

Energizing Communities to Sustainability

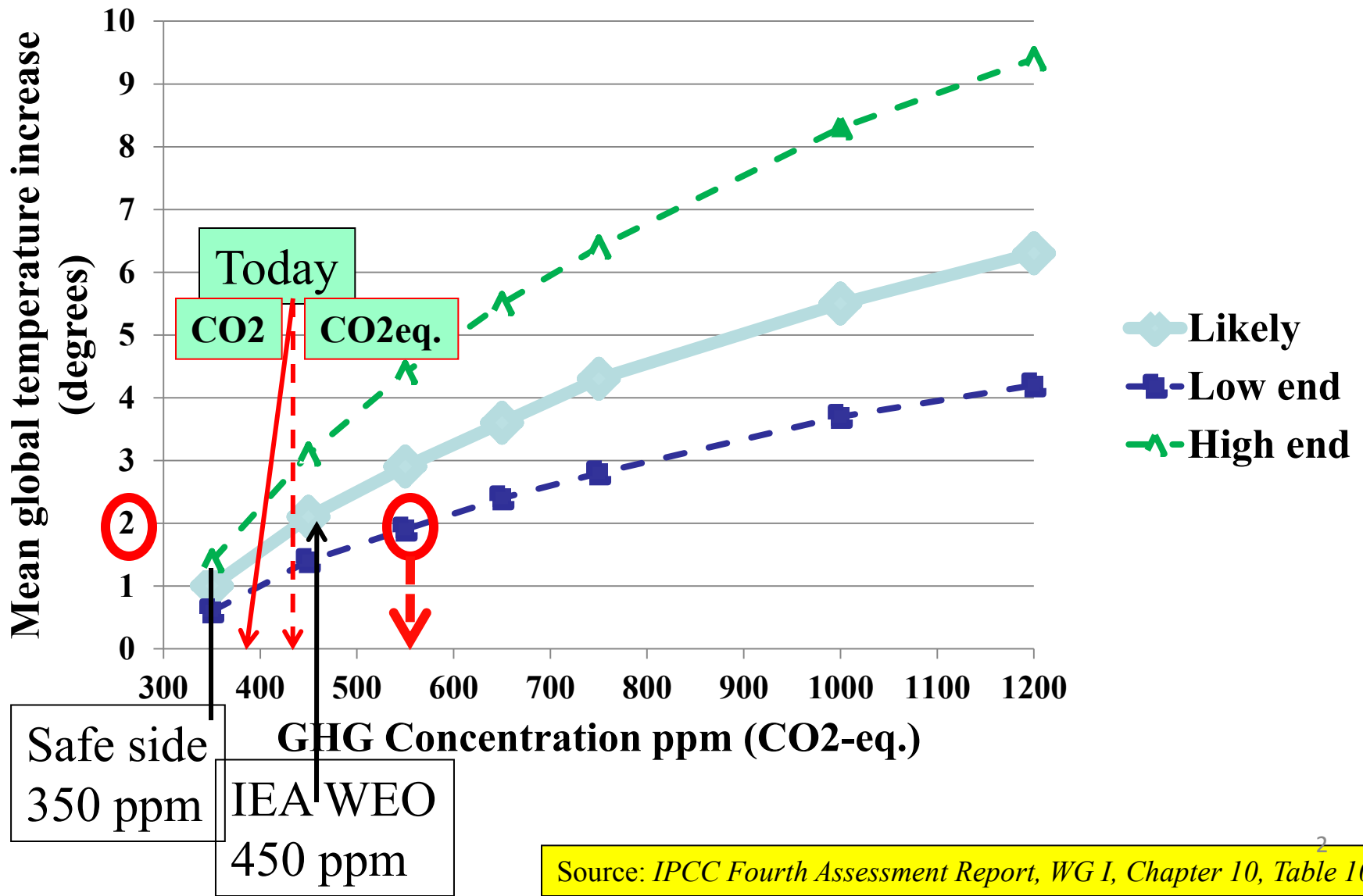
Hans Nilsson

FourFact AB

eceee

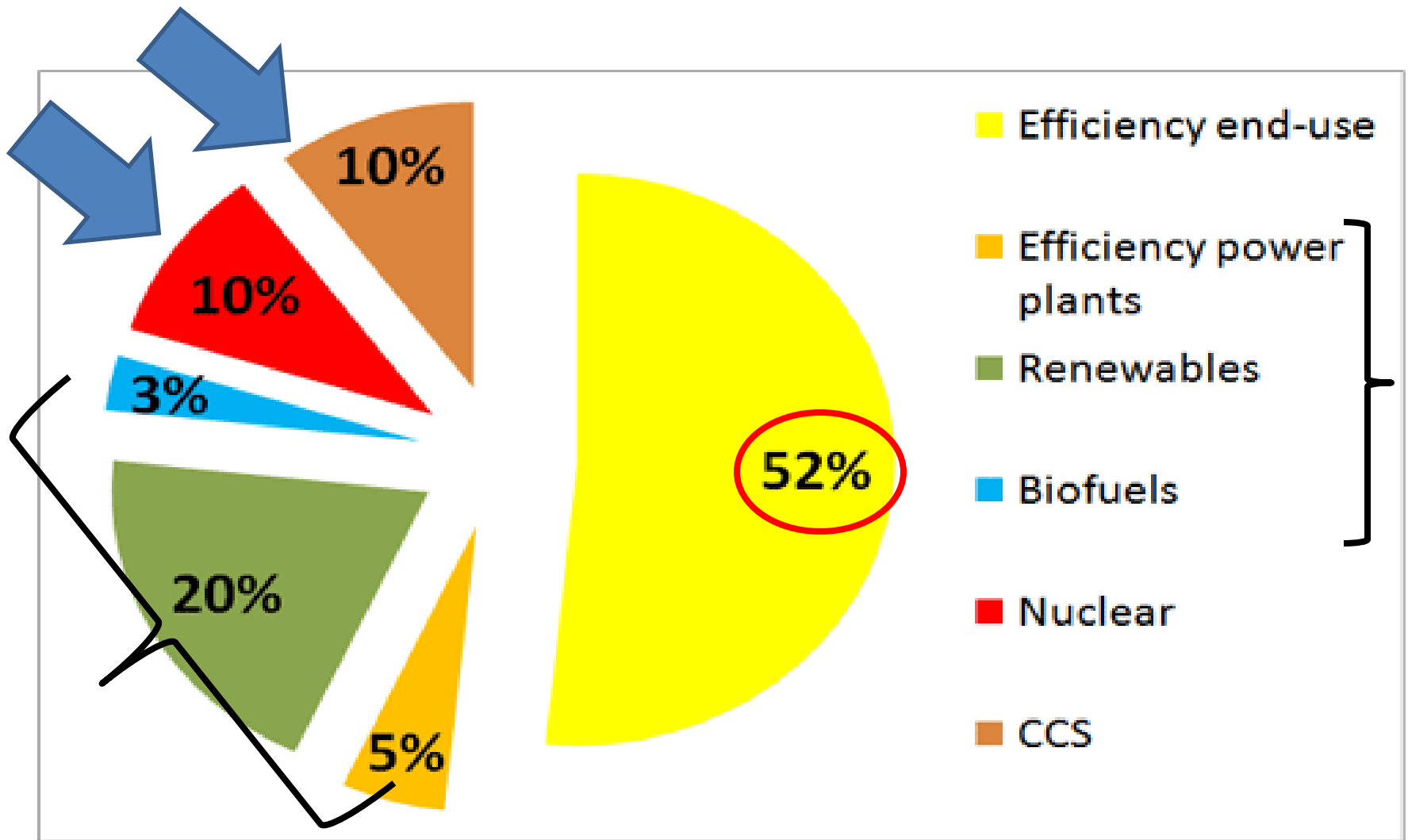
IEA DSM Programme

Mean temperature increase



Means for decarbonising till 2030

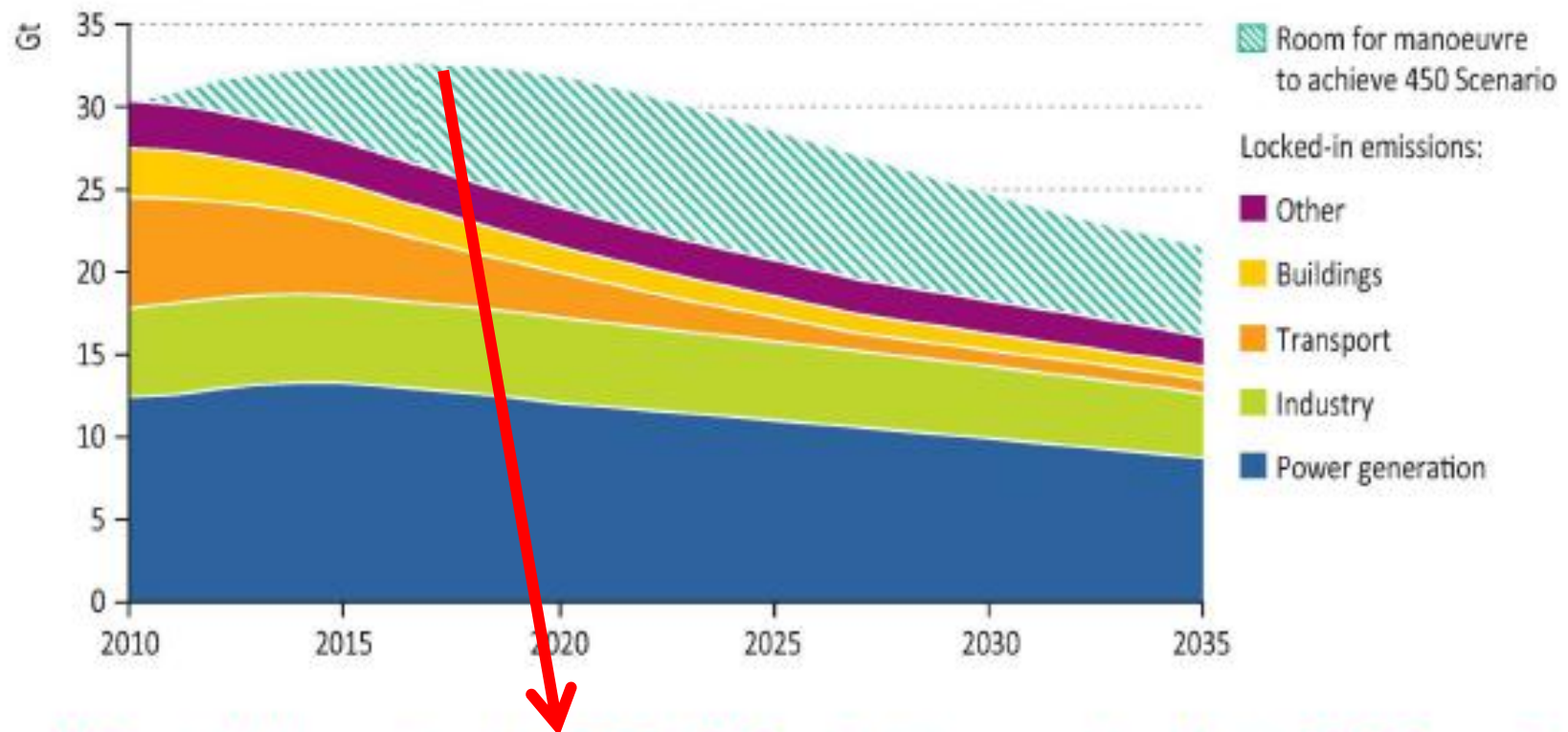
compared to BAU



*The door to 2°C is closing,
but will we be “locked-in” ?*

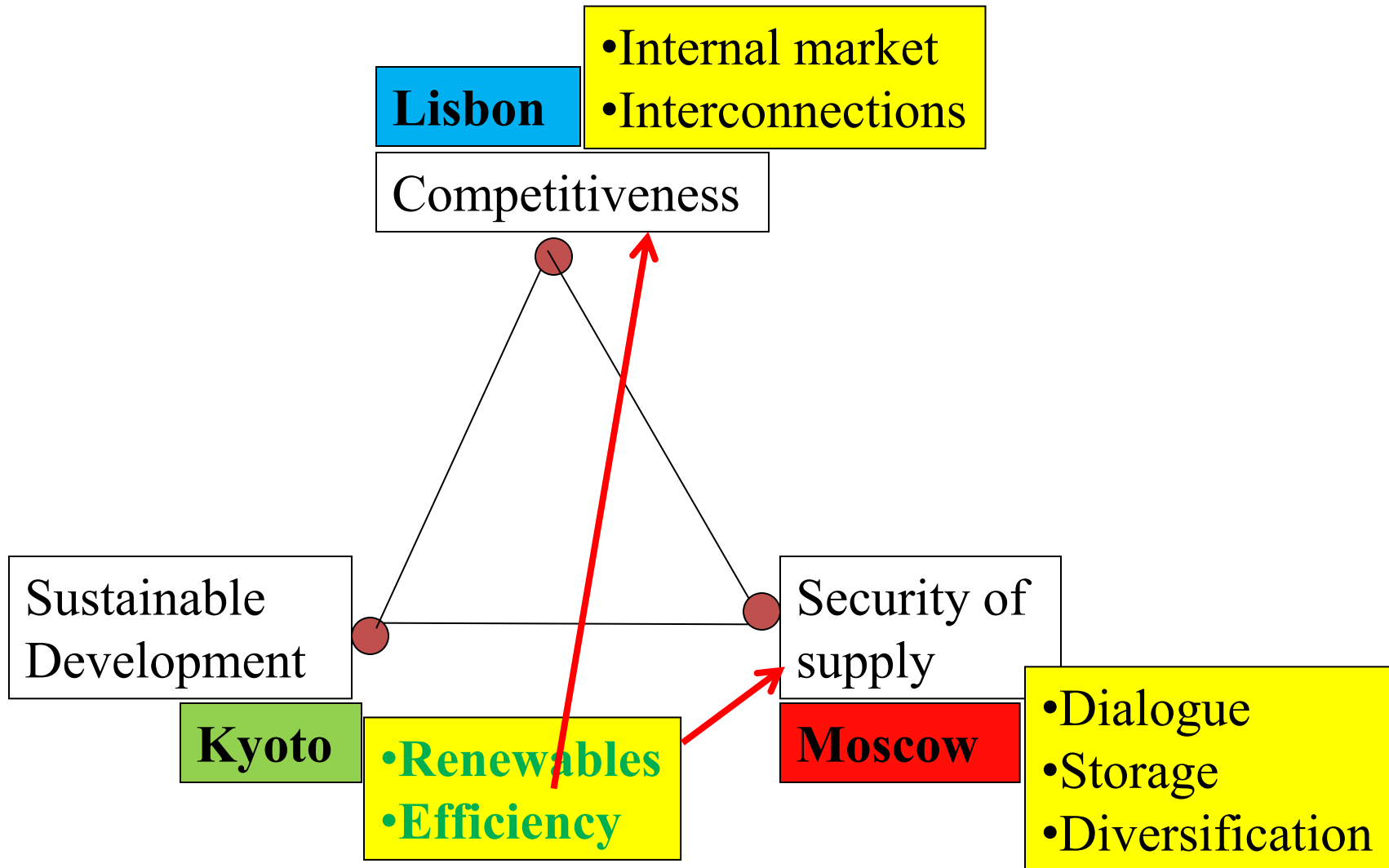
WORLD ENERGY OUTLOOK

Figure 6.12: World energy-related CO₂ emissions from locked-in infrastructure in 2010 and room for manoeuvre to achieve the 450 Scenario



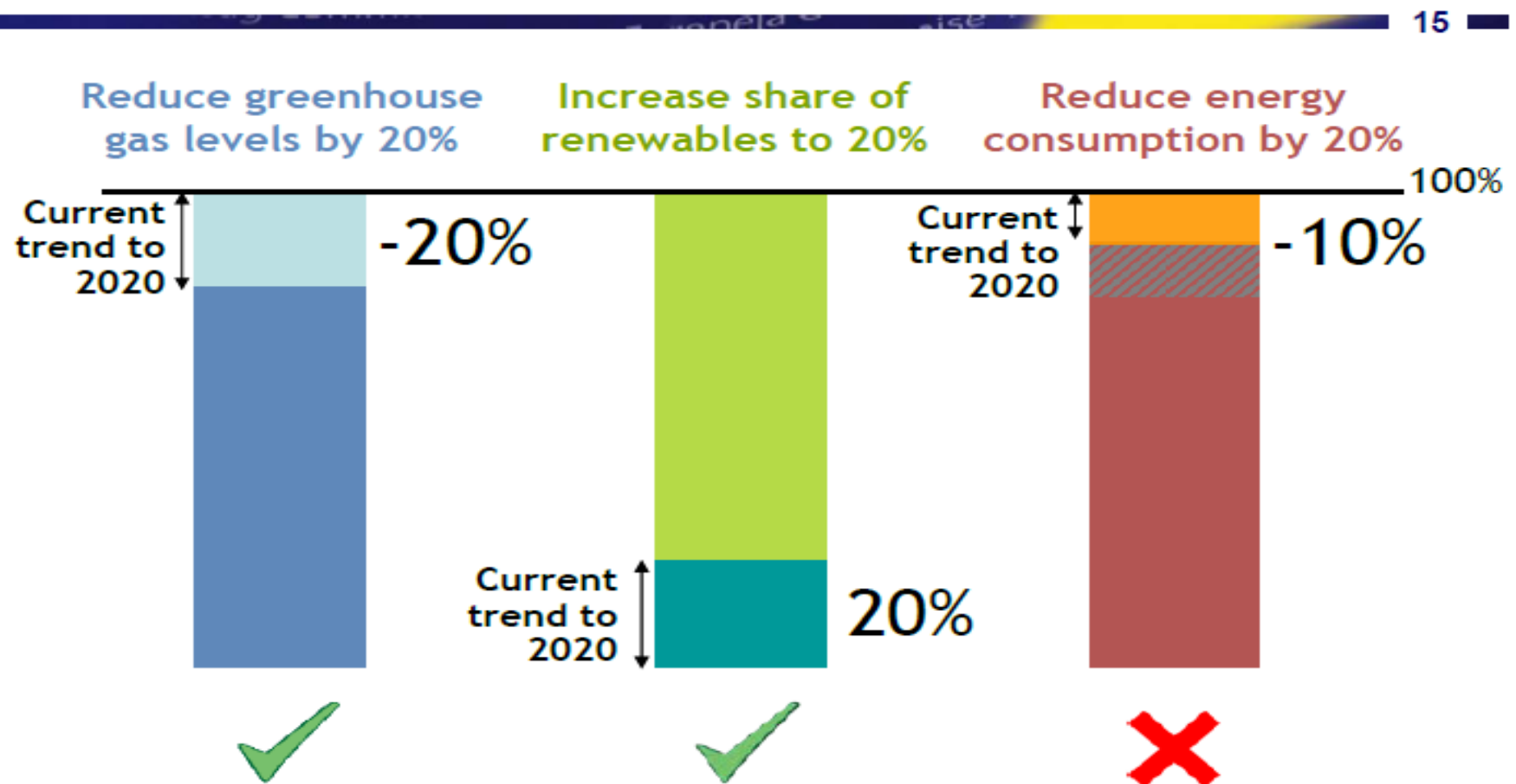
Without further action, by 2017 all CO₂ emissions permitted in the 450 Scenario will be “locked-in” by existing power plants, factories, buildings, etc

The EU Challenges -2009



A modest proposal

Meeting our “20-20-20 by 2020” goals



With high impact

Benefits of meeting the 20% efficiency target are enormous

**368
Mtoe**

Primary
energy
savings
in 2020

=

**2.6
billion**

Barrels of
oil we do
not
have to
import
per year

=

**193
billion
EUR**

Money saved
at
conservative
73
EUR/barrel
per year

=

**1 000 fewer
coal power
plants**

or

**GDP of Portugal
in current prices
(2010)**

À la recherche du temps perdu

Oilcrisis (1973-

Act 1: SAVE OIL AT ANY PRICE

GOVERNMENTS' RESPONSIBILITY

Efficiency (1985-

Act 2: THE MARKET WORKS (ALONE)

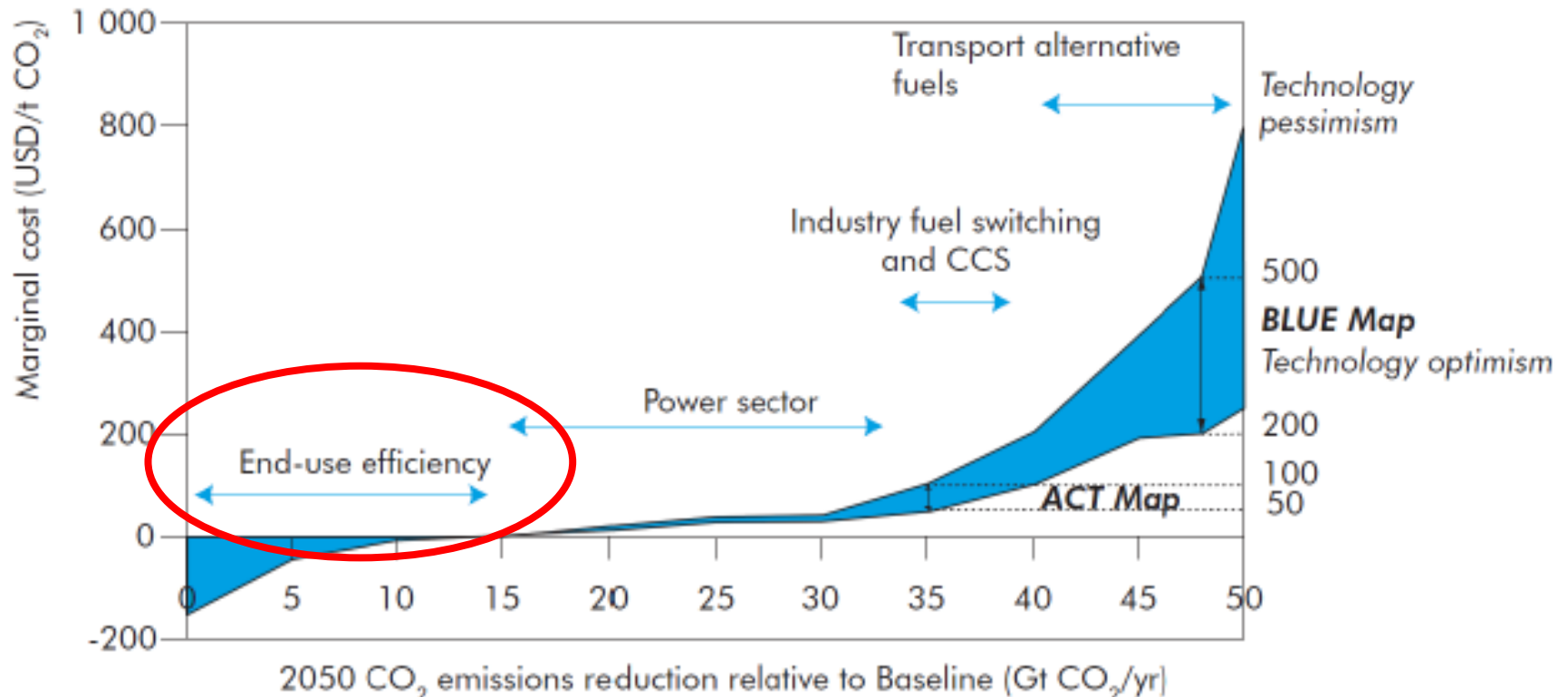
(The invisible hand with a green thumb)

Sustainability (2000-

Act 3: ACTIVE LEADERSHIP

(But who ?)

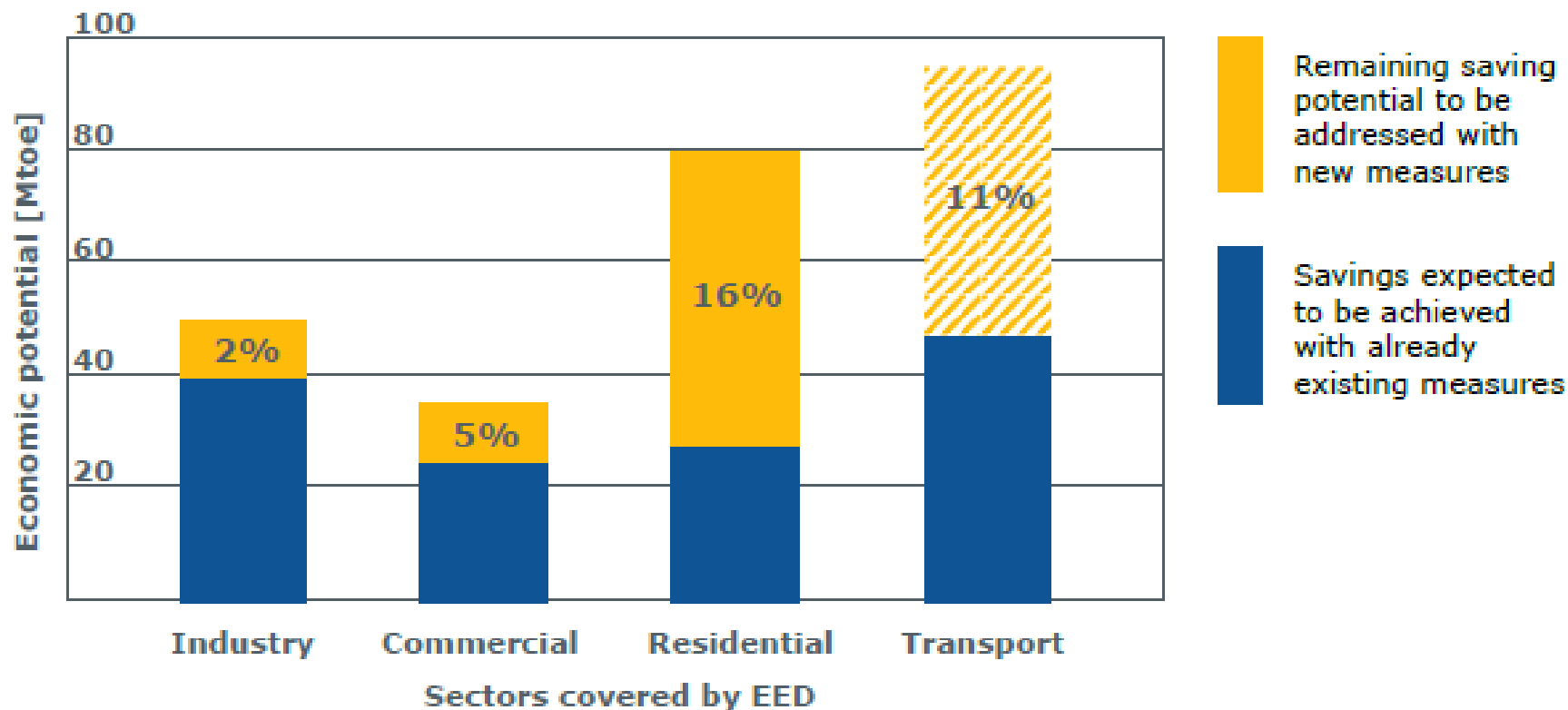
Energy Efficiency – the cheap solution



Source: IEA Energy Technology Perspective 2009

The potential for energy savings

Despite untapped savings potentials across all major sectors



The potential is > 50%

- Over an **investment cycle** (Buildings – long (decades); Industry – short (decade); Transport – Medium)
- **Benefit** is normally **underestimated** (comfort, security, robustness is not accounted for)
- **Costs** are normally **overestimated** (market learning, routine development is seldom regarded)
- **Planning** is normally absent (Building declarations, Management Systems) since it is not required or stringently applied

Not difficult, but complicated

What the customer wants!



What the customer ought to get!

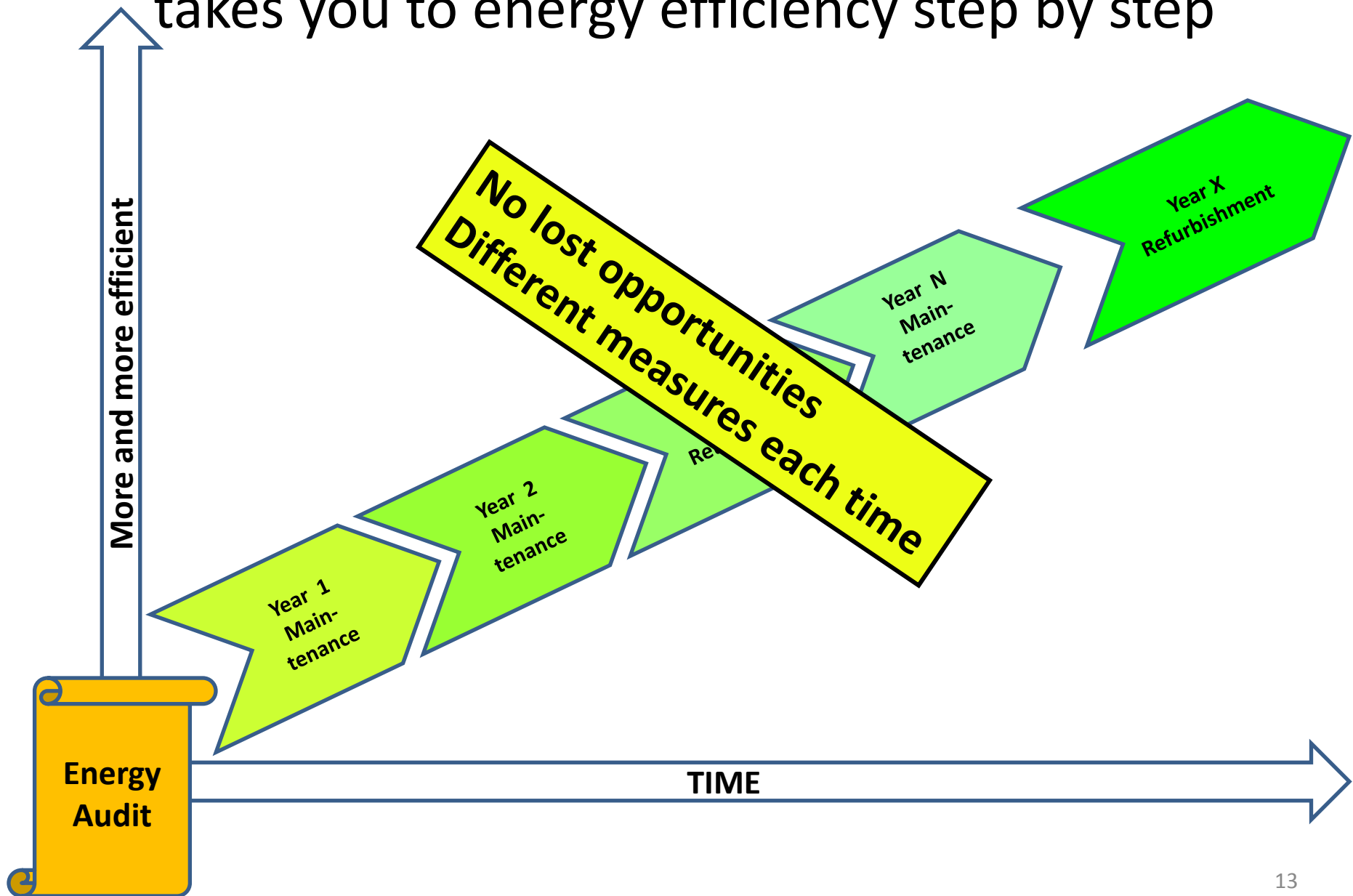


Competences to make the changes

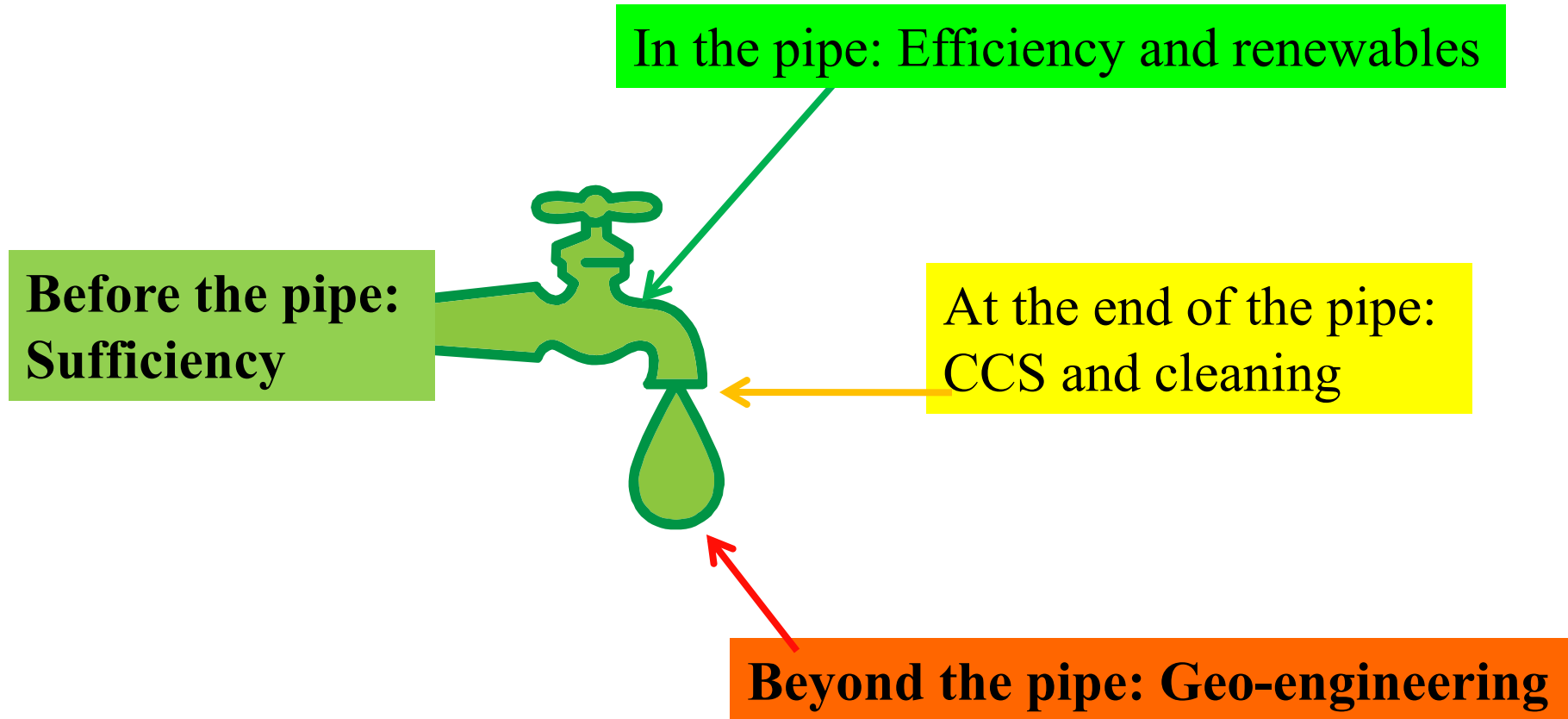
Insulation, ventilation, cooling, heating, building, electricity, lighting, plumbing, solar shading, compressed air, control, ICT, etc.

Focus and Perseverance

takes you to energy efficiency step by step



Where (in the pipe) should we act?



Creating Markets with Experience

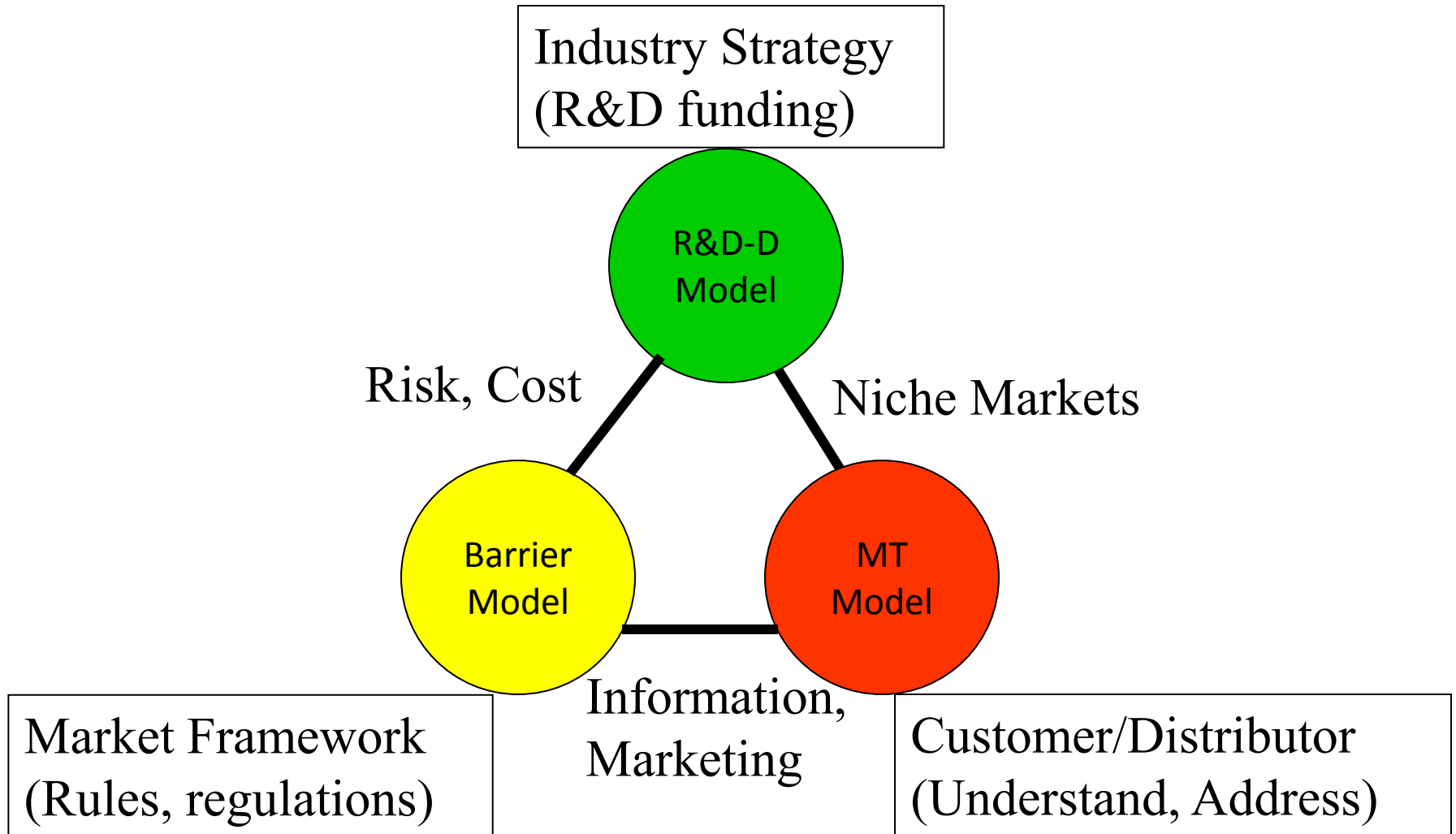


INTERNATIONAL ENERGY AGENCY



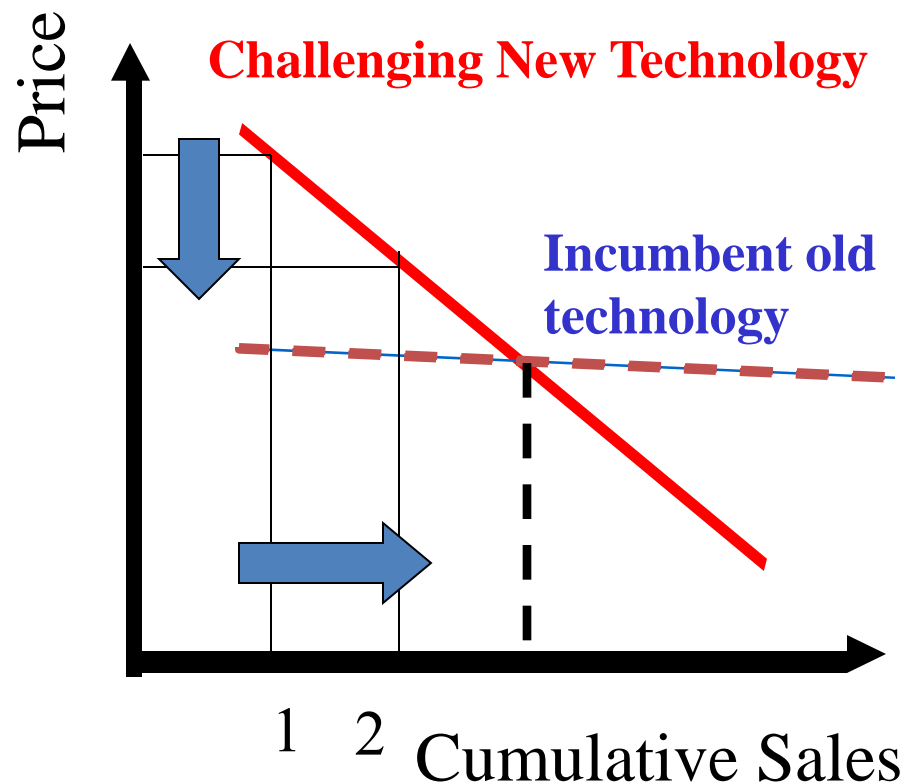
Lessons Learned in technology deployment policies

THE TRIANGULATION MODEL



The message of the learning curve

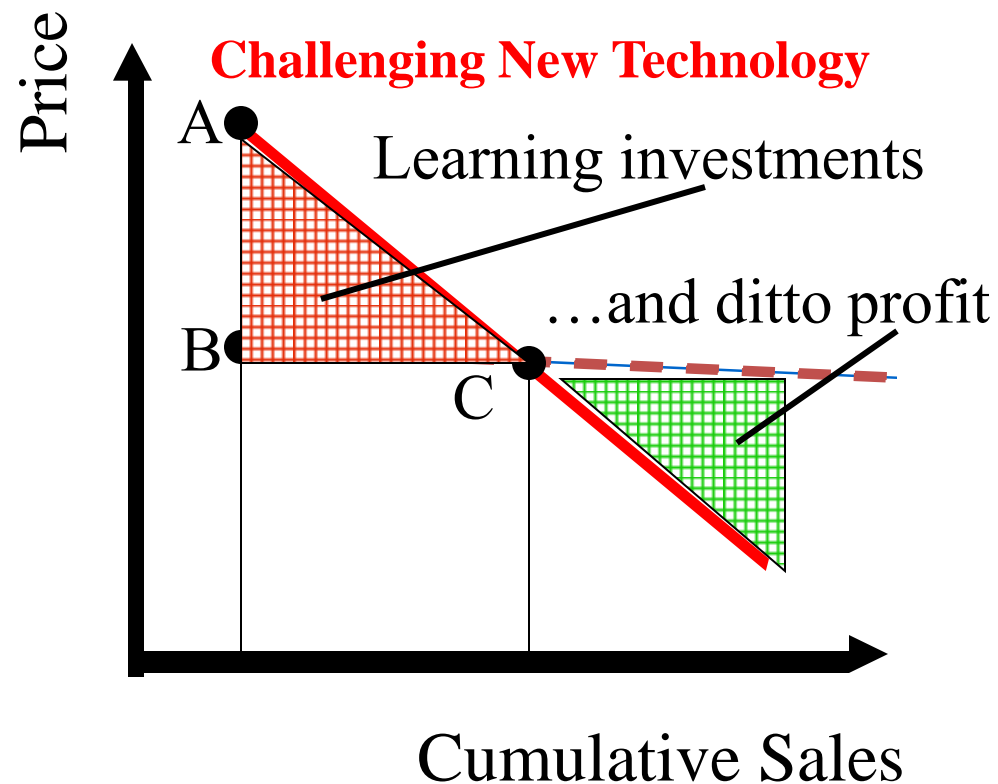
- Price (Cost) is reduced by 10-25% by each doubling in cumulative volume/sales (LR=Learning Rate)
- The new technology might reach a break even and be competitive to the old technology



Learning curves are straight lines in a double
Logarithmic scale

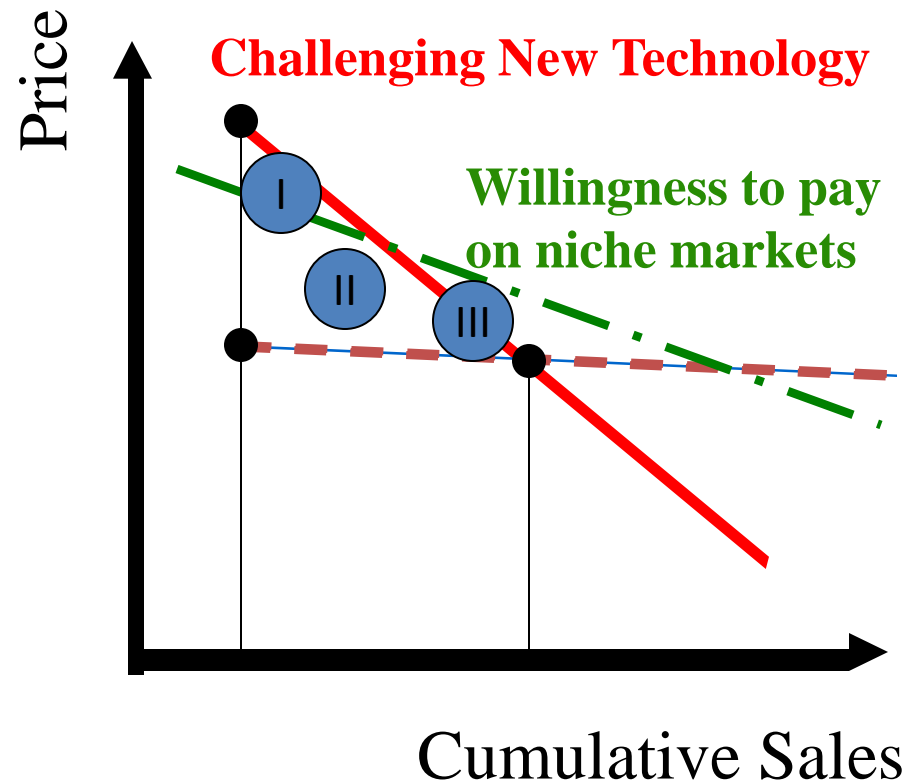
The learning investments have to be covered and recovered

- Learning investments are not subsidies IF they can be anticipated to yield future profit
- Someone has to start the process
- It takes TIME to reach break even
- The investments might be HUGE

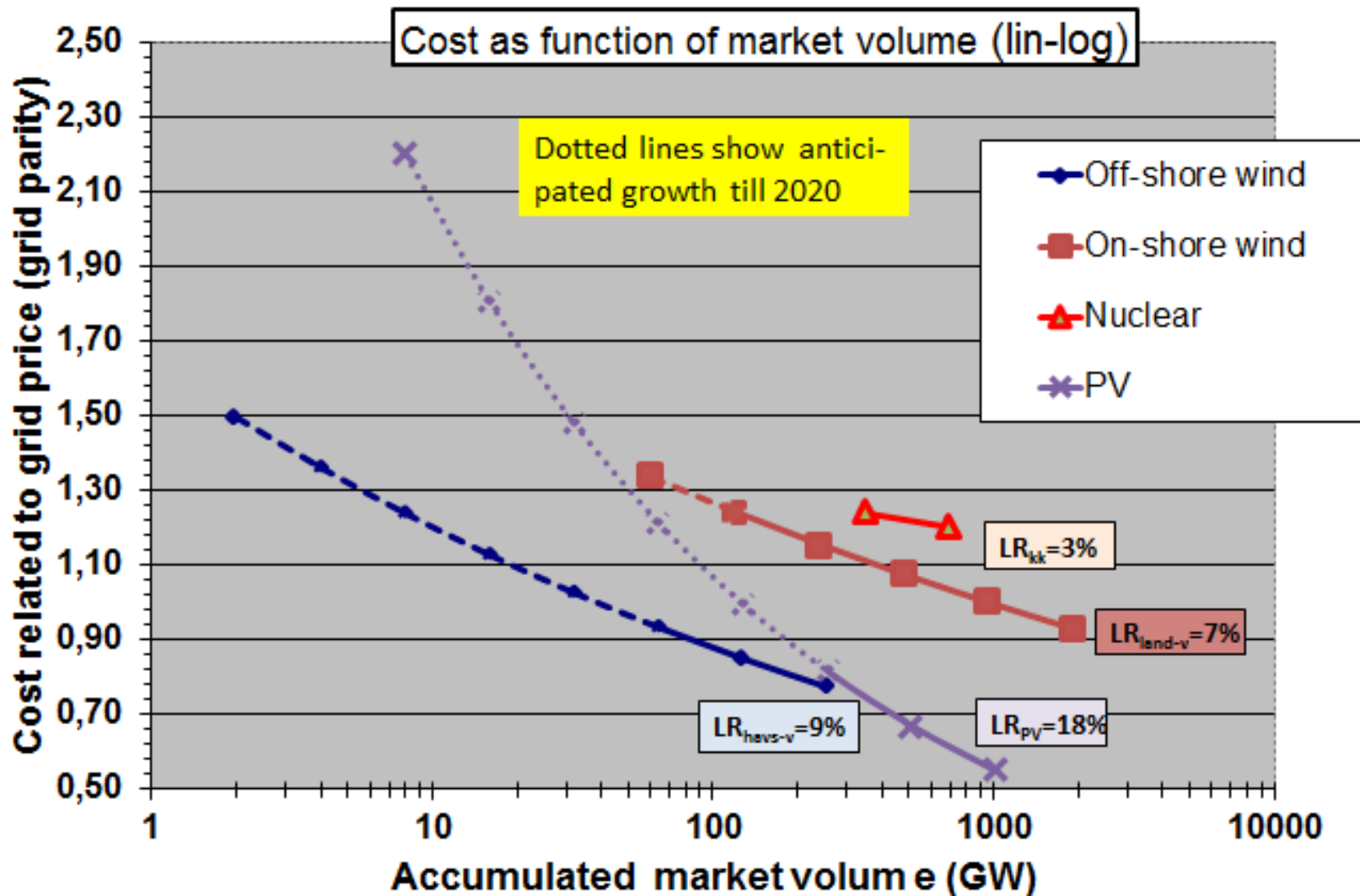


There is always someone to share the bill

- (I) Government and companies that have a “first-mover” interest
- (II) Private sector (users) who have a worse alternative
- (III) Private sector (users) who have an interest in showing leadership

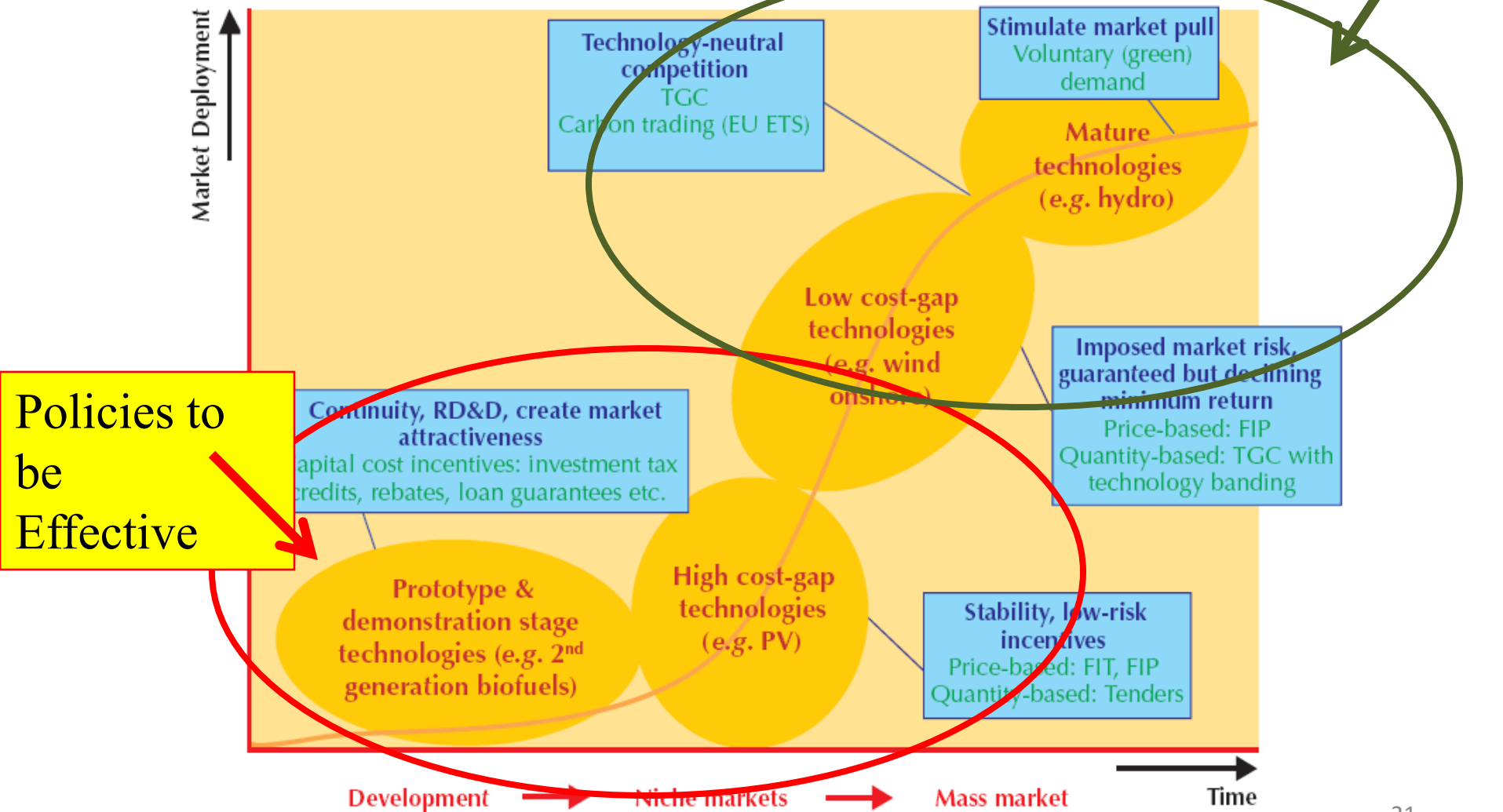


Comparison of supply side technologies



Both Effectiveness and Efficiency

Figure 1. Combination framework of policy incentives in function of technology mat



New Technologies will change business

More ICT

New (smaller)
generation units

Efficient
Building
Systems

Renewables

PV

Utility
Communications

Internet

Consumer Portal
& Building EMS

Advanced
Metering

Control
Interface

Dynamic
Systems
Control

Distribution
Operations

Plug-In Hybrids

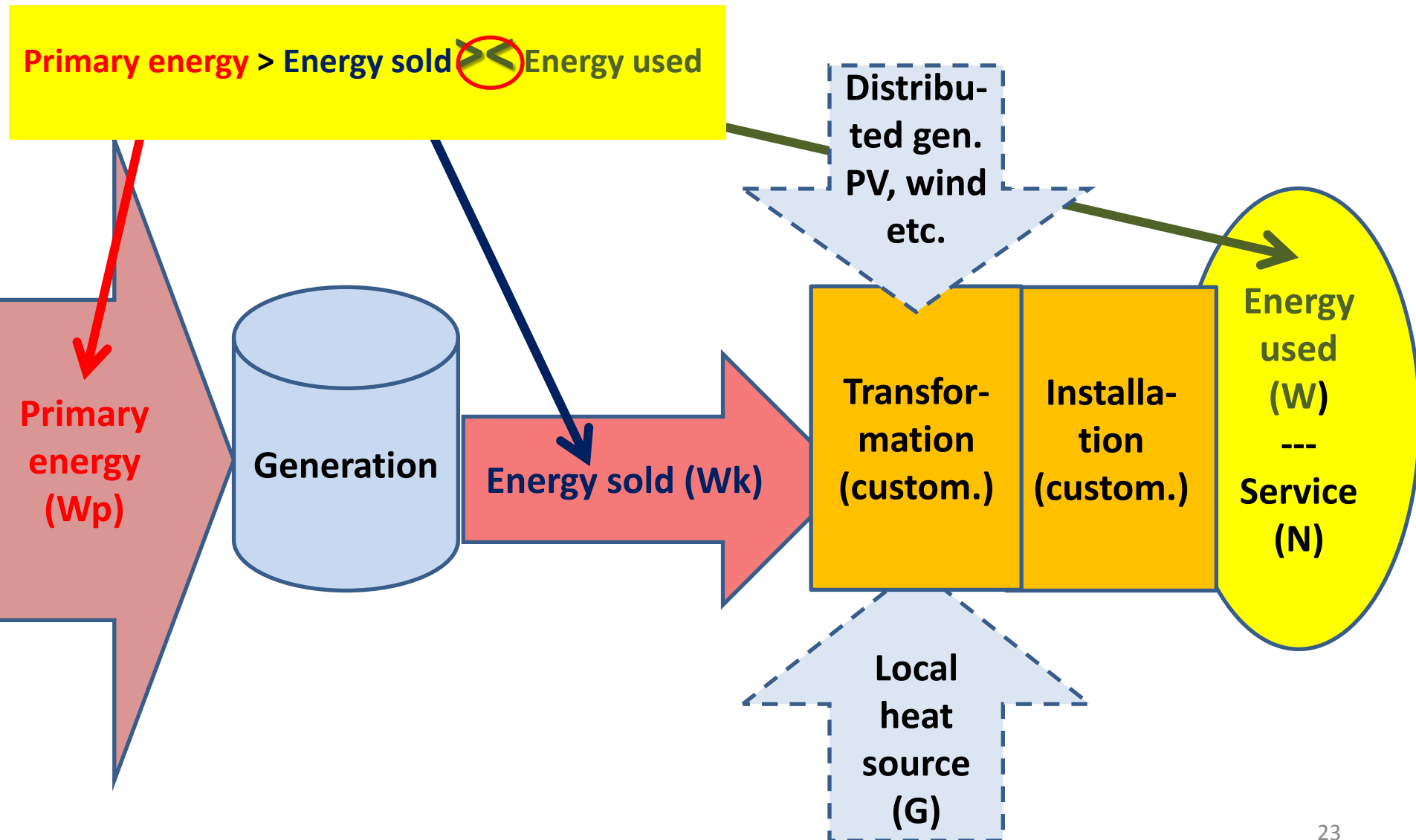
Distributed
Generation
& Storage

Smart
End-Use
Devices

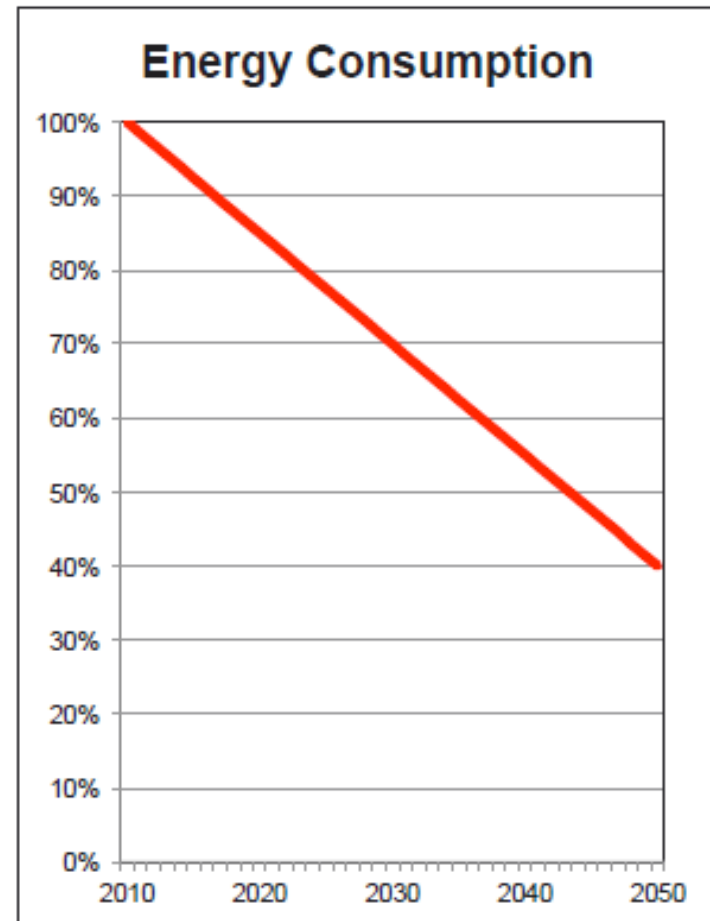
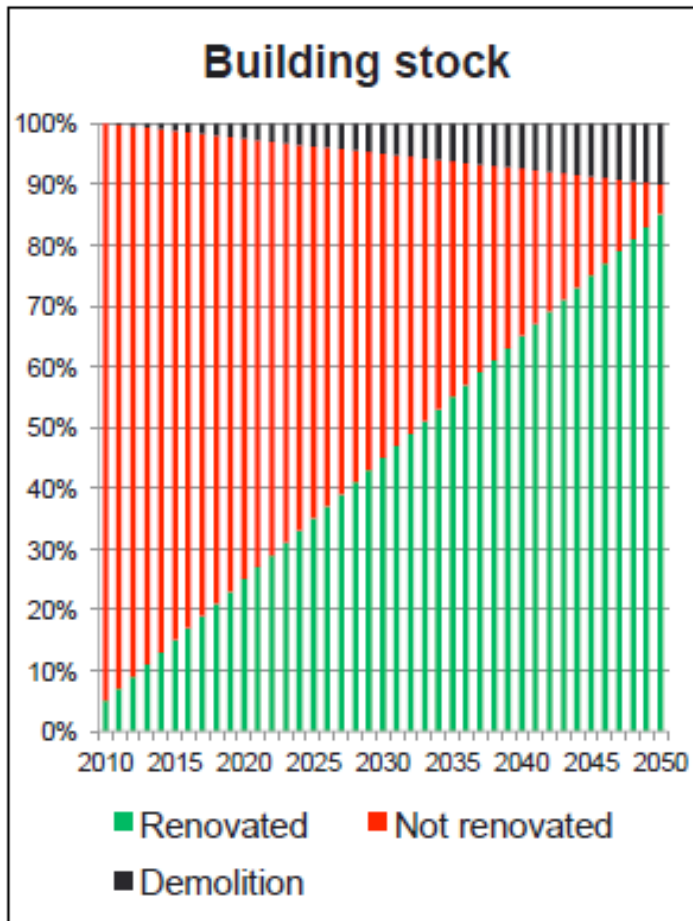
Data
Management

New applications

Local resources change the view



Deep renovations of all buildings



The Potentials are there – go for the
Acceptance

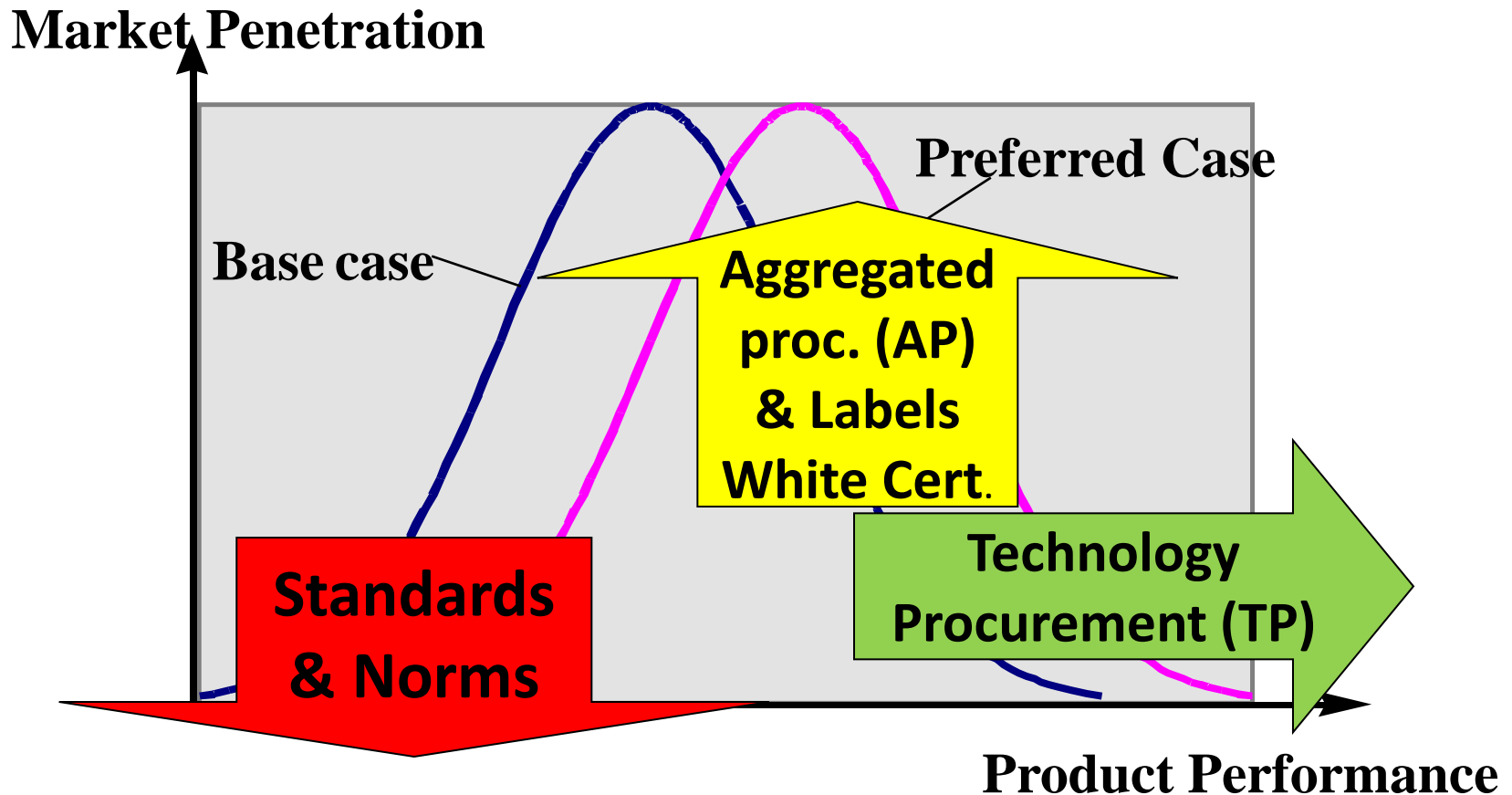
Result (Efficiency)

=

Potential_{technology, time}
*

Acceptance_{time; exposure}

Market Transformation



The Issue...

Is not....

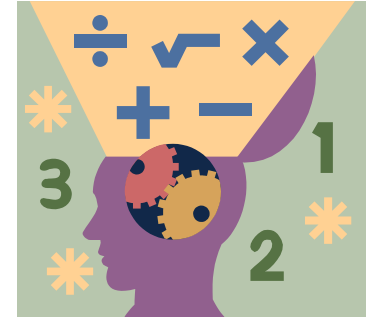
- **Awareness** (*People know that we are wasting energy and roughly also where*)
- **Motivation** (*People want to save energy*)

Is....

- **Empowerment**
(People do NOT know **HOW** to do it)

Measures and prospects have to be framed according to how people think and act.

Perspectives on the market



Standard (Neo)-classical model ECONS

- Preferences are constant
- The prices contain the necessary information
- Customers have access to all necessary information on performance and prices

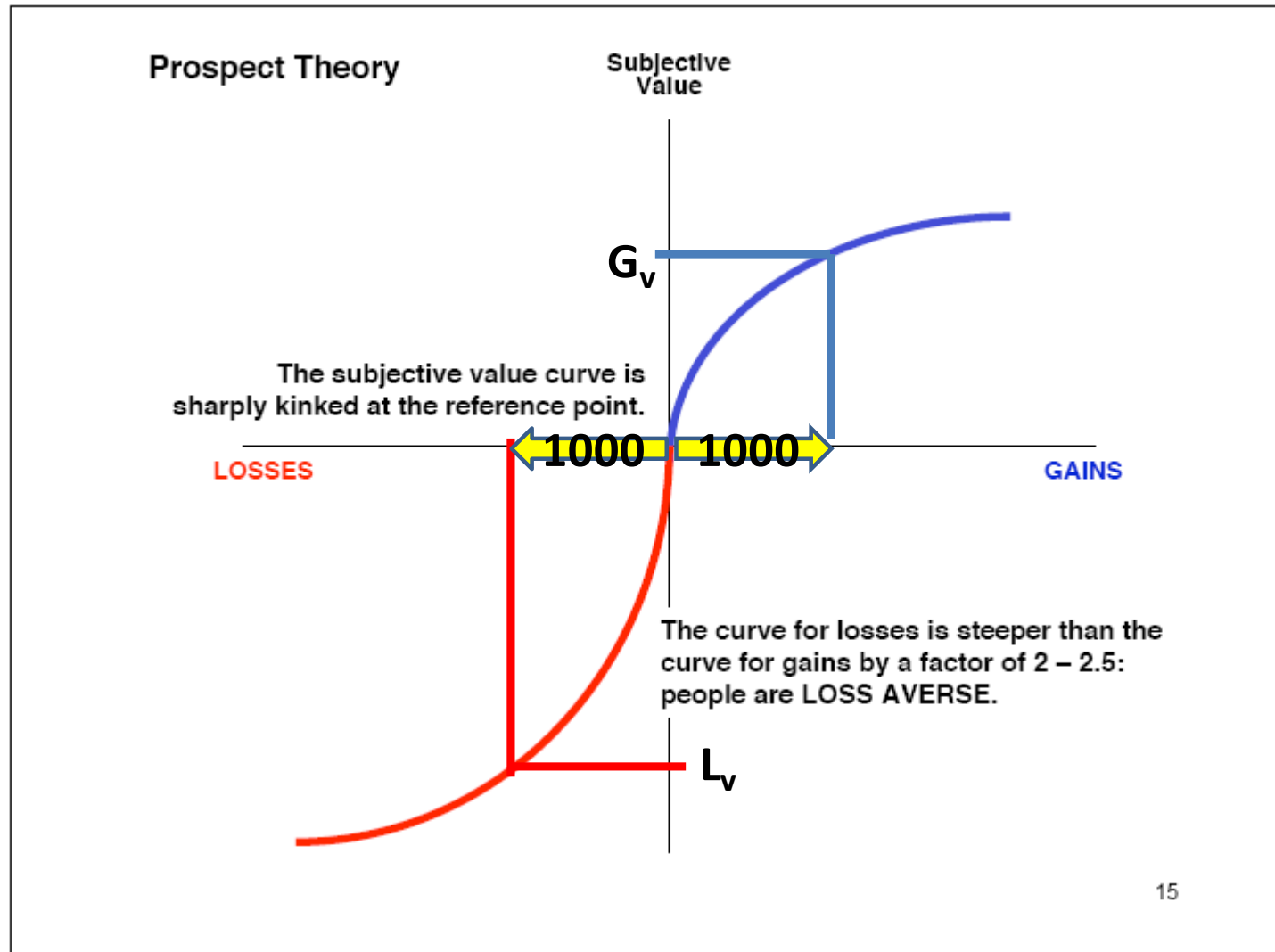
Good model to estimate the potential

Behavioural economics model HUMANS

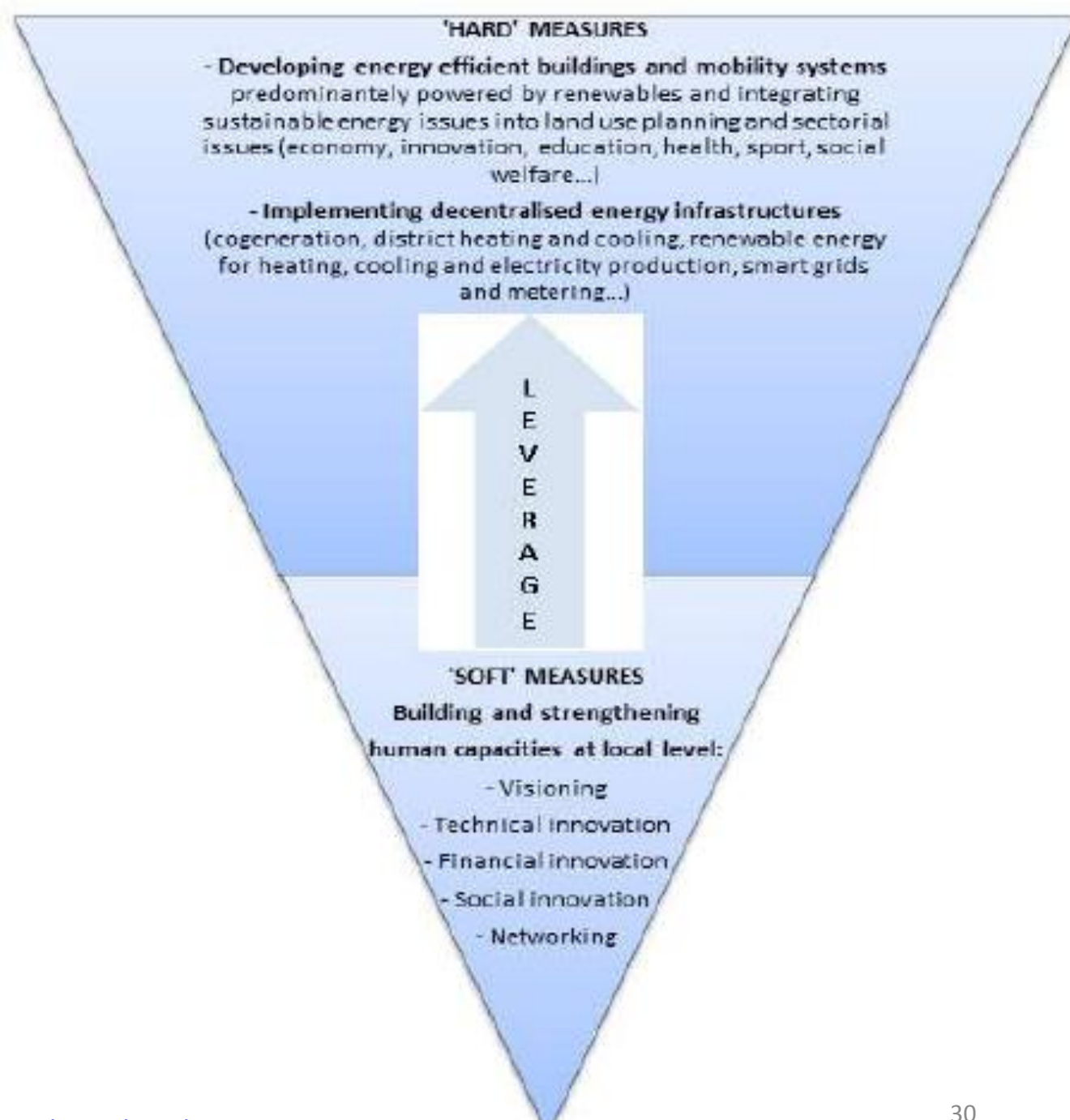
- Preferences are changing
- Decisions are biased by the way we are treating information
- Offers need to be designed (choice architecture)

Necessary to decide on policies for implementation

Mental accounting of losses and gains



Soft measures to leverage the hard



Soft Measures

- **Visioning:** setting up long-term energy & climate local strategies and targets
- **Implementation of innovative technologies:** uptake of sustainable energy technologies
- **Financial innovation:** implementation of innovative financial instruments, setting up new business models
- **Social innovation:** inventing and implementing new local governance, communication, ways of mobilizing local actors & citizens, changing behaviour, etc.
- **Networking:** new ways of exchanging knowledge & innovative practices, taking multi-level actions, etc.

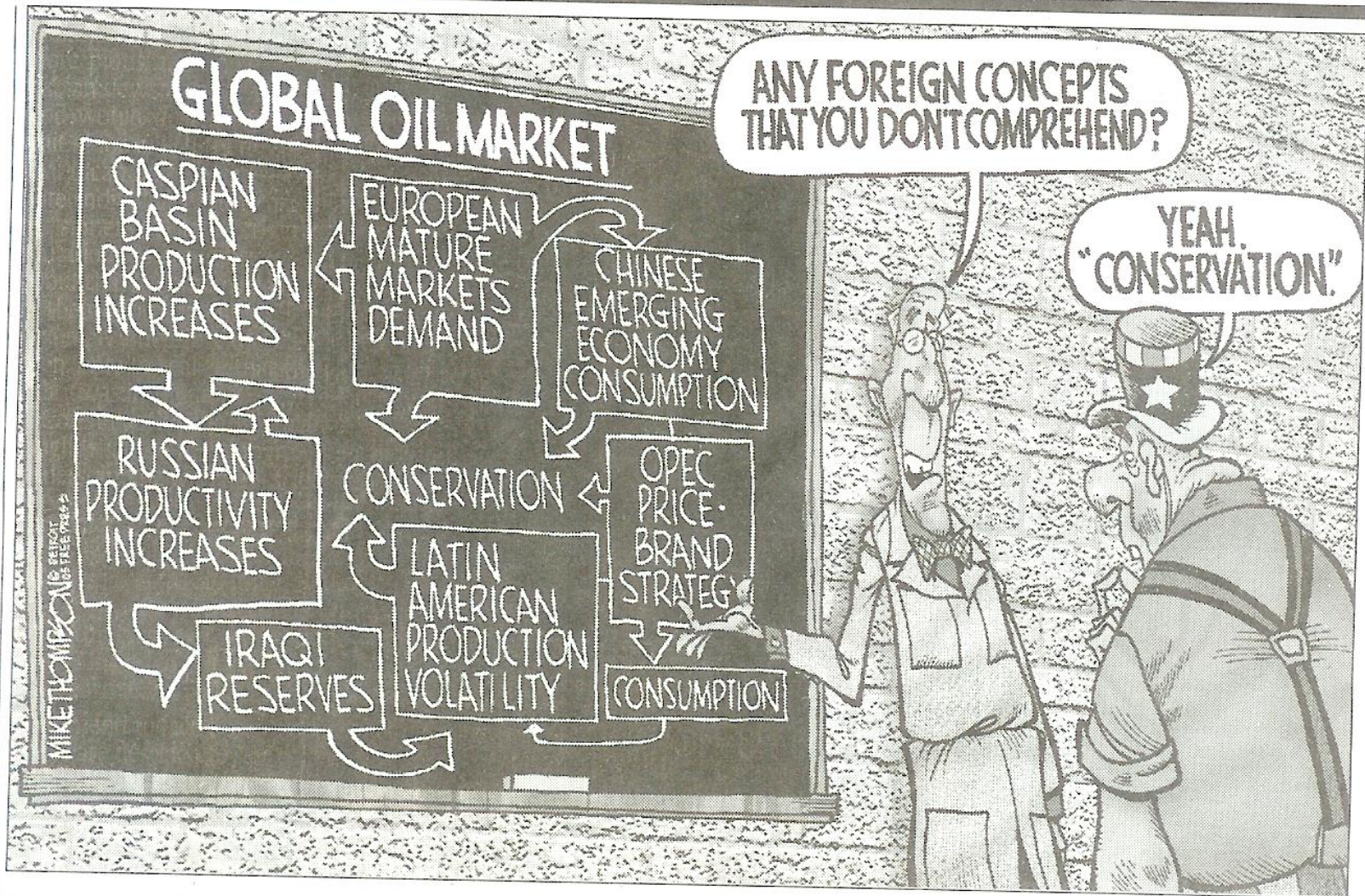
Pulling the pieces together?

- Technology performance (from BAD to BAT to BAT+)
- Technology integration (supply and demand side)
- Address the customer perception of changes
- Planning of changes (macro and micro perspectives)
- Industry learning and applications (business models)
- Policy instruments, both effective and efficient

Check also Concerto:

http://download.steinbeis-europa.de/concerto/website/CONCERTO_plus_energy-perform-26_final_long.pdf

Kelley;
ebber



By Mike Thompson, Detroit Free Press, for USA TODAY

1. NO, they are willing to endure abuse

We all have our personal doomsday scenarios with respect to an extremely “energy hungry” world

Year 1900



Year 1800



Year 2000
CFL



Year 2020, LED



Year 2050
?

And finally...

**THANKS FOR
LISTENING !**

