

Decarbonising the existing built environment

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Chairman of the IEA DSM-Programme

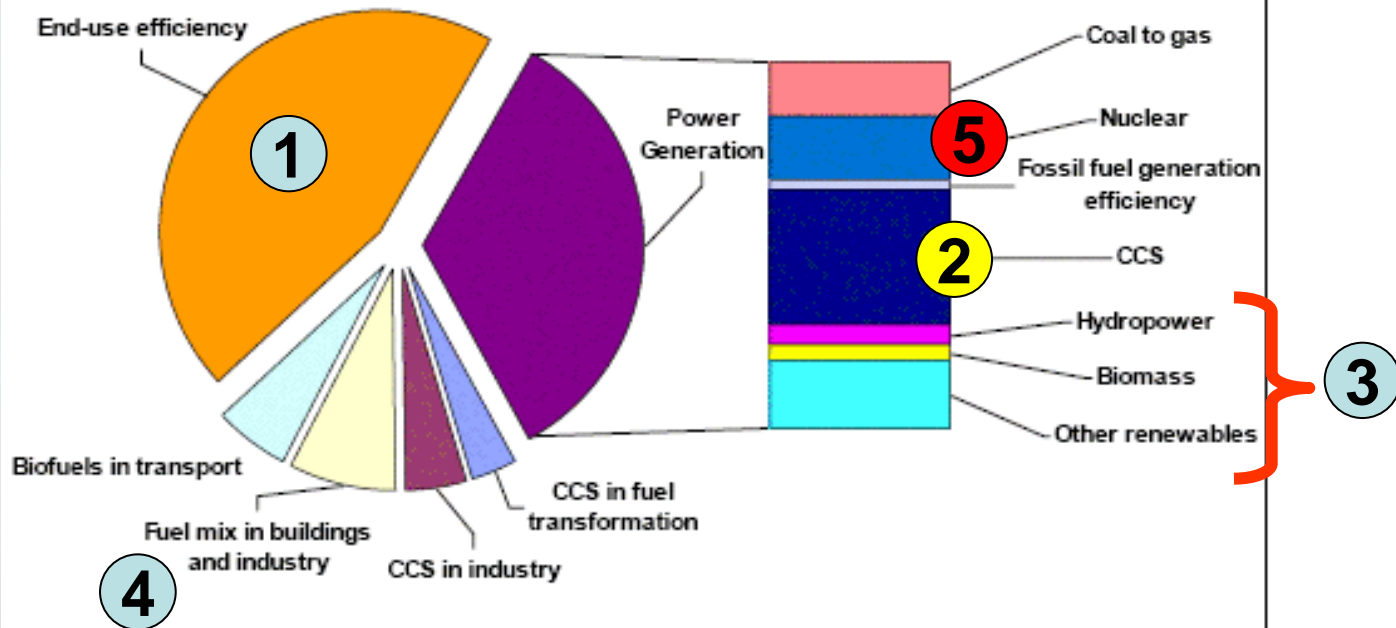
FourFact AB

4-Fact

Energy efficiency – The most important means to reduce GHG

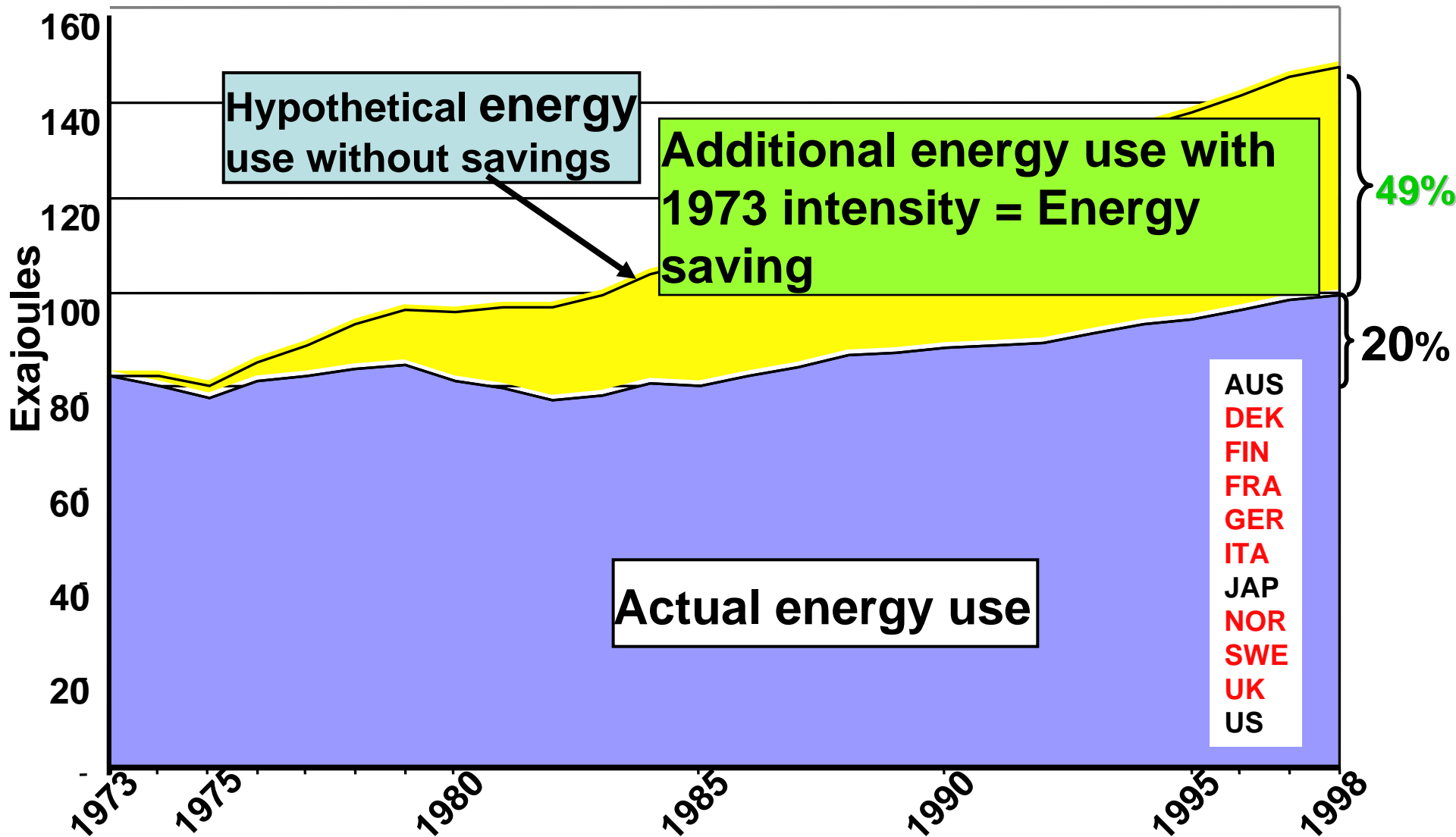


Emission Reduction by Technology Area ACT Map Scenario



*Improved end-use energy efficiency
is the most important contributor to reduced emissions!*

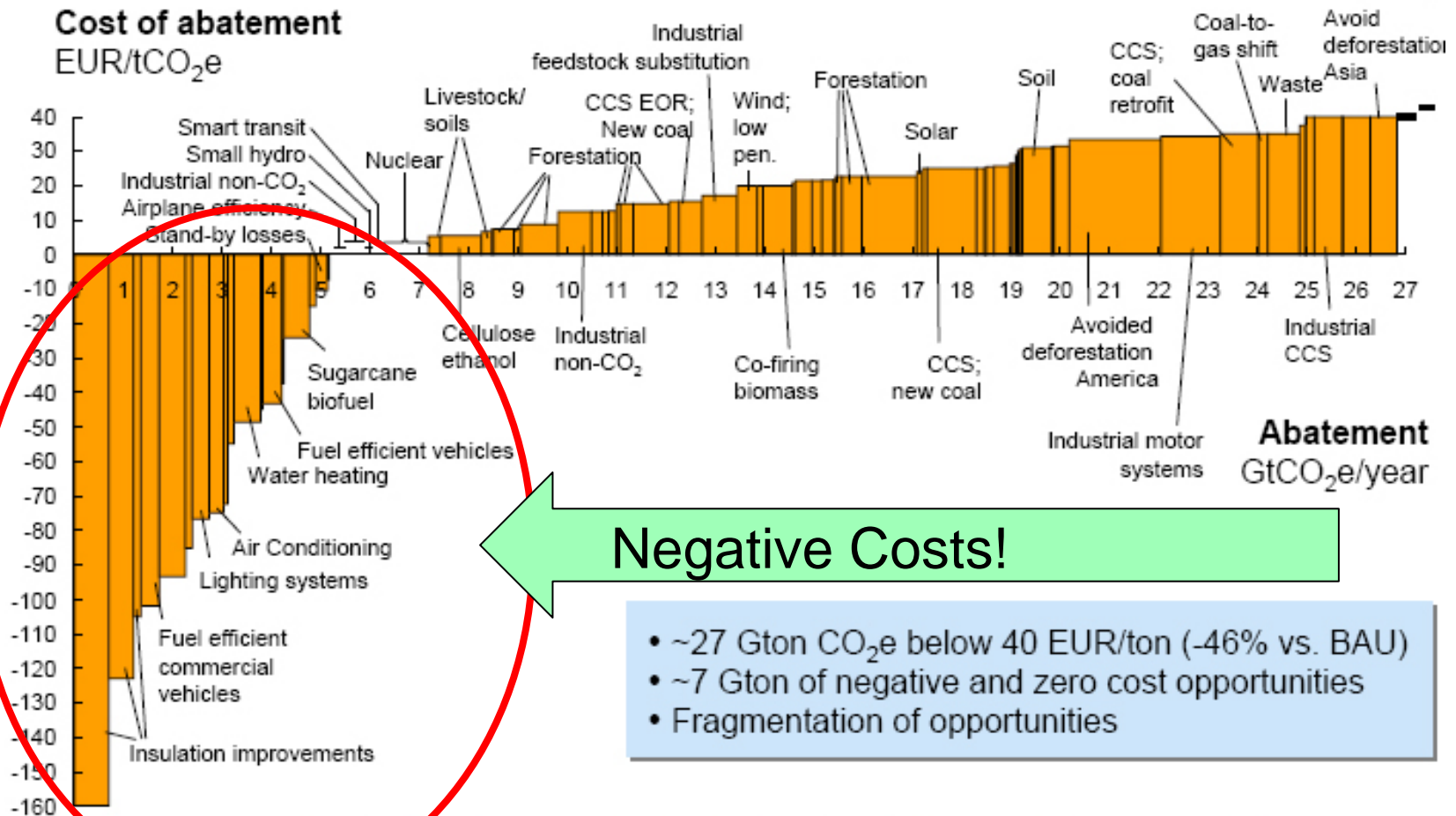
Energy-use in the IEA-11



Efficiency – too cheap to avoid!

Global cost curve of GHG abatement opportunities beyond business as usual

2030



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

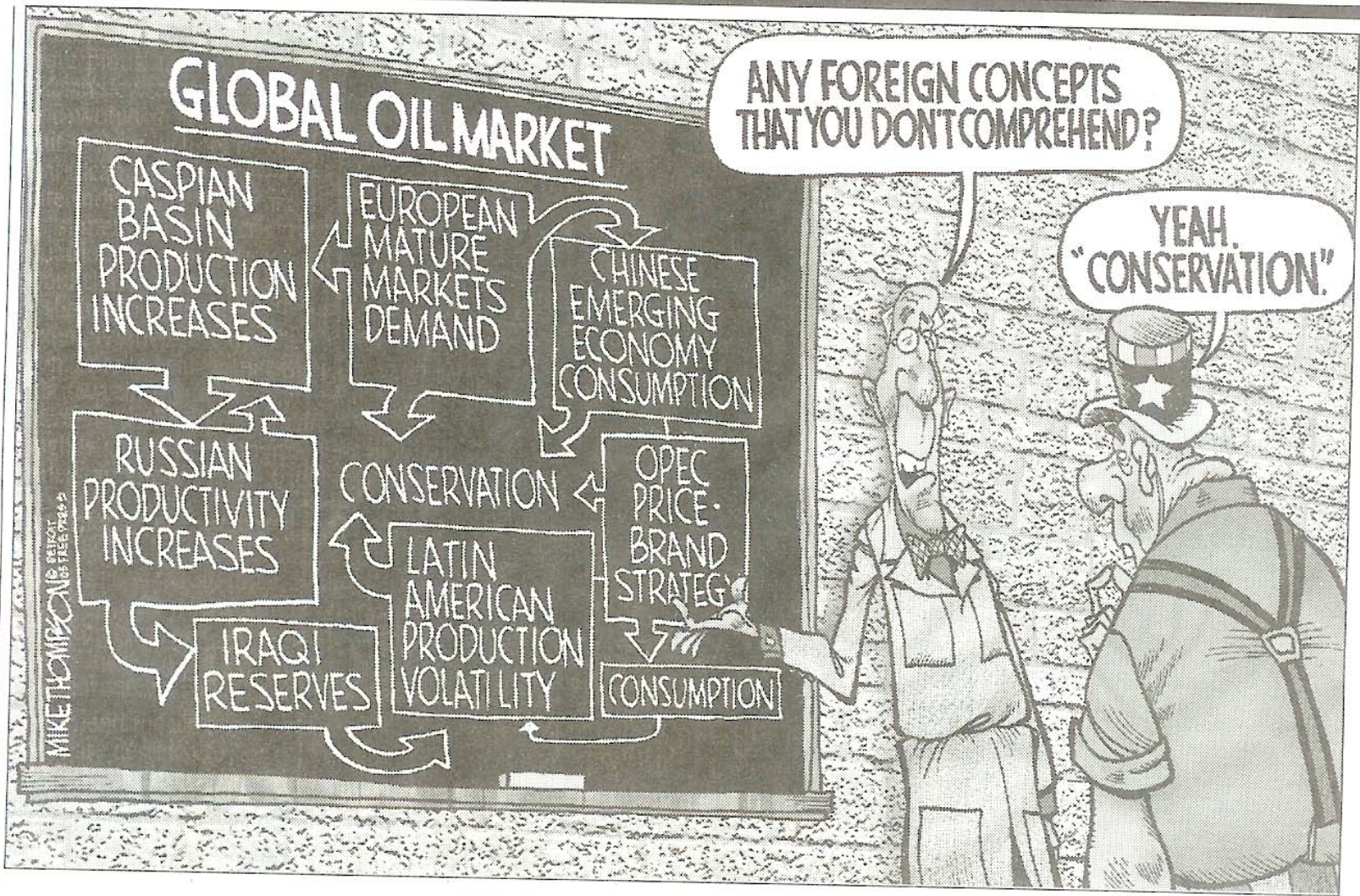


Energy Efficiency has multiple dividends



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

Kelley; Febber

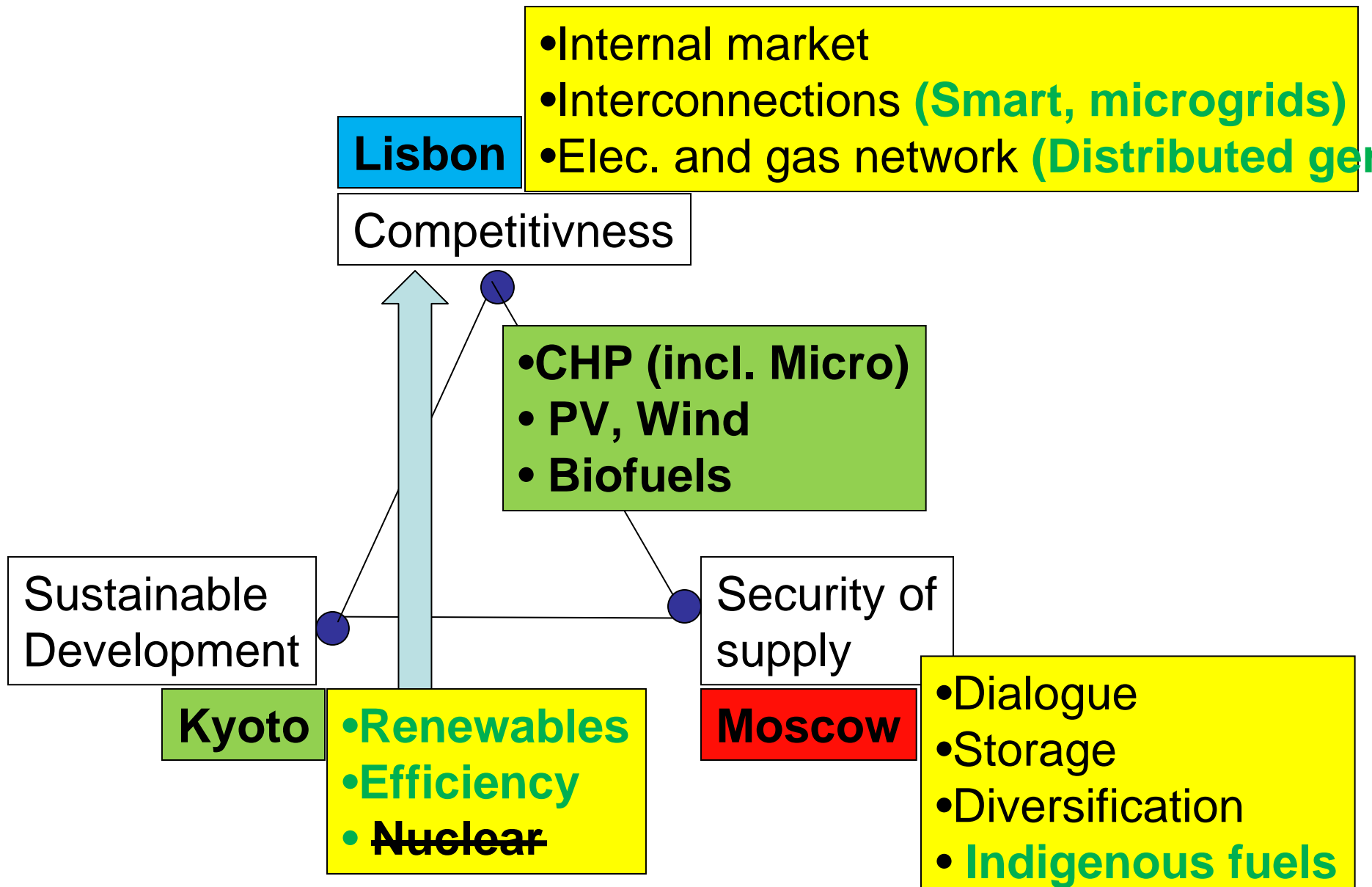


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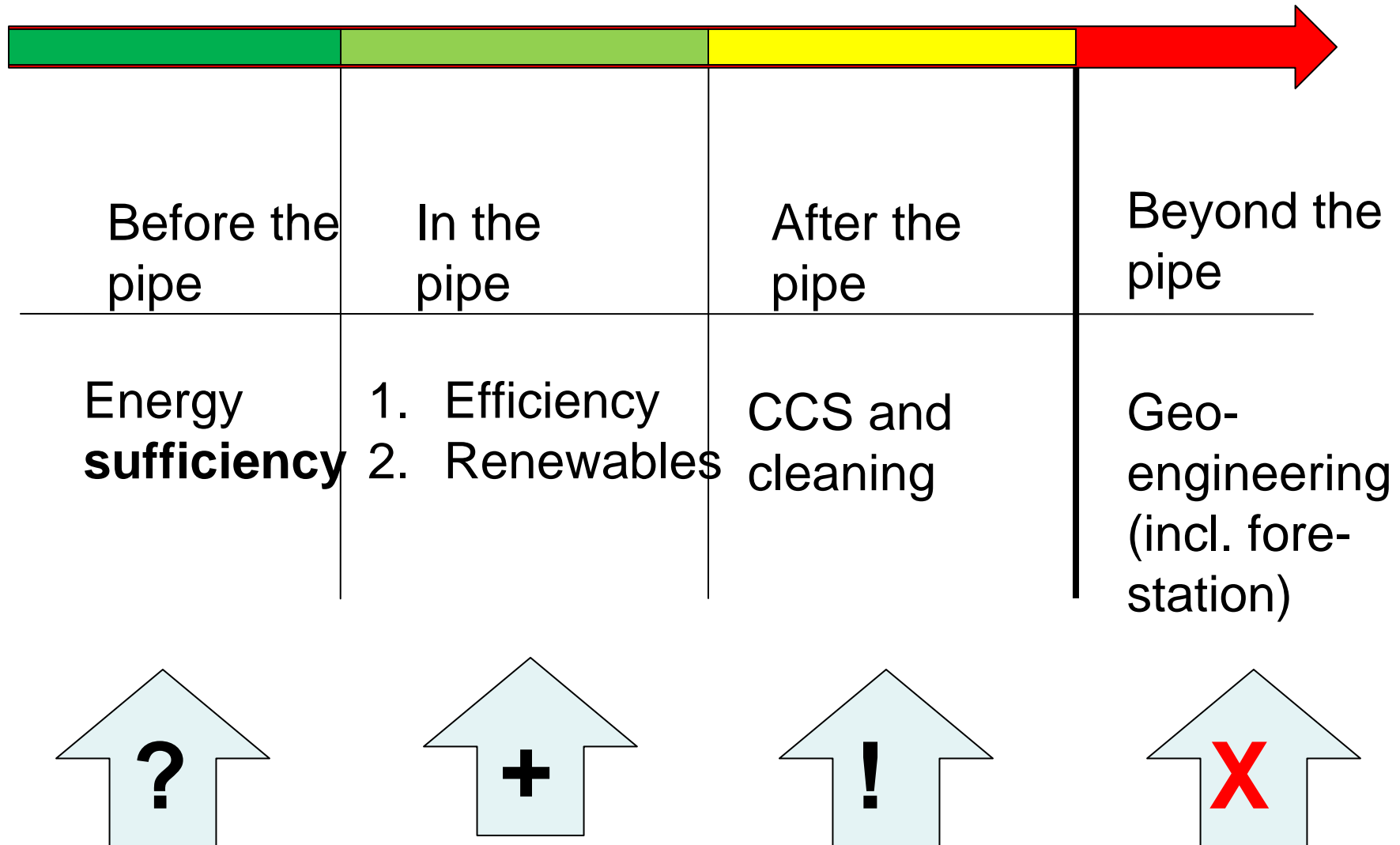
By Mike Thompson, Detroit Free Press, for USA TODAY

...NO, they are willing to endure abuse...

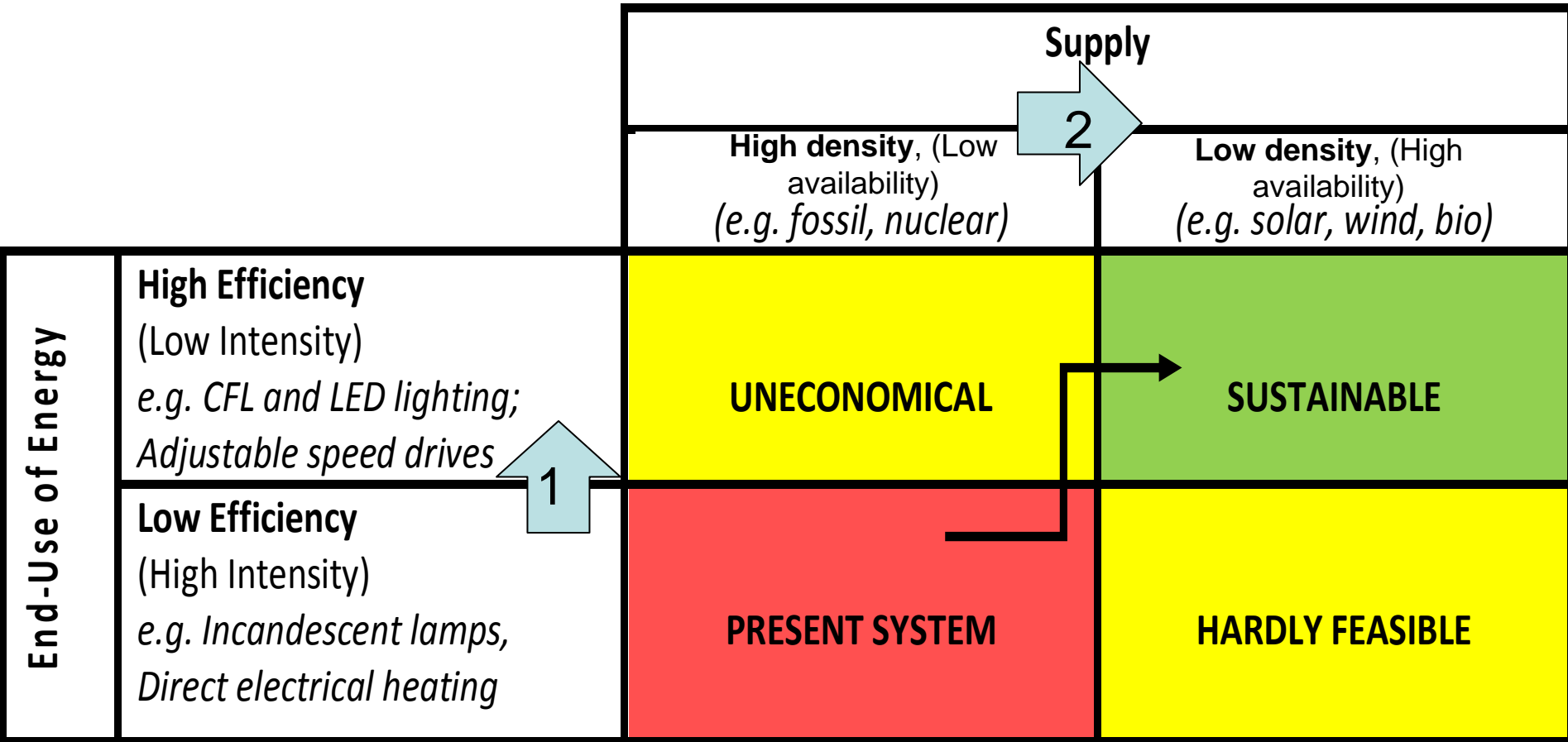
The Challenges



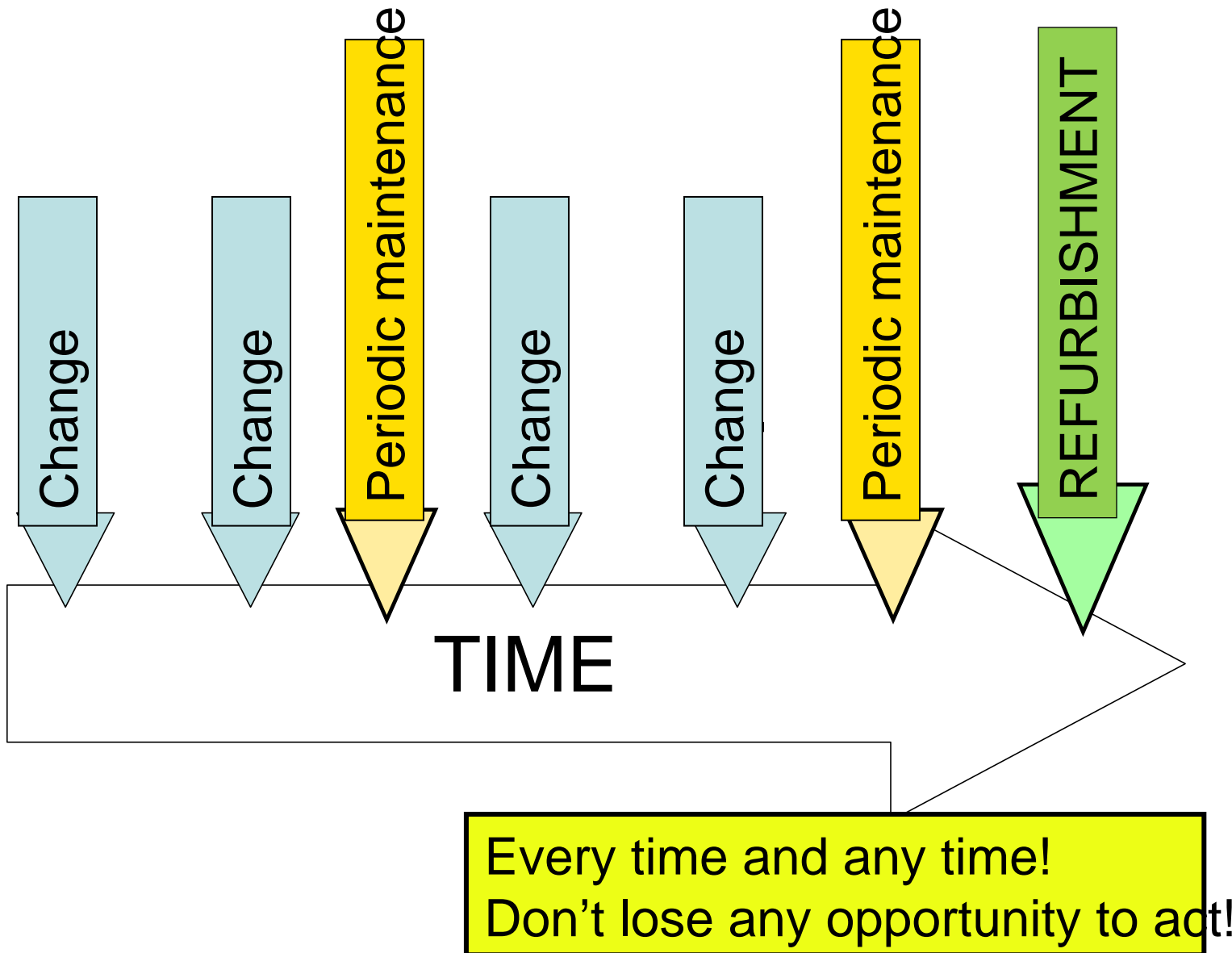
Where to begin the abatement?



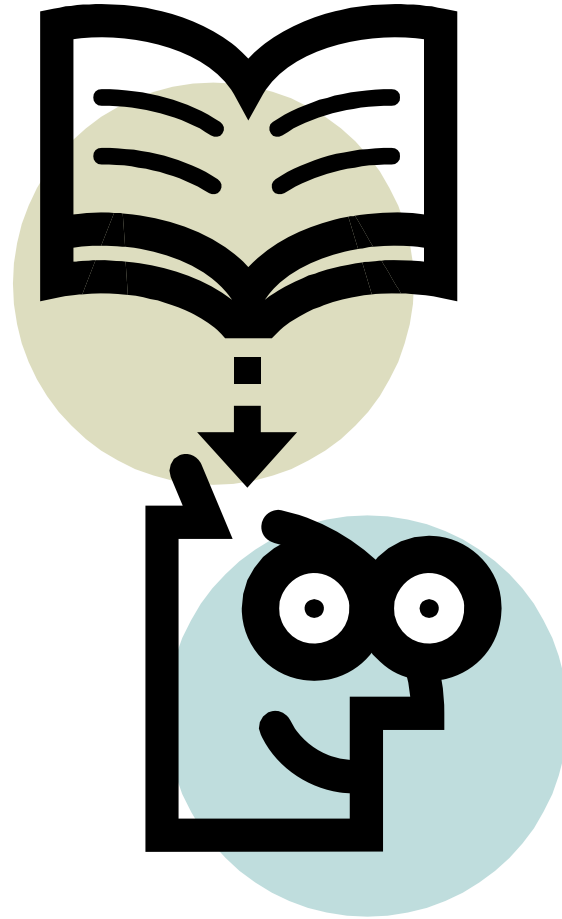
Towards Sustainability



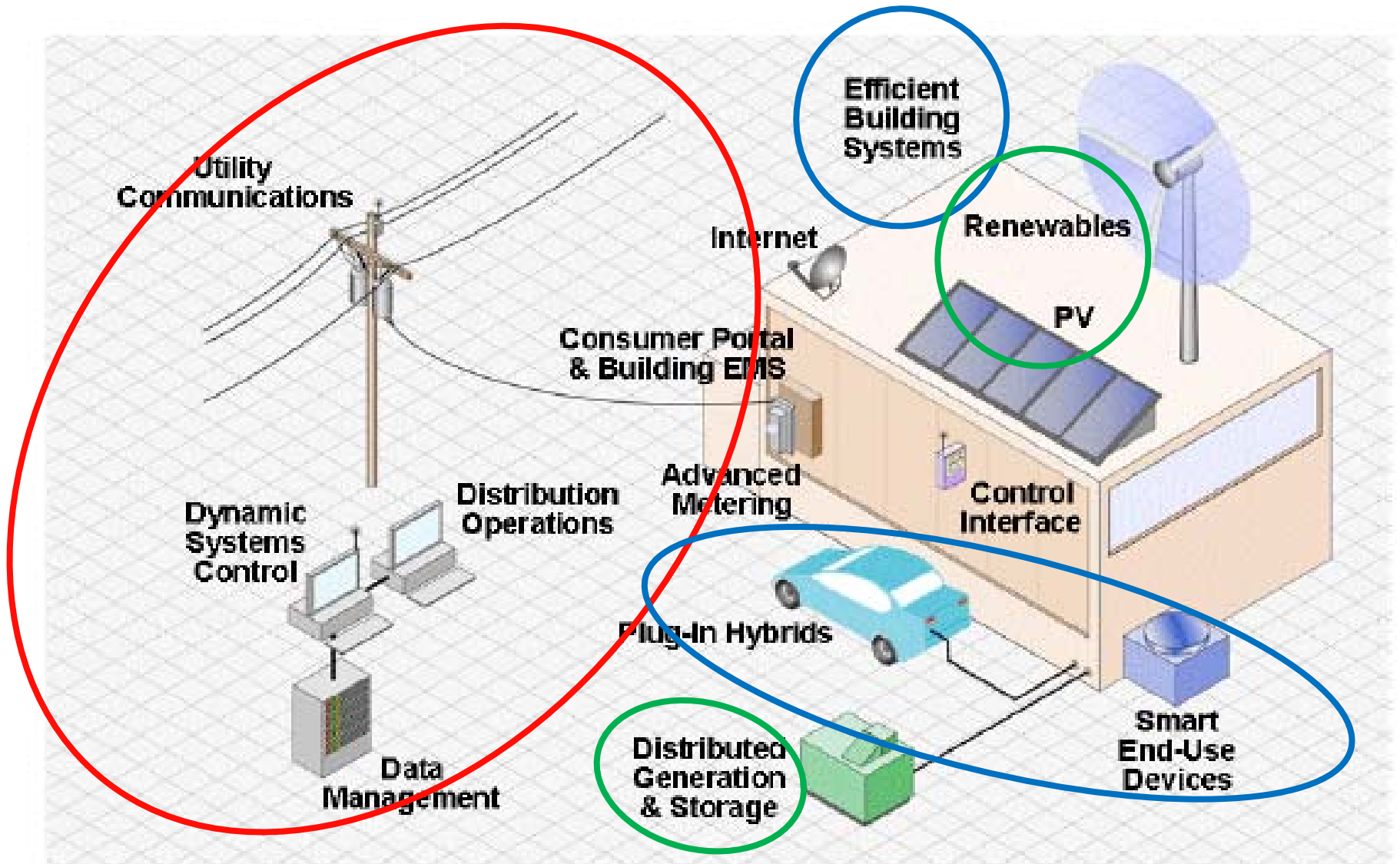
When should it be done?



Technology is different today



New Technologies



Future Business – The two extremes

- **Technology driven** (Adapt and combine technologies). Stakeholders are already identified actors who enters when the incentives are right
- **Service driven** (Adapt business structures). Some stakeholders are new and emerging. All are integrated to deliver services in accordance with needs and regulations

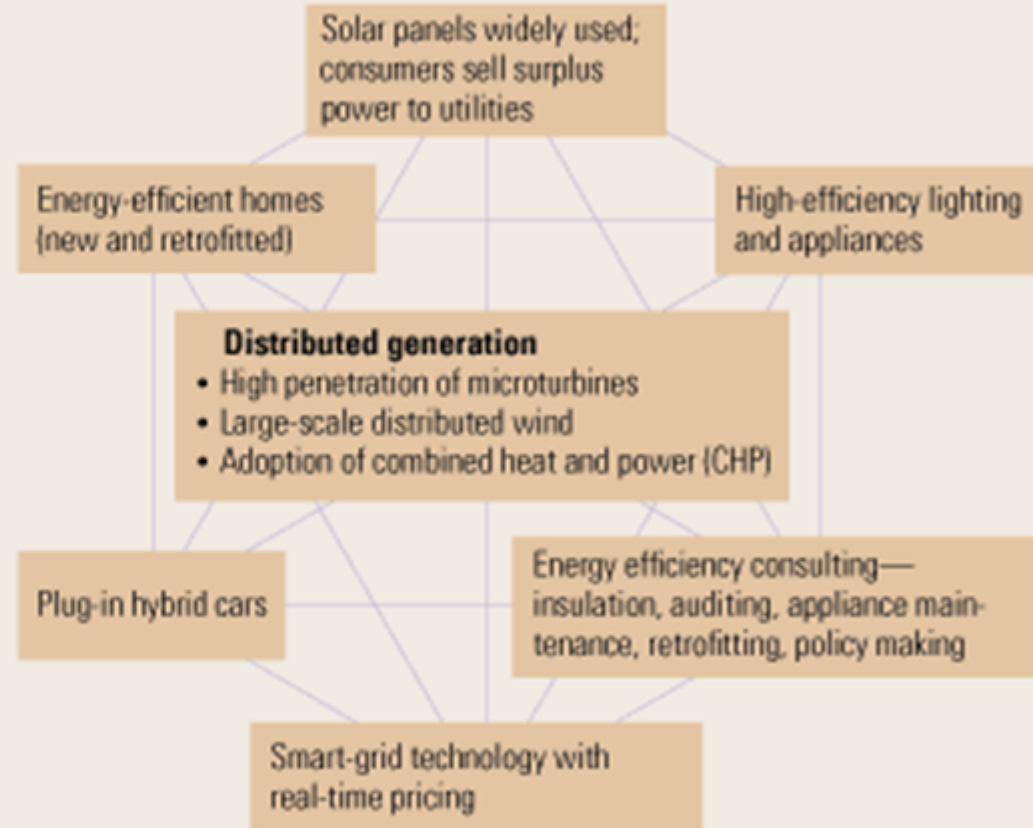
From the traditional utility ...



Current utility business model

- Highly centralized asset model with focus on infrastructure, capital programs
- Interaction with customers consists of producing and delivering electricity to meet demand
- Success driven by regulatory relationships, core business performance

... to the utility of the future



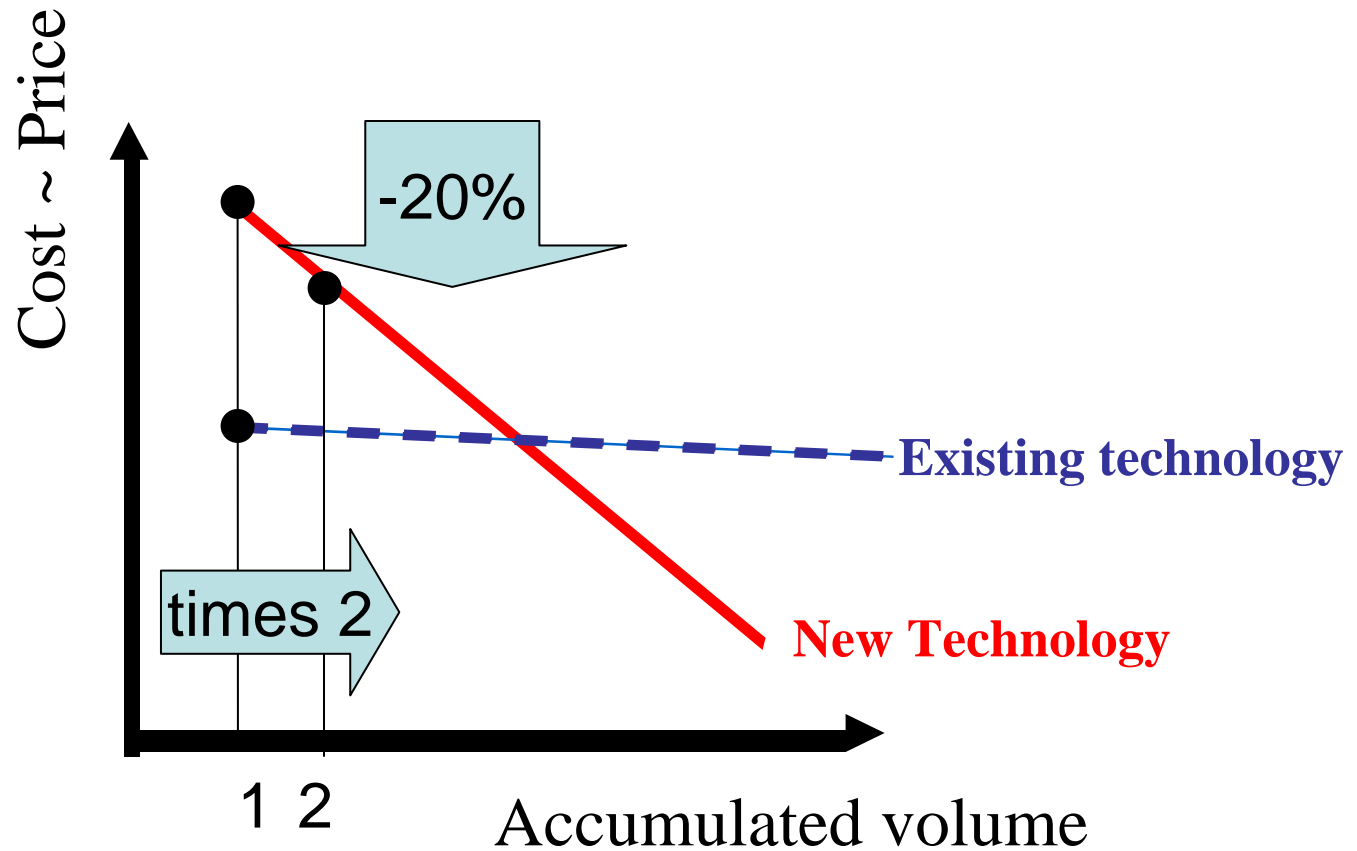
Potential utility business model

- Decentralized asset model with infrastructure featuring technology advances
- Customer interaction involves education/marketing, behavior modeling, and financing of services/new technology
- Success driven by revenue retention, partnering, and customer interaction

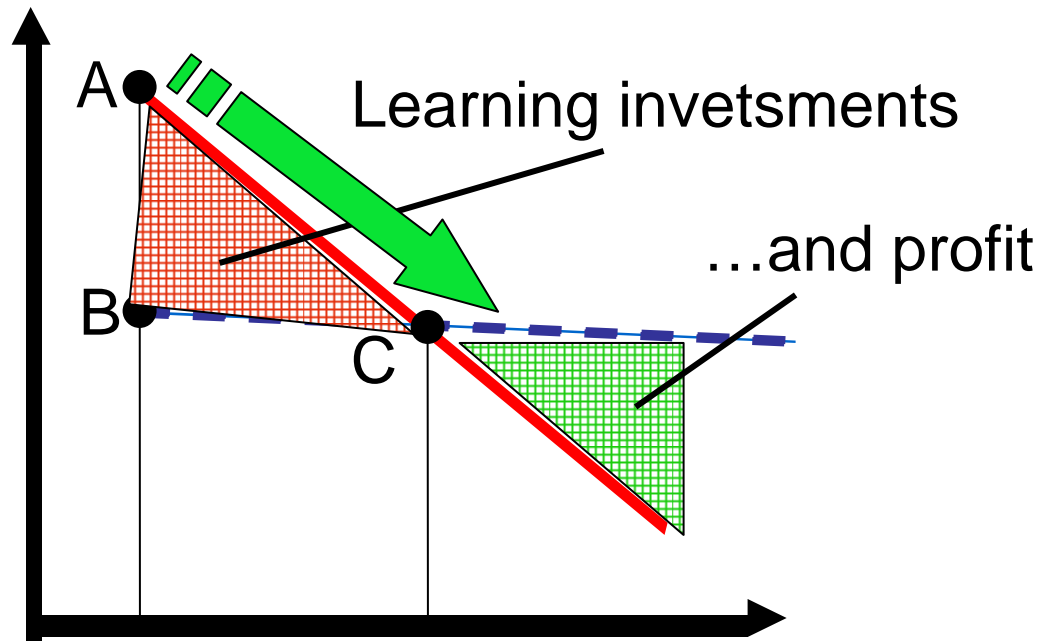
Technology

Service

Learning



Learning investments are not subsidies



New policies to incentivise!?



The potentials are there – go
for the acceptance

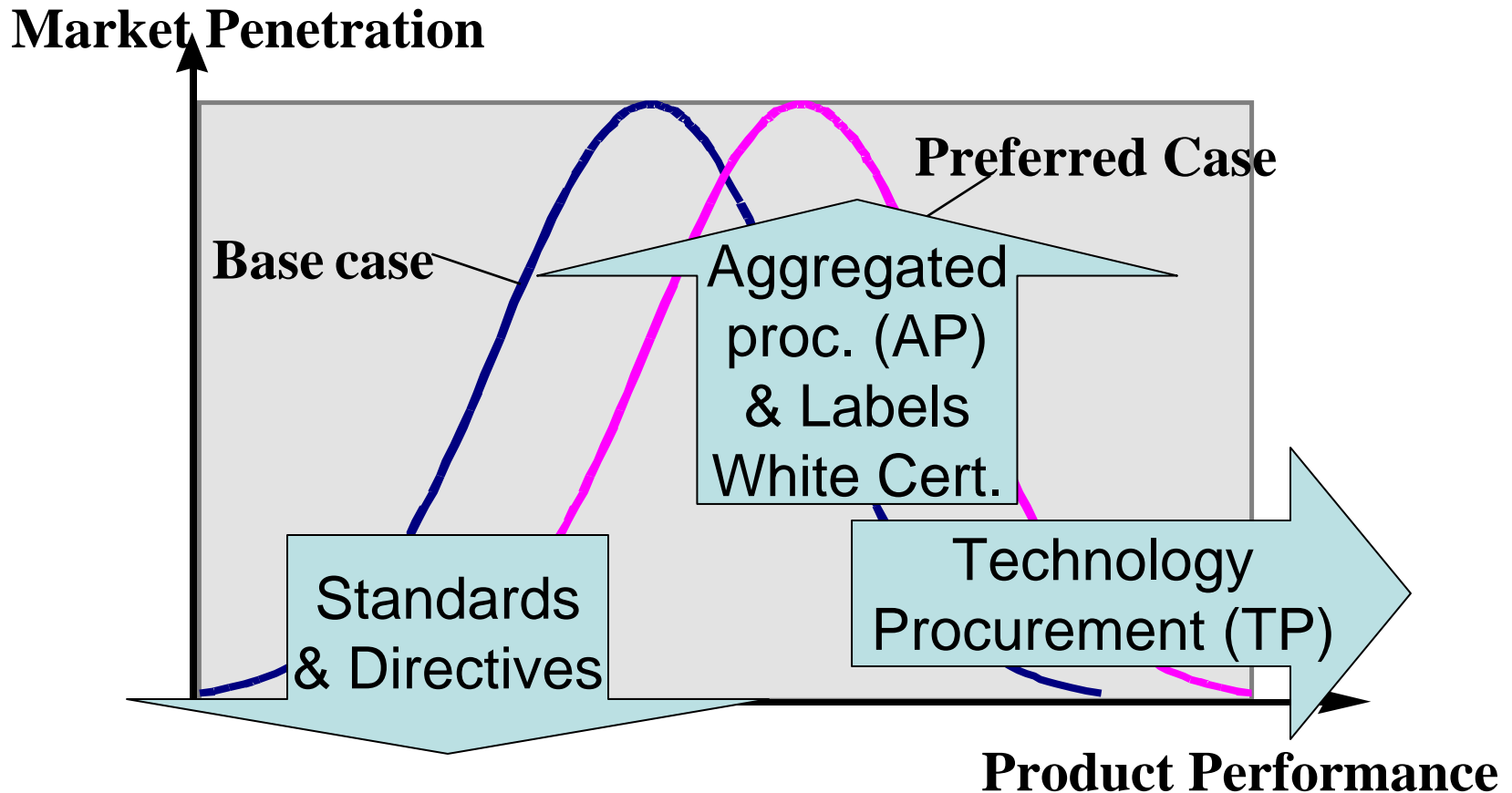
Result (Efficiency)

=

Potential _{technology, time}
*

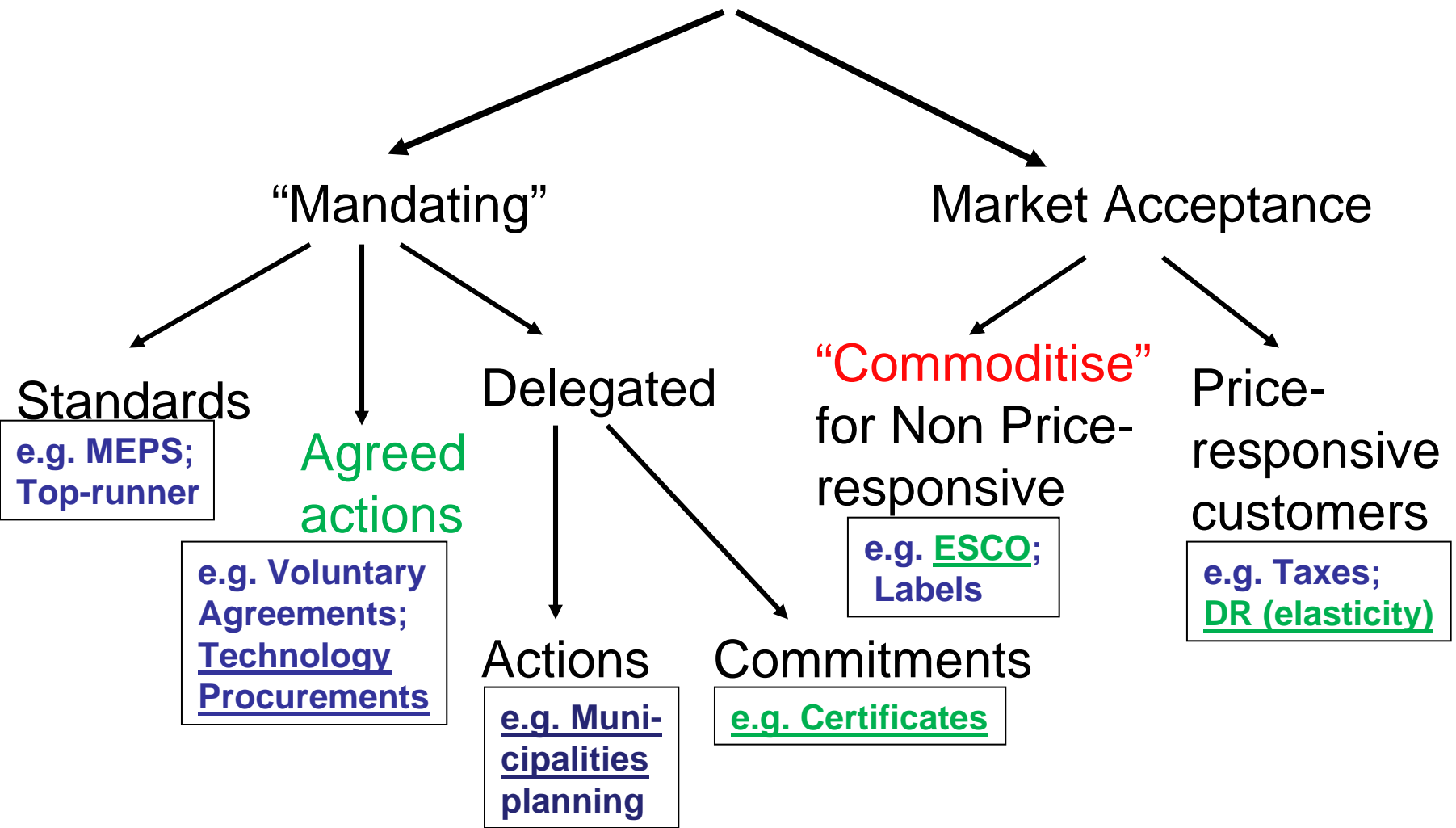
Acceptance _{time; exposure}

Market Transformation



But there are several means

LARGE-SCALE ENERGY EFFICIENCY



DSM Policy for load shape

- **Countries should develop a regulatory regime that appoints responsibility for resource adequacy**

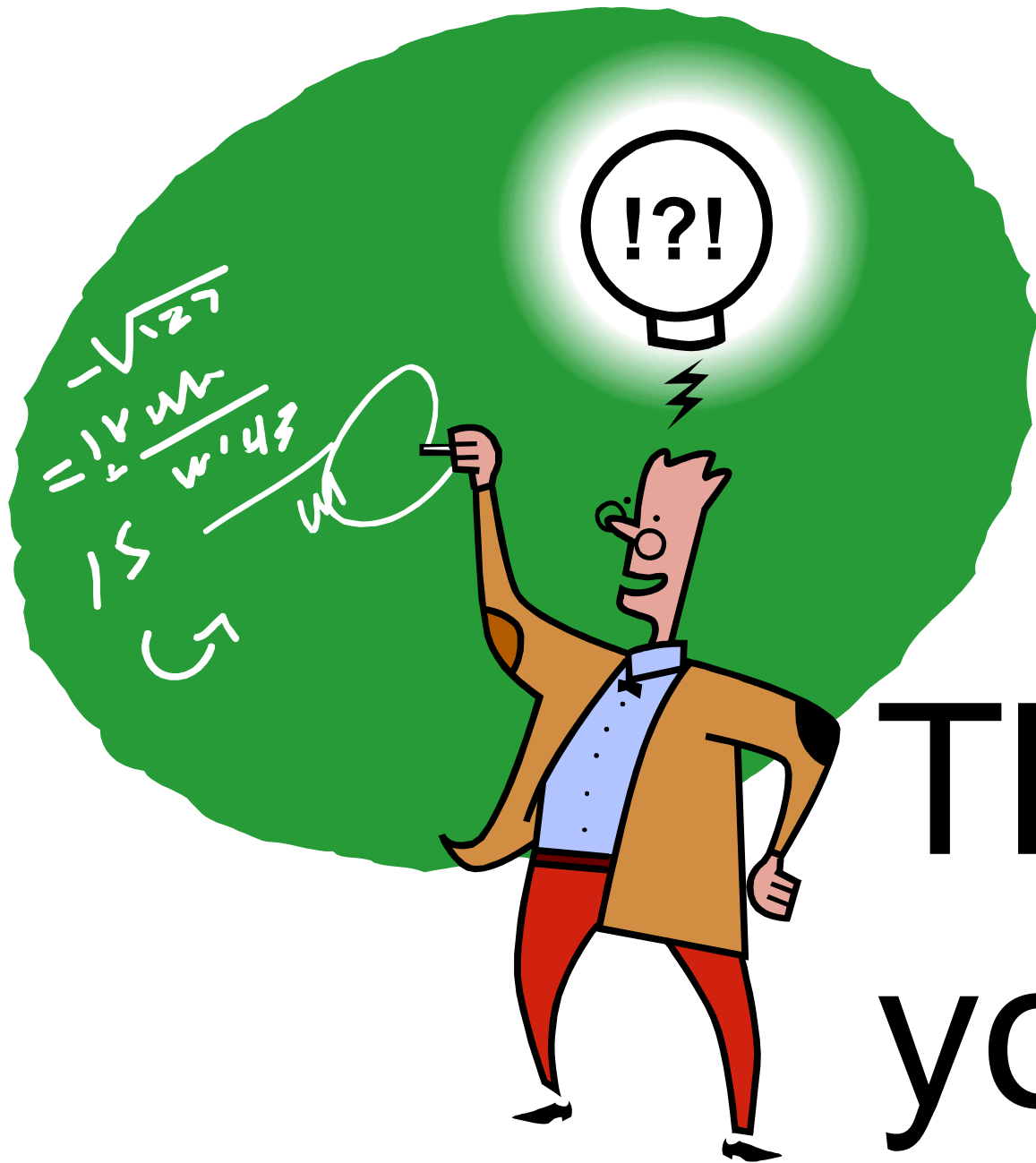
DSM Policy for load level

- **Assessment of the least-cost delivery of energy services that includes both the demand and supply side.**

The Stern messages

- Act now!
- The alternatives (costs) are worse (more expensive)
- The early actors may even gain financially from their acting
- Costs for technologies are falling (the learning element)
- Failure to act also has a moral element to it



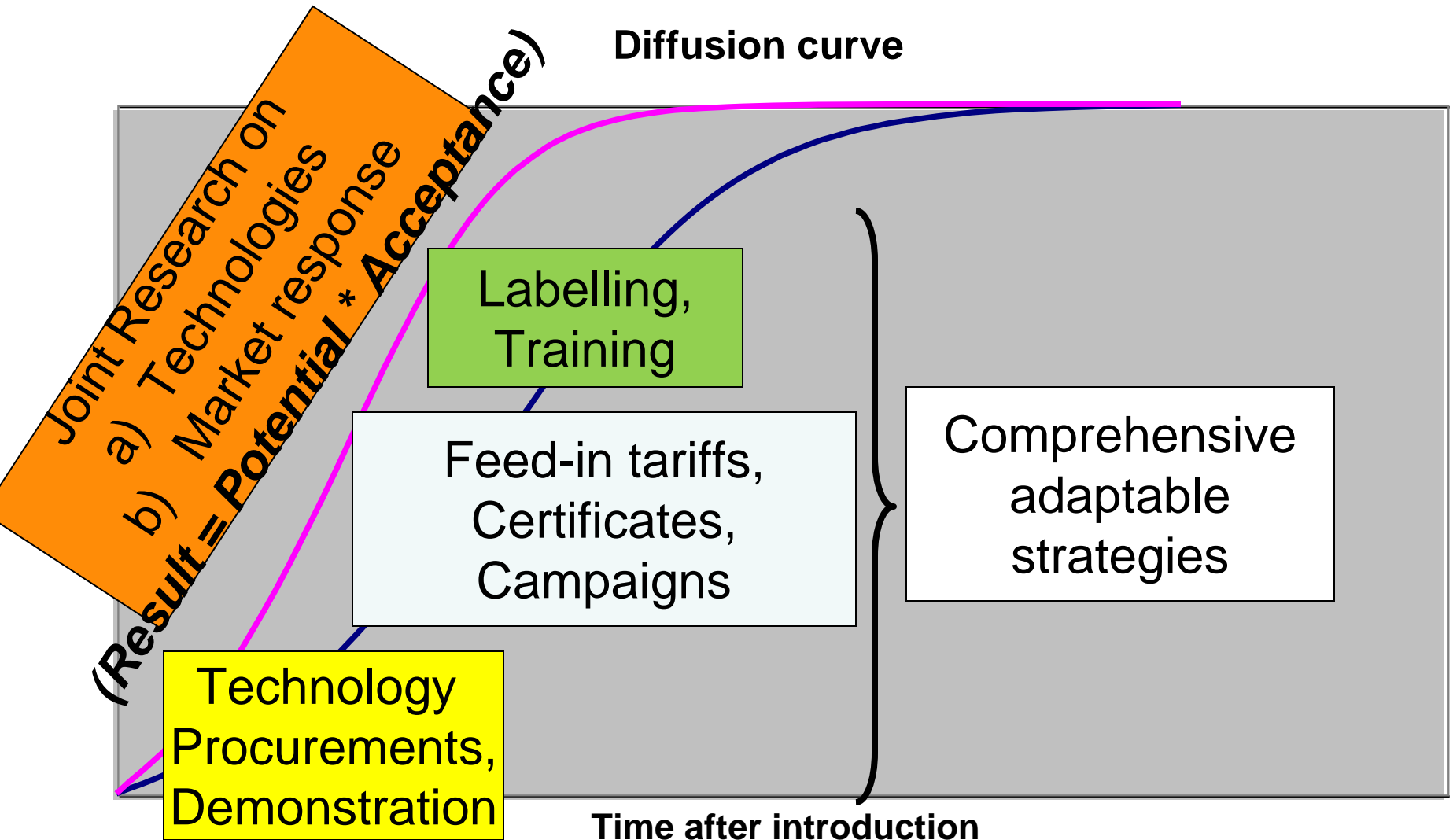


Thank
you !

Change Agents (companies, intermediaries, catalysts)

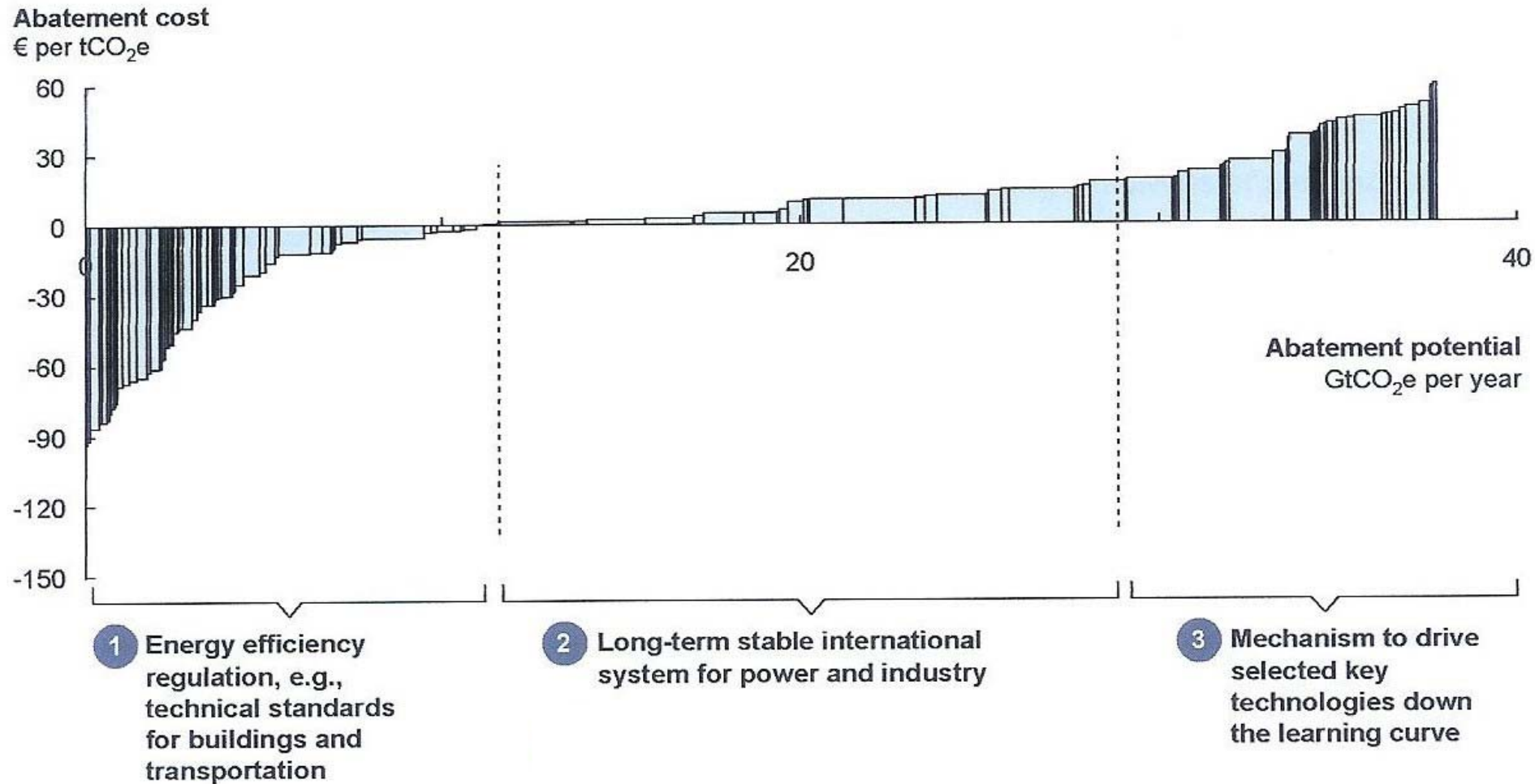
DSM-concept		Change agent role	Example
Classic (addressing utilities as they are)	Monopolised markets	Deliver products and services	Paradip Port (India)
	Customer aggregation	Fundraising	Public Benefit Charges (USA)
	Liberalised markets	Mandate utilities to achieve a set level of energy efficiency	White Certificates (Italy, some Australian states) and EE Commitment (UK)
Incentivising utilities to deliver energy efficiency		Decouple profit from sales volume	California Investor-owned Utilities
Energy Efficiency Power Station		Aggregate energy efficiency projects to the scale of a virtual power plant	Jiangsu, Shanghai and Guangdong (China) Efficiency Vermont
Government Deployment schemes		Aggregation of purchasing power	FEMP (USA), Technology procurement (Sweden)

Means for accelerated diffusion



Incentives - Not "One size fits all"

Key areas of regulation



Policy guideline for load level

Assess the least-cost delivery of energy services that includes both the demand and supply side.

DELIVERS MOTIVES FOR

- **Energy service companies** and performance contracting
- **Allocation of commitments and obligations** that mobilises the actors
- **Organisation and targeting of support programmes** for energy efficient products
- Improved allocation of **obligations for reduction of GHG-emissions** between sectors and countries
- Improved use of **market communication mechanisms**, e.g. standards and labels
- Input to how further **research and support** mechanisms should be distributed among actors.

Policy guideline for load shape

Develop a regulatory regime that appoints responsibility for the resource adequacy

DELIVERS

- **Less Price Volatility** by improving short term price elasticity
- Improved **System Reliability** by reducing peaks and adding to safety margins
- Enhanced **System security** by reducing dependency on vulnerable supply resources
- Improved **Restoration capacity** by dispatching in/after emergency situations
- **Less costly network reinforcements** since energy efficiency measures will be active alternatives
- **Distributed generation** as alternative to transmission lines.
- Improved **operation and use of flowing renewable** sources
- **Elastic response** as complement to competition