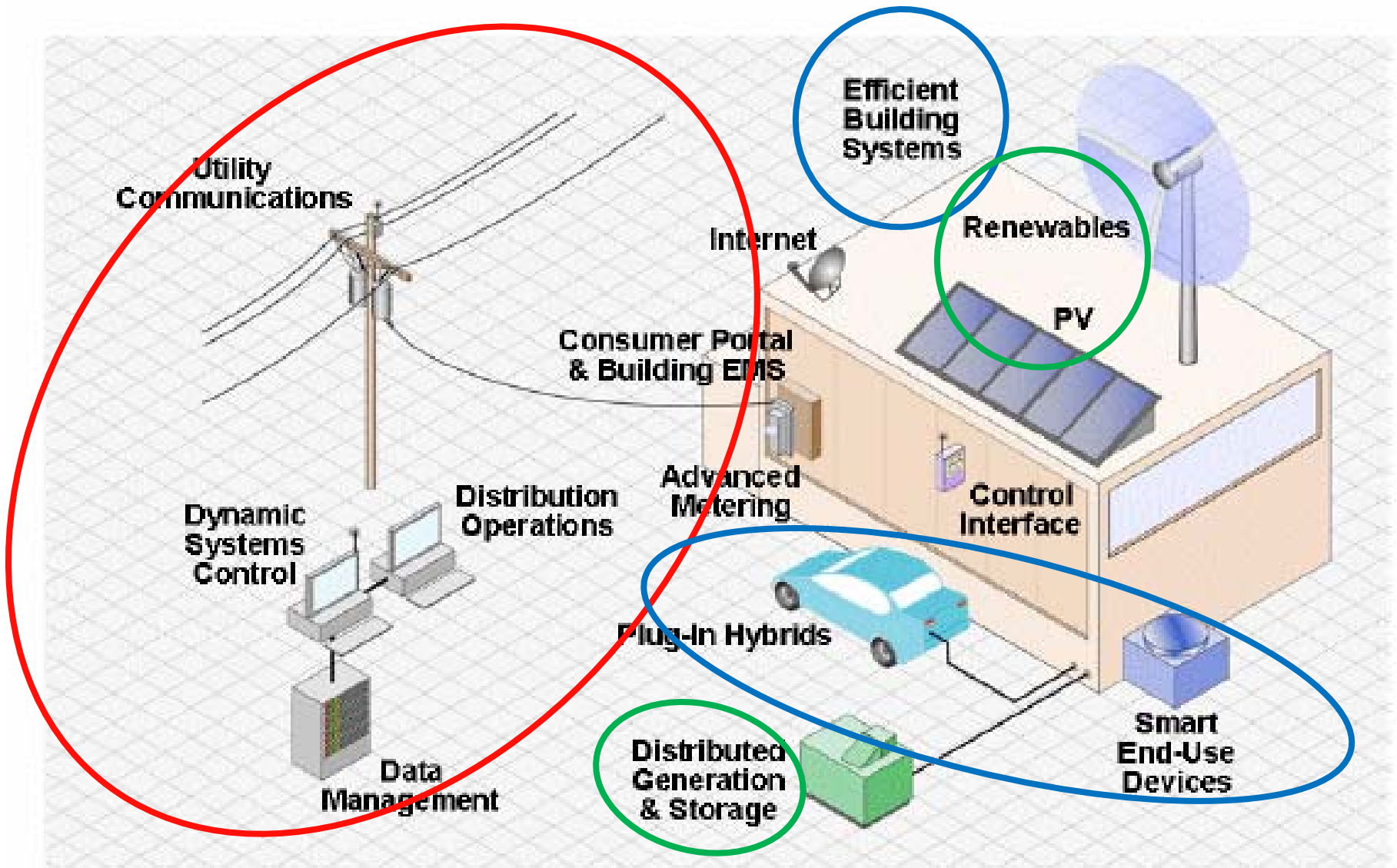
# The value chain used to be vertical..



# ...but with liberalisation the value chain is fragmented



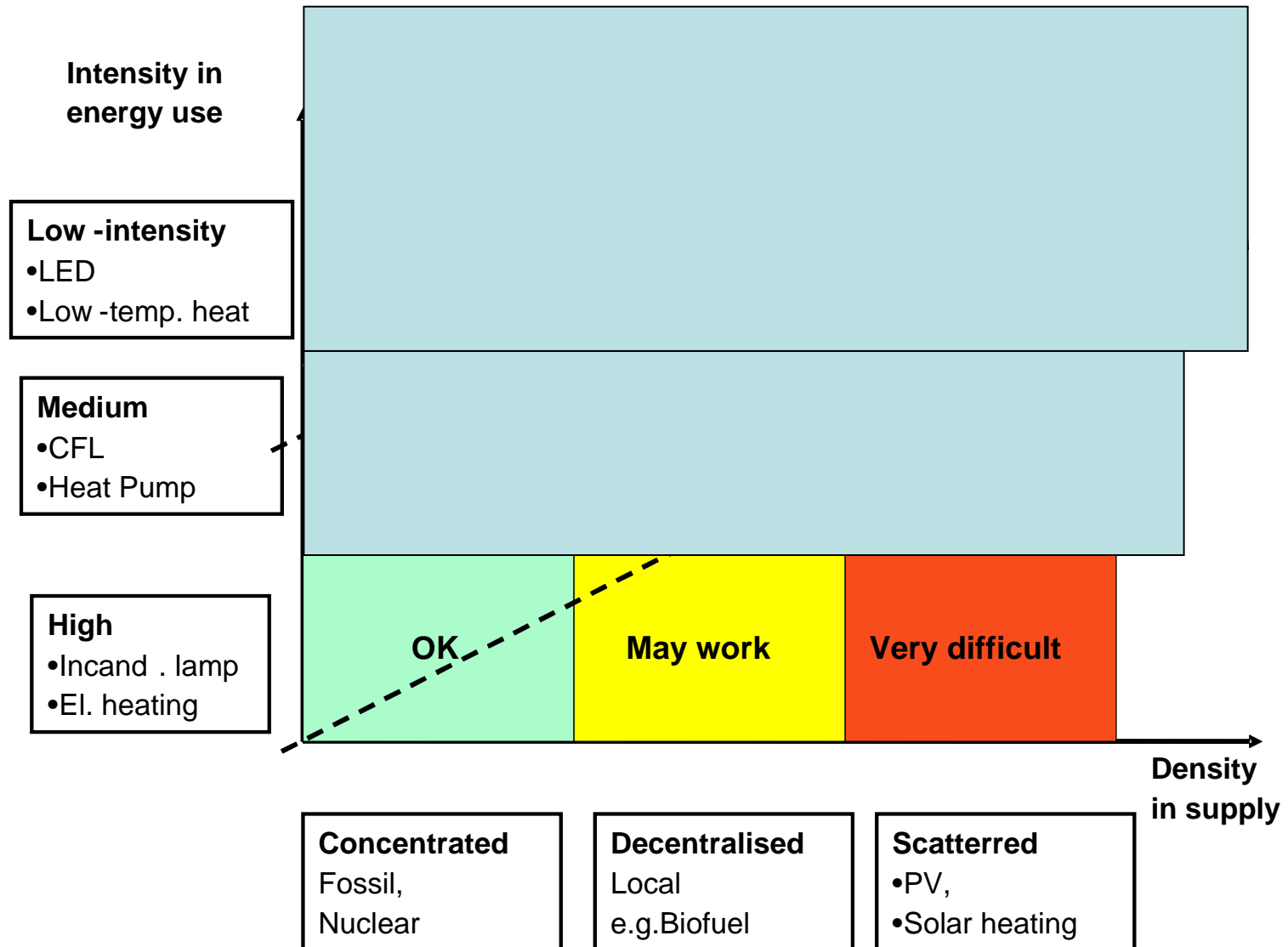
# New Technologies



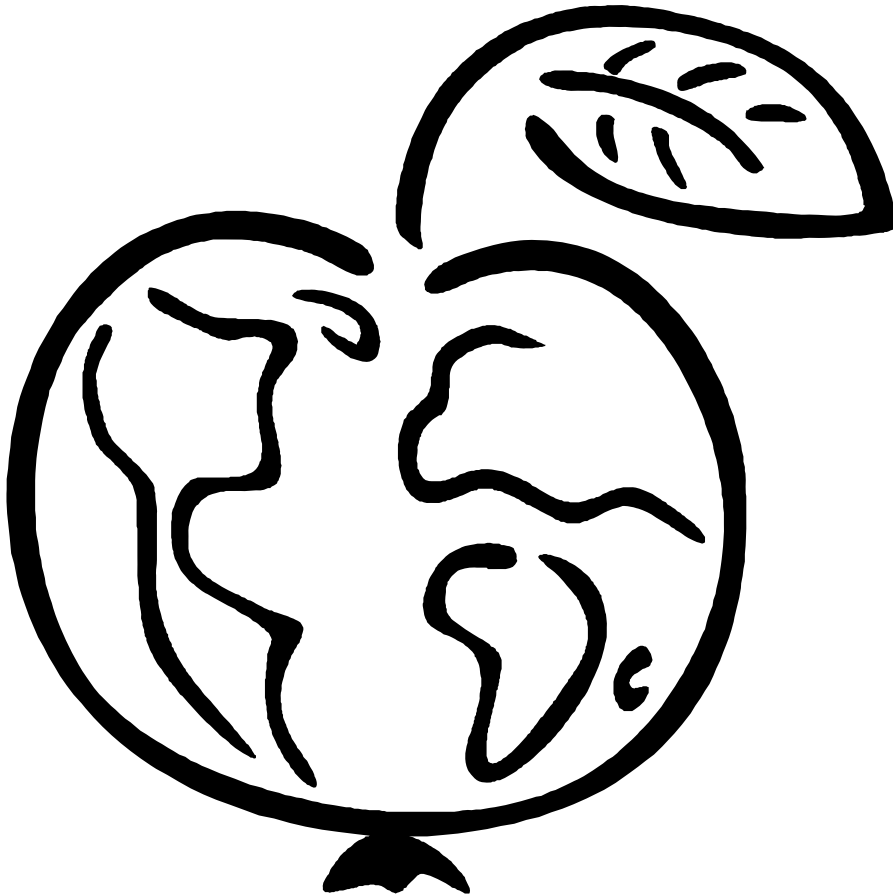
# Business interest in DSM

Actor	Peak Load	Load Level	Remark
<b>Generation company</b>	<b>No</b> (prices are set on the margin)	<b>No</b> (loss of sales)	Windfall profit may be regarded to be too high by authorities
<b>Systems responsible (regulator)</b>	<b>Yes</b> (to avoid systems breakdown)	<b>Possibly regional and in special situations</b> (to avoid bottlenecks and to maintain systems to develop as planned)	Very different organisation between countries.
<b>Transmission and Distribution</b>	<b>Yes</b> (to maintain systems and avoid bottlenecks)	See above	Where “white certificates” and commitments are introduced they concern the load level operations from these actors.
<b>Energy supplier</b>	<b>Yes</b> (as a business opportunity to shift loads and operate in pools)	<b>Yes ?</b> (primarily as a marketing instrument)	
IEA DSM-Programme tasks pertaining to utilities	<b>Task II, VIII, XI, XIII, XV and XVII</b>	<b>Task I, VI, VII, XIV and XVI</b>	-

# A sustainable system combines energy efficiency and renewable energy



Is sustainable growth  
possible...



..without DSM  
and without  
global co-  
operation?



# The IEA DSM-Programme can assist you with, e.g.

1. **ASSESSMENTS and EVALUATION** of the DSM-situation (opportunities, organisation, potentials, technologies, training, incentive structures, etc.)
2. **TRAINING** of staff (for planning, programme-design, evaluation etc.)
3. **TROUBLE-SHOOTING** (and suggestion for programme development)
4. **PROGRAMMES** (target technologies, impact analysis)
5. **PROJECTS** (Technology Procurements, ESCO development, DR-implementation)

[www.ieadsm.org](http://www.ieadsm.org)

