ROLE OF EUROPEAN REGULATORS IN MEETING CHALLENGES OF FUTURE ENERGY MARKETS

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NEWES, New Energy Solutions

Regulation and liberalization of energy markets

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1. INTRODUCTION
2. LIBERALIZATION
3. CHALLENGES OF FUTURE ENERGY MARKETS
4. ENERGY REGULATION: REALITY CHECK
5. CONCLUSIONS

INTRODUCTION

February 20, 2010

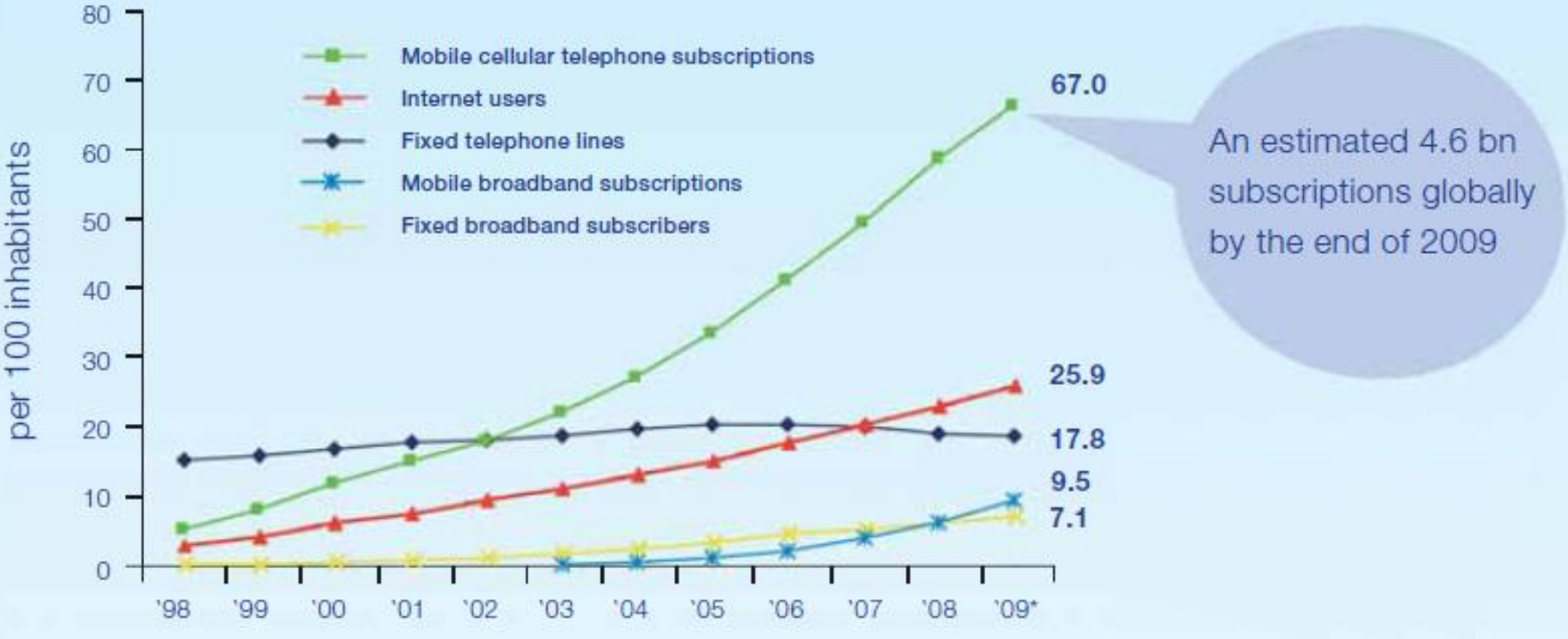
EDITORIAL

The Revolution Has Gone Mobile

By mid-2010, there will be 6.8 billion humans on this planet. According to United Nations estimates, there also will be five billion cellphone subscriptions. These are astonishing numbers. What is still more astonishing, and hopeful, is the breadth of change this number reflects.

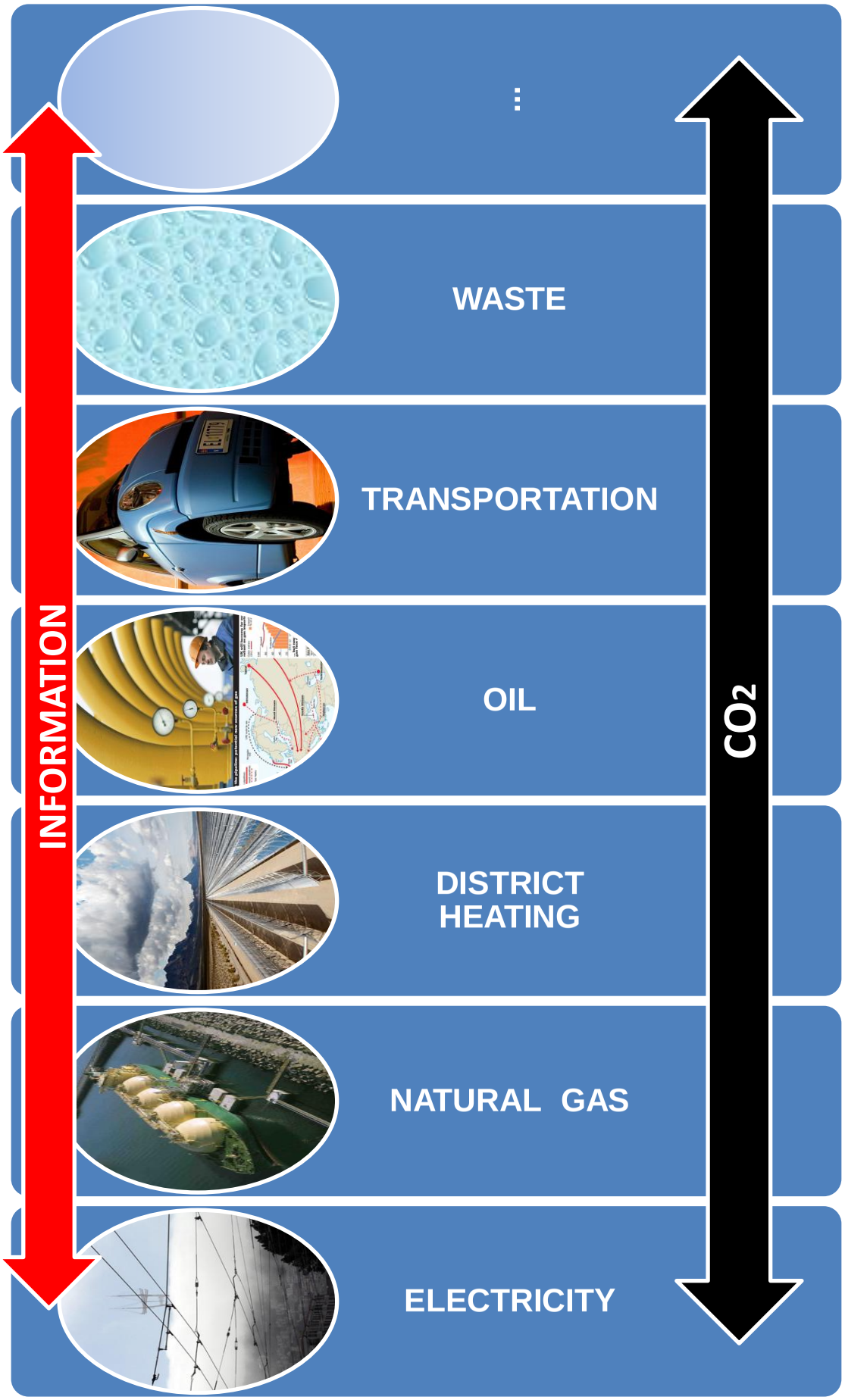
The New York Times

A decade of ICT growth driven by mobile technologies

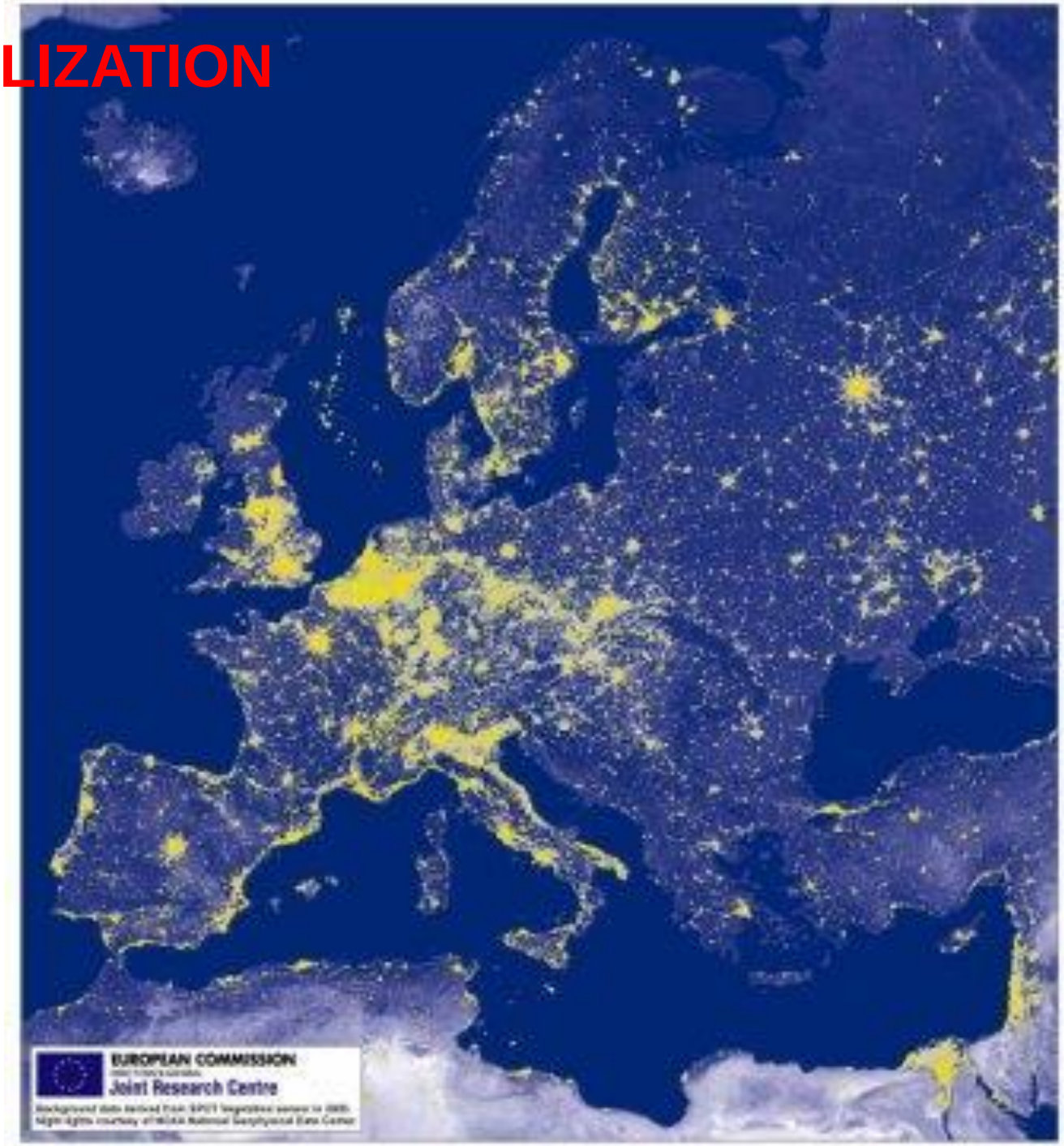


Source: ITU World Telecommunication/ICT Indicators Database.
** Estimates.*

http://www.itu.int/ITU-D/ict/material/Telecom09_flyer.pdf


INFORMATION
WASTE
TRANSPORTATION
OIL
DISTRICT HEATING
NATURAL GAS
ELECTRICITY
CO_2

LIBERALIZATION



THE INTERNAL ENERGY MARKET

3 CONCEPTS INTRODUCED SIMULTANEOUSLY:

- LIBERALIZATION
- SUPRA-NATIONAL INTEGRATION
- INDEPENDENT REGULATION

MAIN DEVELOPMENT PHASES OF THE IEM

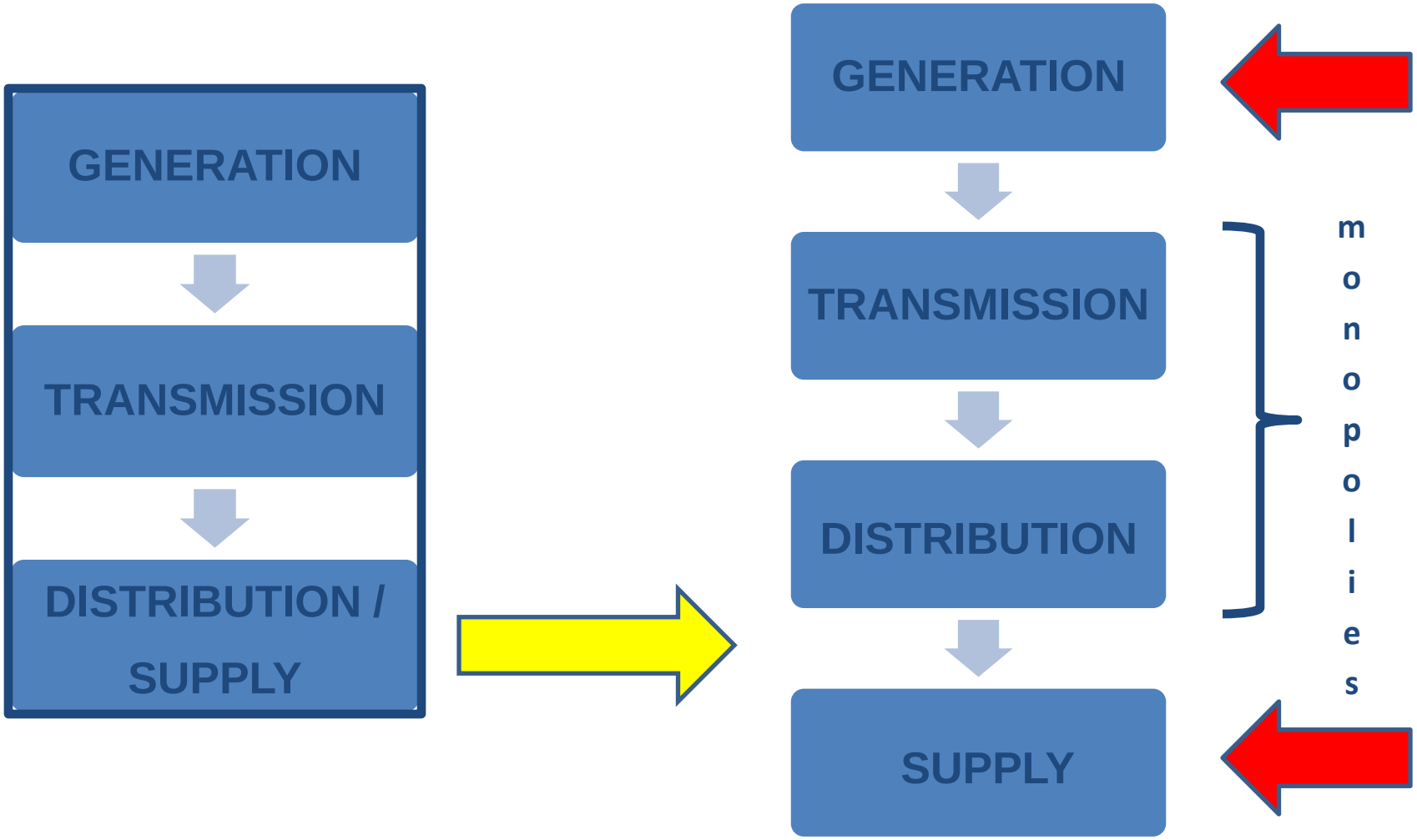
1988 - 1990

1996 - 1998 **1st package**

2003 **2nd package**

2009 **3rd package**

FROM VERTICAL MONOPOLIES TO HORIZONTAL MONOPOLIES



Just as Lenin wanted to build socialism in one country, Britain sought to build a free deregulated energy market in a single European state. It was a less vainglorious ambition, but no less futile. The British day-dream of a sheltered market of perfectly priced megawatt hours is ending as fast as the hydrocarbon molecules are sucked out of the depleting North Sea reservoirs. From the gas glut of the mid-1990s, we have moved to the tyranny of the marginal molecule.


POWER
TO DECLARE

CHALLENGES OF FUTURE ENERGY MARKETS

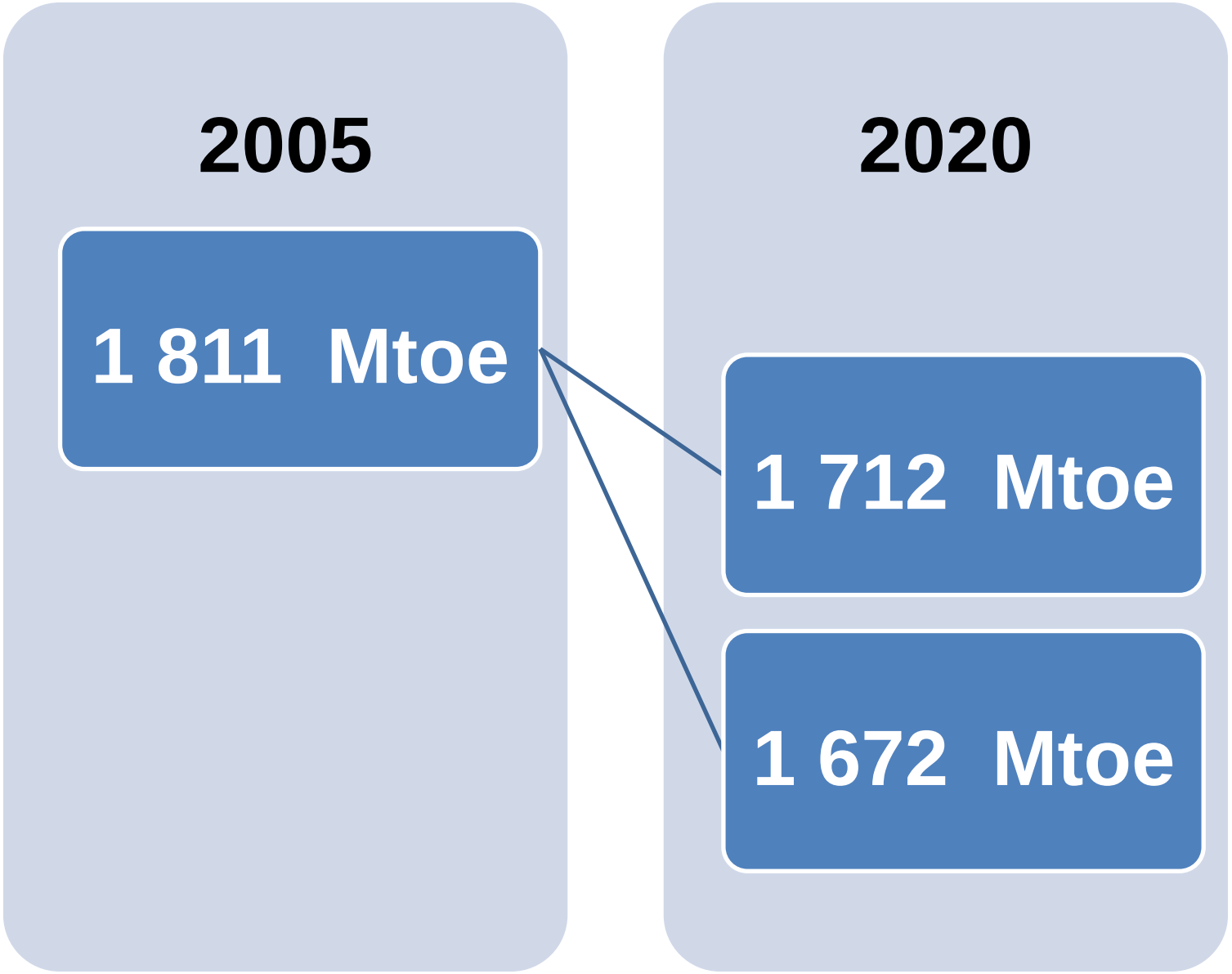
THE IMPACT OF ENERGY / CLIMATE CHANGE POLICY

"Given that energy production and use are the main sources for greenhouse gas emissions, an integrated approach to climate and energy policy is needed to realise this objective.

Integration should be achieved in a mutually supportive way."

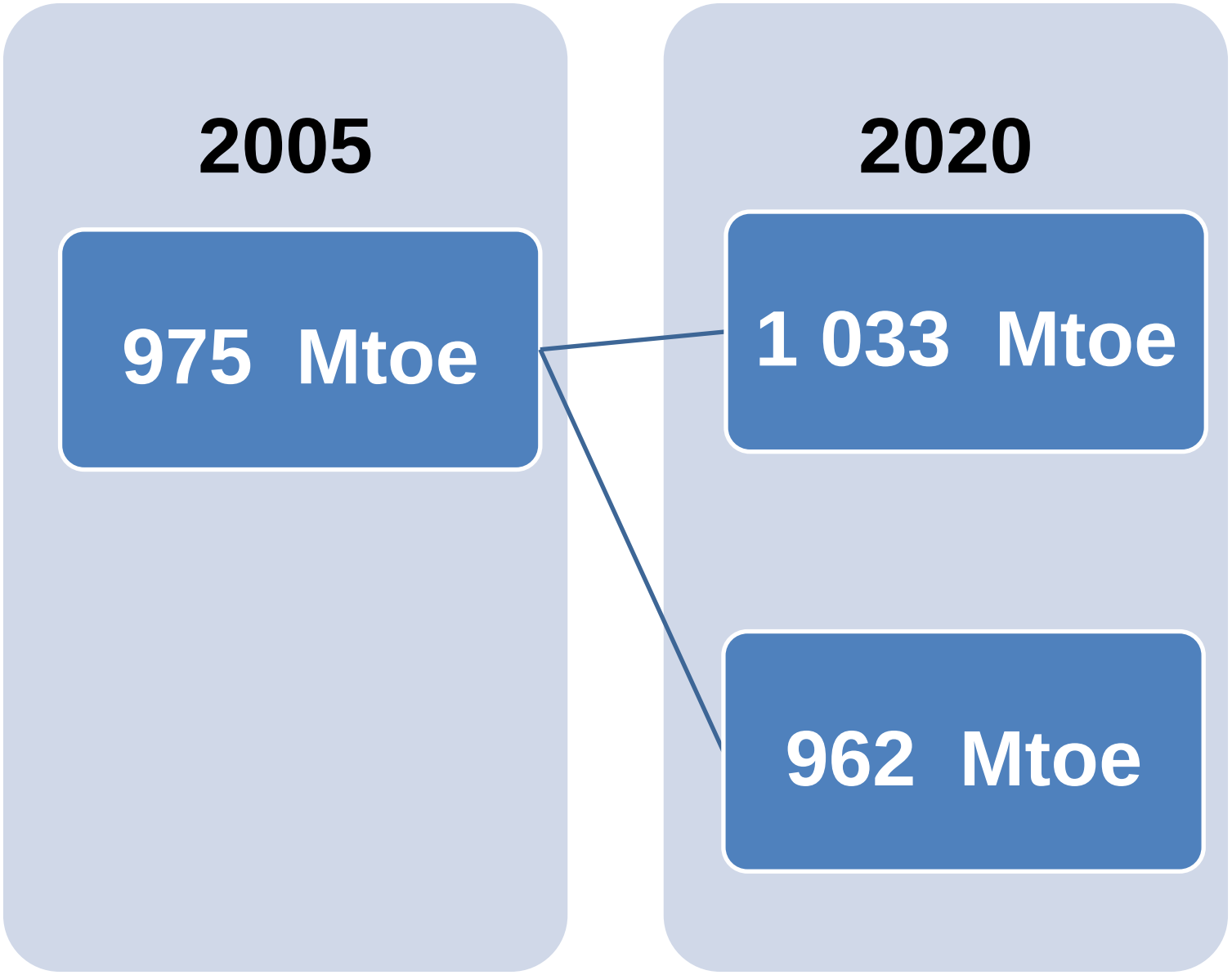
European Council, March 2007

EU PRIMARY ENERGY CONSUMPTION



"Commission staff working document *accompanying the* Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Second Strategic Energy Review An EU energy security and solidarity action plan. *Europe's current and future energy position Demand – resources - investments"* COM(2008) 744
http://ec.europa.eu/energy/strategies/2008/doc/2008_11_ser2/strategic_energy_review_wd_future_position2.pdf

EU ENERGY IMPORTS



"Commission staff working document *accompanying the* Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Second Strategic Energy Review An EU energy security and solidarity action plan. *Europe's current and future energy position Demand – resources - investments"* COM(2008) 744
http://ec.europa.eu/energy/strategies/2008/doc/2008_11_ser2/strategic_energy_review_wd_future_position2.pdf

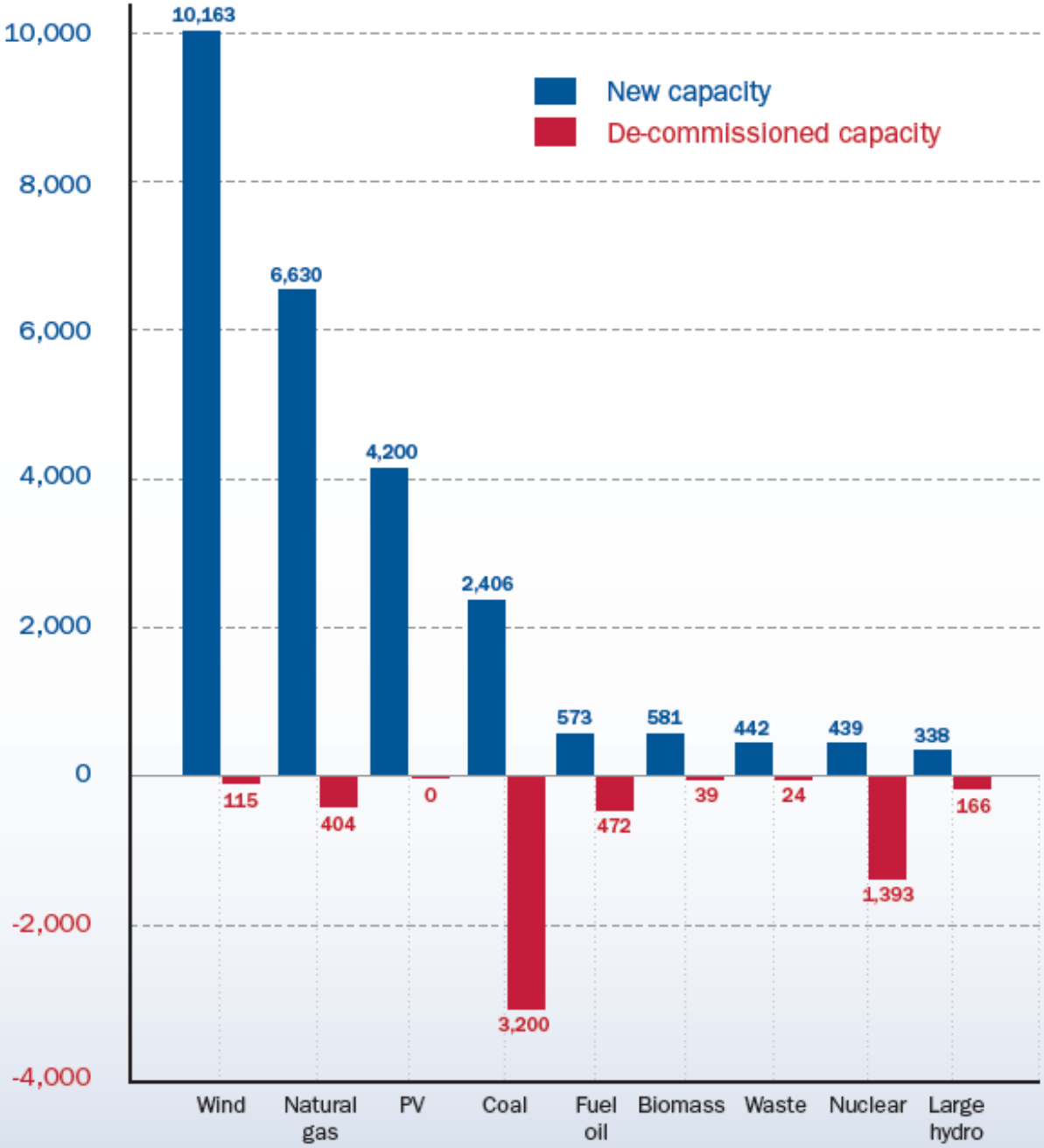
EU FINAL ENERGY DEMAND

Table 2: Final energy demand (Mtoe), gross electricity generation (TWh) and emissions index in 2020 for EU-27

Final energy demand (Mtoe), gross electricity generation (TWh) and emissions index for EU-27	*2005*	*Baseline scenario, oil price 61$/bbl*	*Baseline scenario, oil price 100$/bbl*	*New Energy Policy scenario, oil price 61$/bbl*	*New Energy Policy scenario, oil price 100$/bbl*
Final energy demand by sector (Mtoe)	*1,167*	*1,348*	*1,293*	*1,185*	*1,140*
Industry	324	368	357	354	339
Residential	307	336	320	281	272
Tertiary	174	205	194	160	154
Transport	362	439	423	390	375
Final energy demand by fuel (Mtoe)	*1,167*	*1,348*	*1,293*	*1,185*	*1,140*
Oil	493	540	499	465	433
Gas	287	314	287	255	235
Solids	53	55	56	50	50
Electricity	238	303	302	257	260
Heat (from CHP and district heating)	41	46	44	41	41
Other	55	89	105	117	121
Gross electricity generation by fuel type (in TWh)	*3,275*	*4,078*	*4,065*	*3,443*	*3,493*
Nuclear energy	998	866	977	851	911
Renewables	488	824	887	1,086	1,094
Fossil fuels	1,790	2,389	2,201	1,506	1,489

RENEWABLE ENERGY: FROM MYTH TO REALITY

New installed capacity and de-commissioned capacity in EU 2009 in MW. Total 25,963 MW



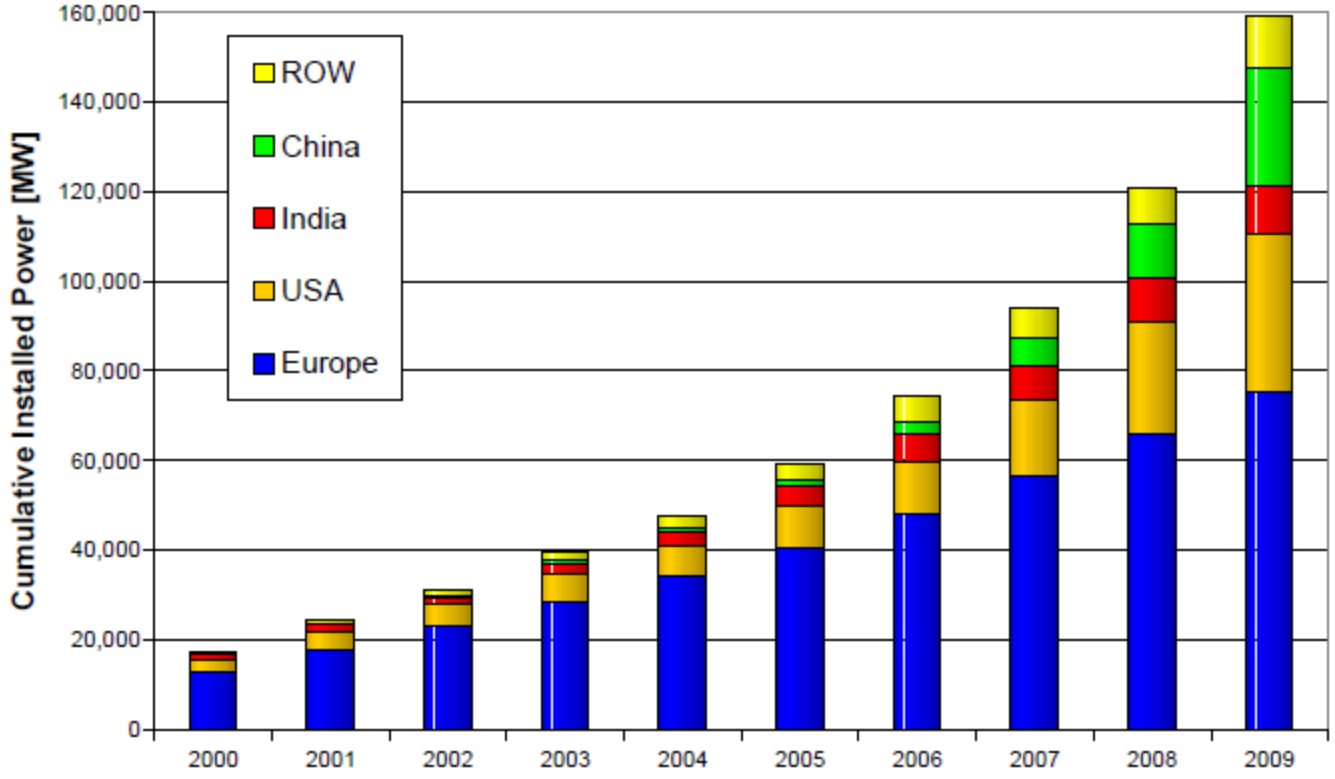


Figure 1: Cumulative world-wide installed Wind Power capacity from 1990 to 2009
Data Source: GWEC, WWEA [1, 2, 3]

http://re.jrc.ec.europa.eu/refsys/

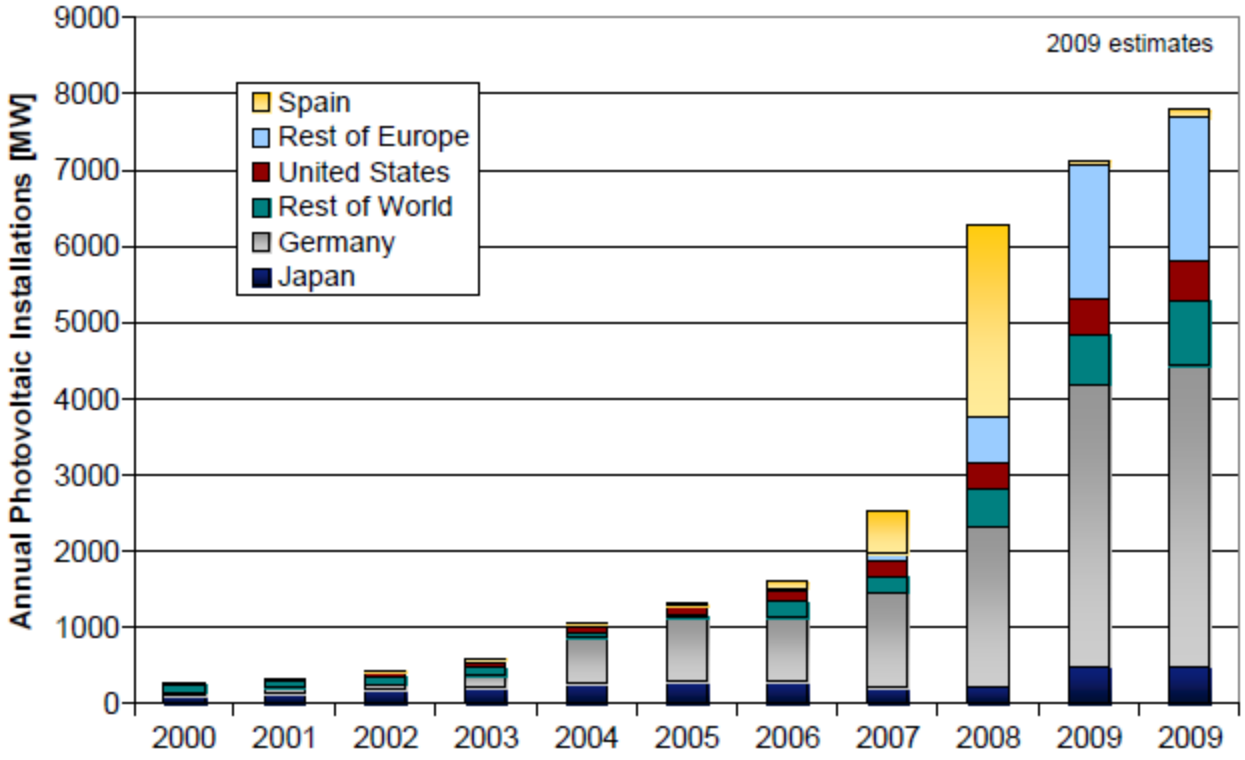
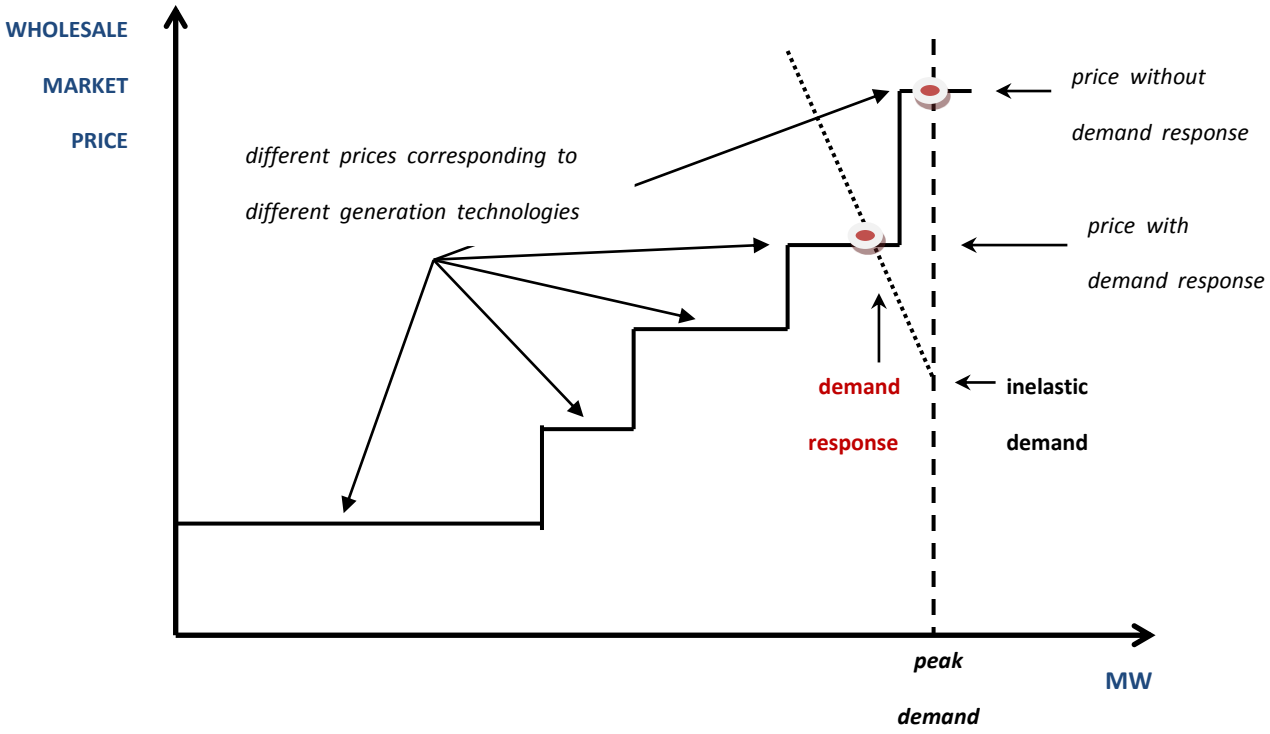
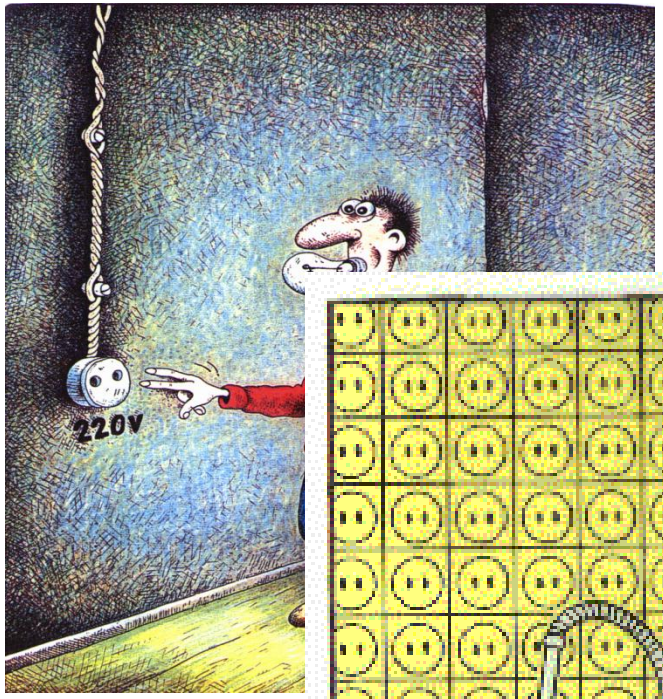


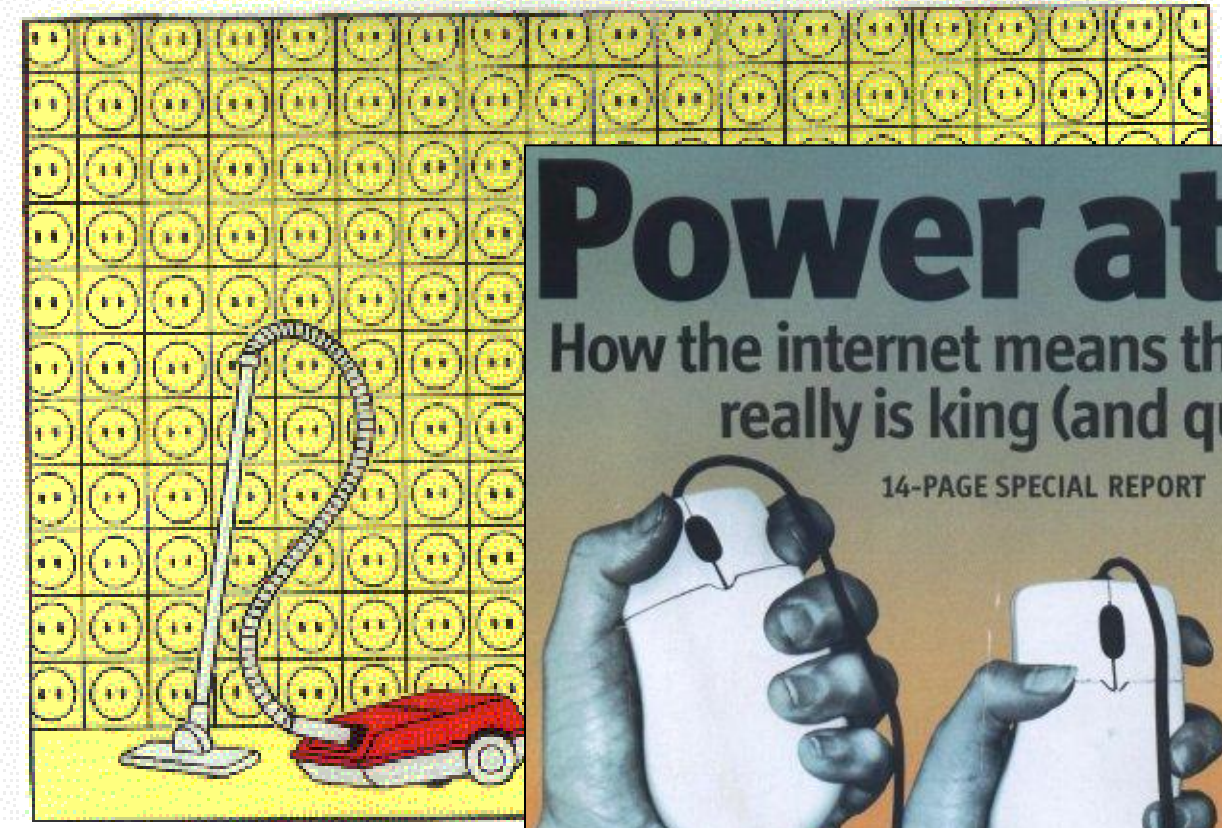
Figure 4: Annual Photovoltaic Installations from 2000 to 2009
(data source: EPIA [9], Eurobserver [10] and own analysis)

http://re.jrc.ec.europa.eu/refsys/

DEMAND PARTICIPATION IMPROVES MARKET EFFICIENCY



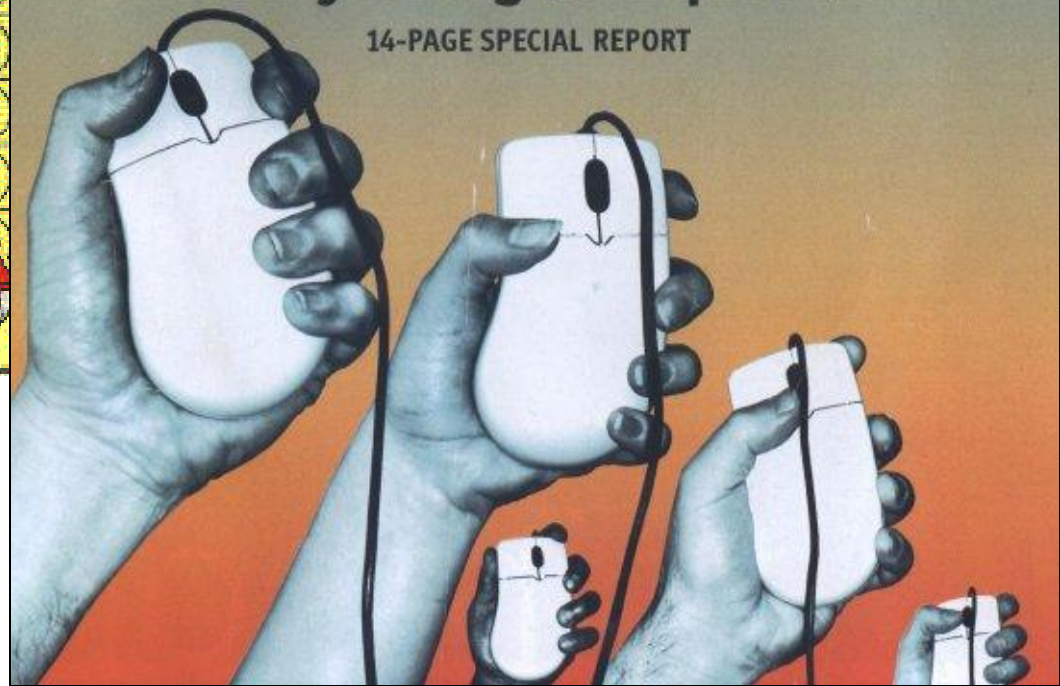




Power at last

How the internet means the consumer really is king (and queen)

14-PAGE SPECIAL REPORT



ENERGY REGULATION : REALITY CHECK


The New York T

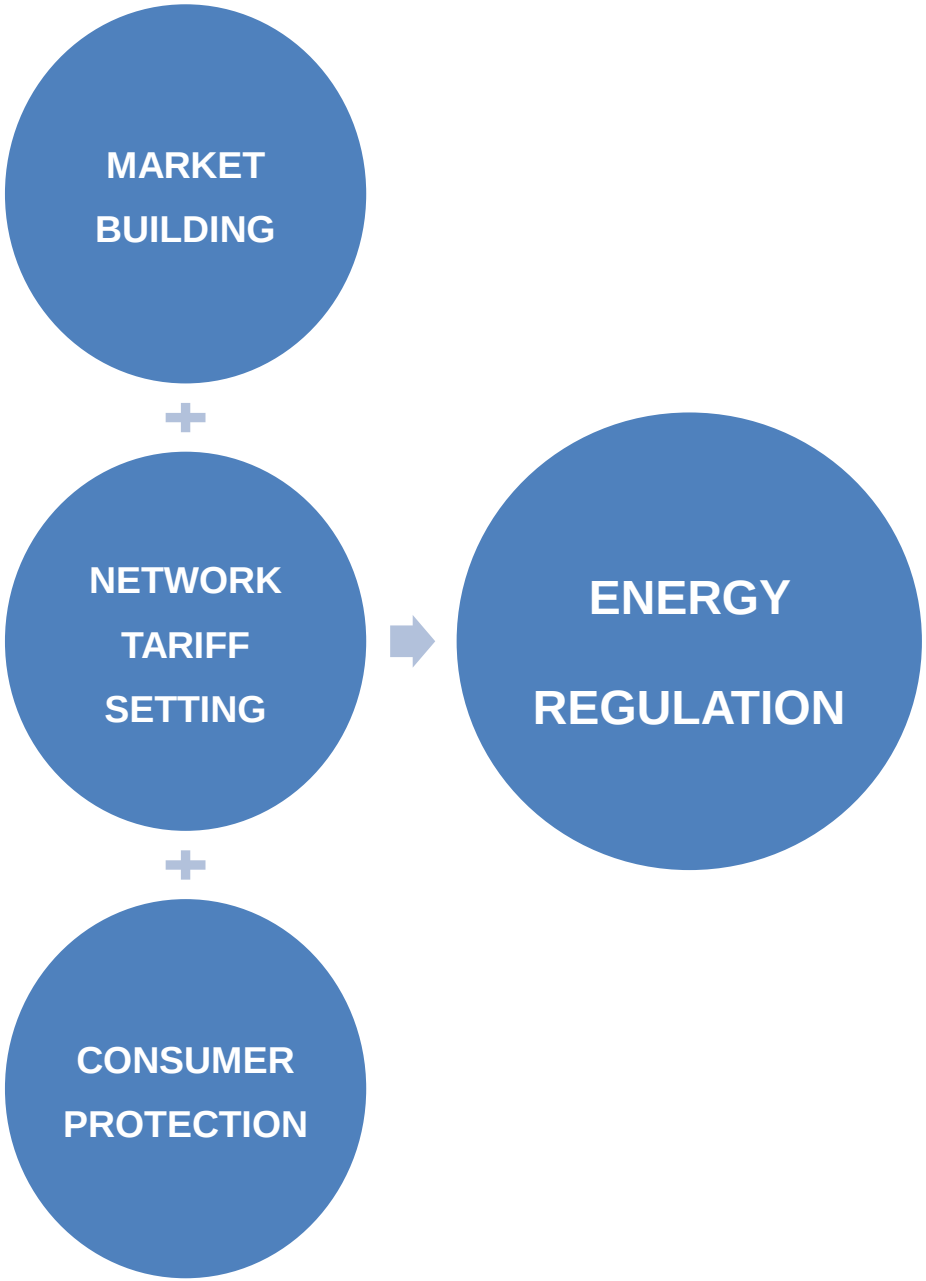
NEW YORK, FRIDAY, OCTOBER 24, 2008

Looking Back in Disbelief

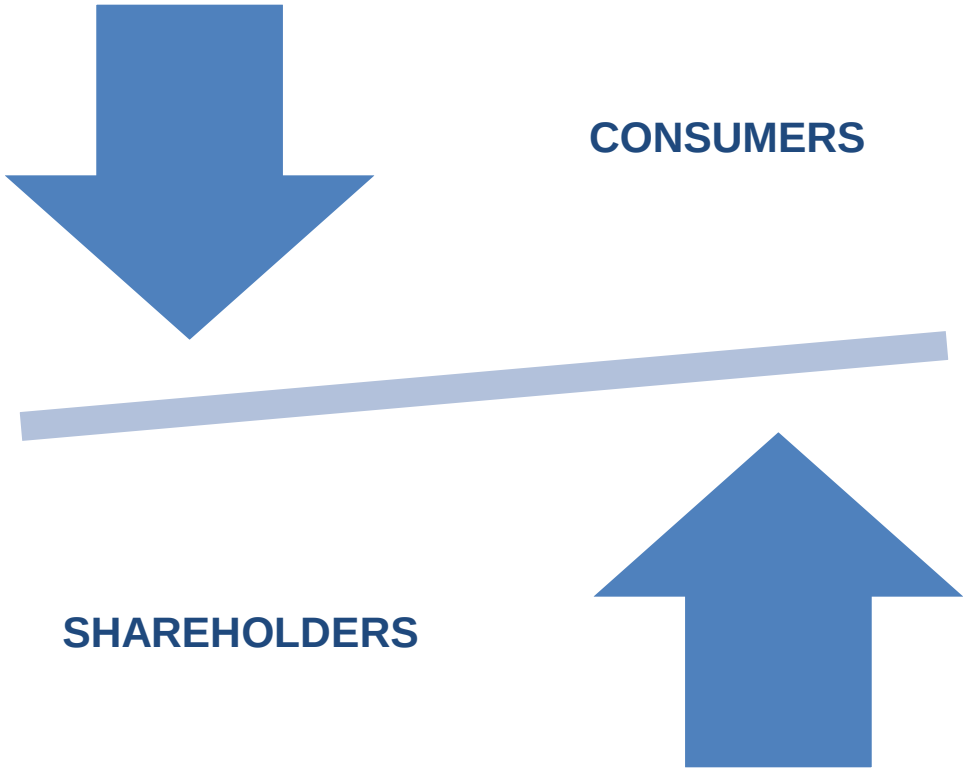
"I made a mistake in presuming that the self-interests of organizations, specifically banks and others, were such as that they were best capable of protecting their own shareholders and their equity in the firms."

Greenspan Concedes Error on Regulation

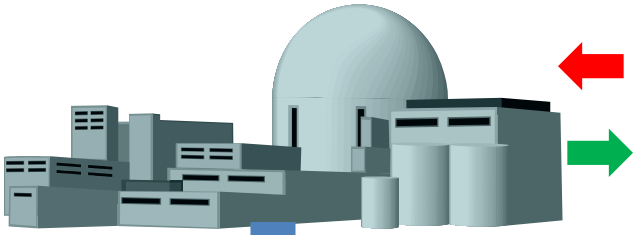
REGULATION IN EUROPE - FROM ZERO TO ACER



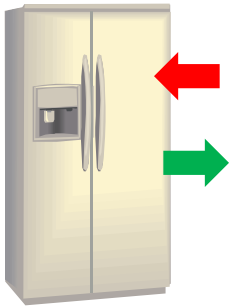
REGULATION IN EUROPE - FROM ZERO TO ACER



THE FUTURE POWER SYSTEM : MEASURABLE & CONTROLLABLE



STORAGE:
100 kWh/vehicle



WHY "SMART GRIDS" IN EUROPE ?

- ❑ SUPPORT SINGLE EUROPEAN (WHOLESALE) MARKET
- ❑ FACILITATE DEVELOPMENT OF RETAIL COMPETITION
- ❑ ENABLE DEMAND PARTICIPATION
- ❑ IMPROVE ENERGY EFFICIENCY (20% 2020)
- ❑ INCREASE PENETRATION OF RENEWABLE ENERGY (20% 2020)
- ❑ ENABLE INTRODUCTION OF NEW ENERGY SERVICES
- ❑ IMPROVE NETWORK PLANNING AND OPERATION


TYPE
CLASS
PULSE VALUE
DC SUPPLY
CT
VT
CERTIFIED
Made in UK

THE CHALLENGES AHEAD

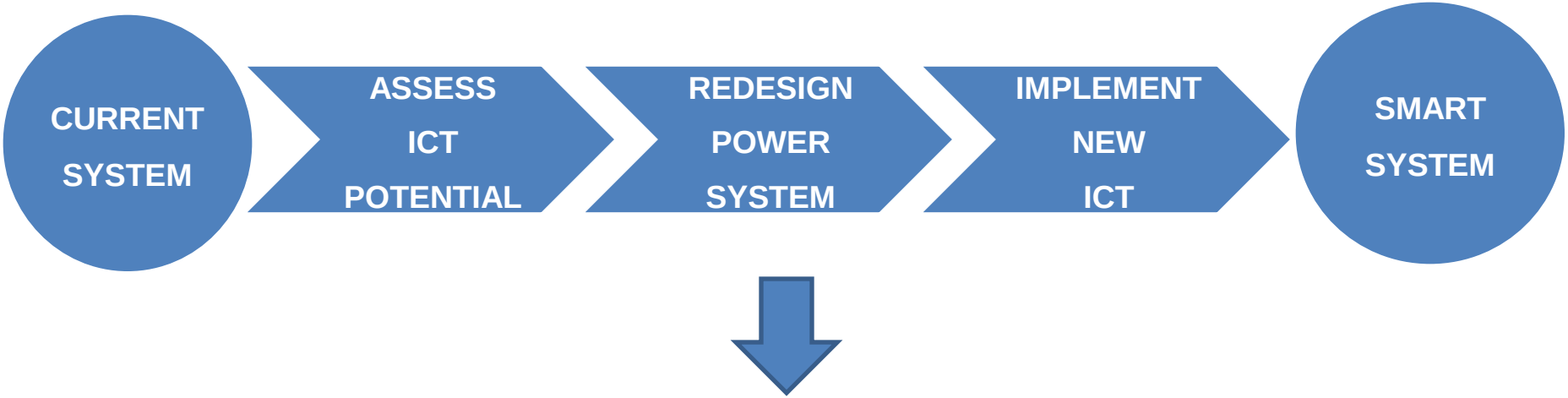
SMART METERING MAKES AVAILABLE A WHOLE NEW SET OF INFORMATION THAT ENABLES:

- **MARKET PARTICIPANTS (CONSUMERS AND SUPPLIERS) TO RESHAPE THEIR CONTRACTUAL ARRANGEMENTS, THUS REINVENTING WHOLESALE, ANCILLARY SERVICES AND RETAIL MARKETS;**

- **SYSTEM AND NETWORK OPERATORS TO IMPROVE OVERALL EFFICIENCY, RELIABILITY AND QUALITY OF SUPPLY;**

- **REGULATORY AUTHORITIES TO INTRODUCE BETTER REGULATION.**

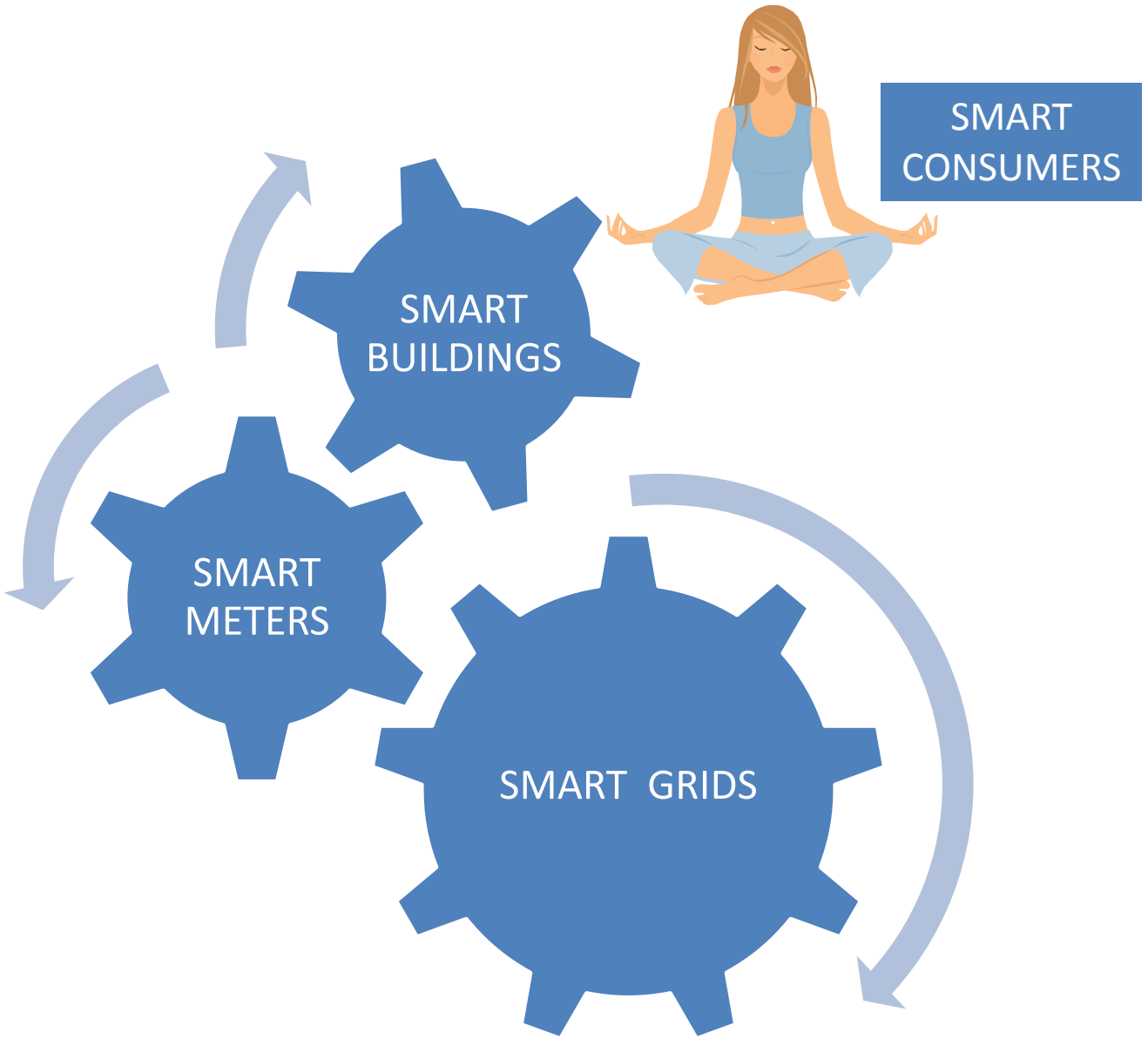
SMART SYSTEMS



WHY IS IT NECESSARY TO REDESIGN THE POWER SYSTEM ?

1) TO COPE WITH STRUCTURAL CHANGES

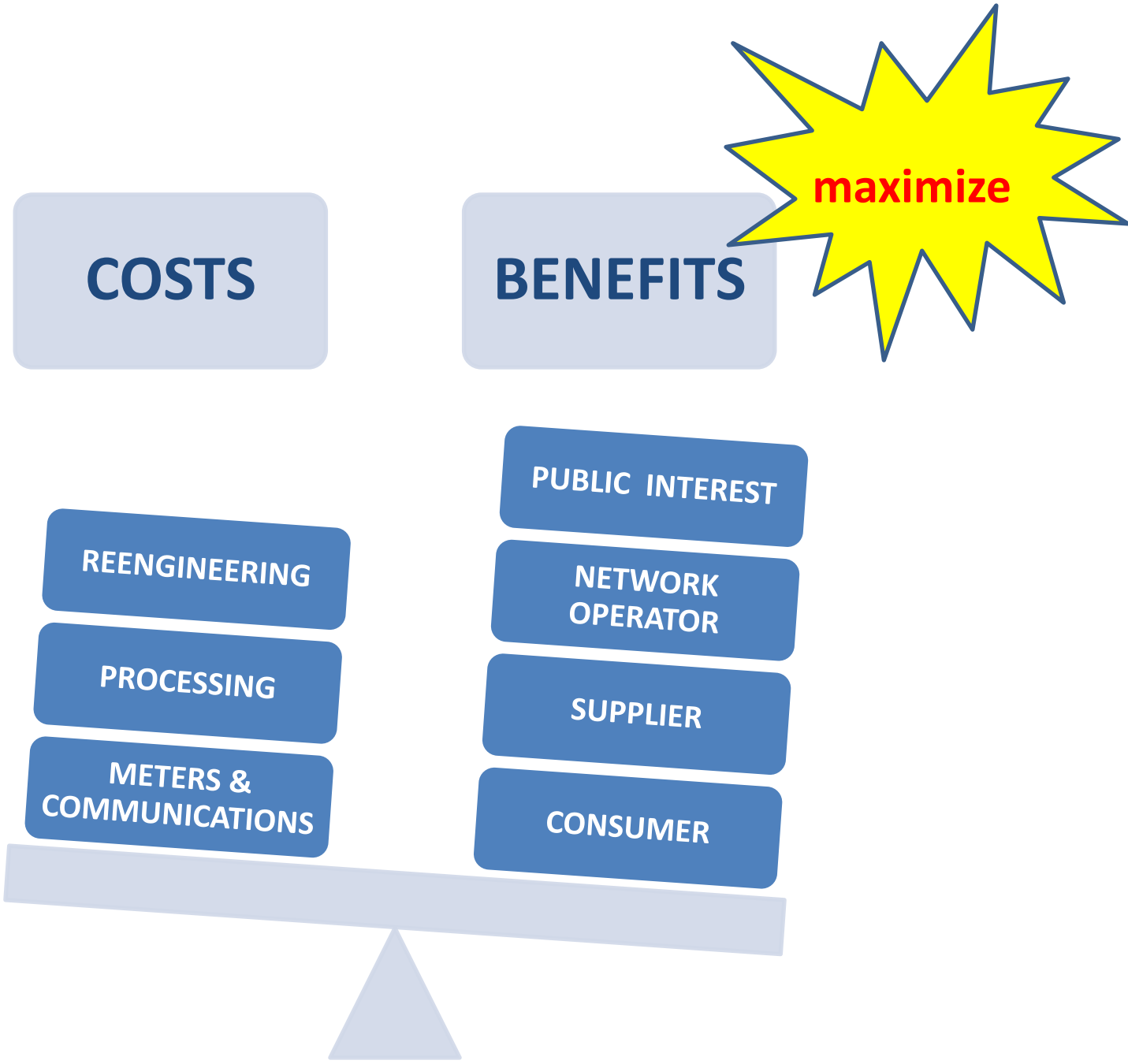
2) TO MAXIMIZE THE BENEFITS OF INTRODUCING NEW TECHNOLOGIES, IN PARTICULAR ICT

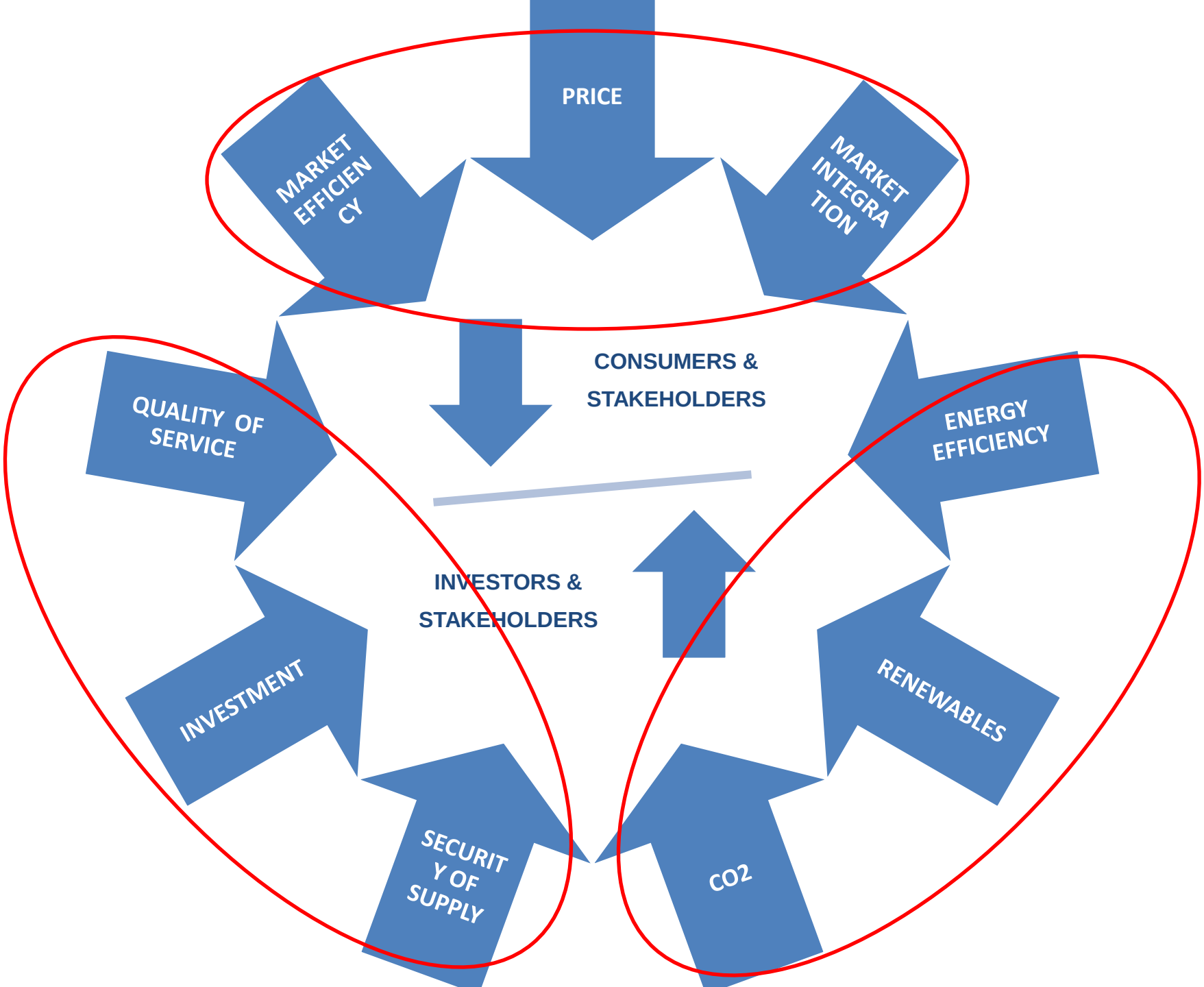


A smart policy

Modern electricity grid would be a wise investment for US

FINANCIAL TIMES


maximize
COSTS
BENEFITS
REENGINEERING
PROCESSING
METERS & COMMUNICATIONS
PUBLIC INTEREST
NETWORK OPERATOR
SUPPLIER
CONSUMER


PRICE
MARKET EFFICIEN CY
MARKET INTEGRA TION
CONSUMERS & STAKEHOLDERS
QUALITY OF SERVICE
ENERGY EFFICIENCY
INVESTORS & STAKEHOLDERS
INVESTMENT
RENEWABLES
SECURIT Y OF SUPPLY
CO2

CONCLUSIONS

REGULATION 2020

NEW REGULATION

SUPRA-NATIONAL INTEGRATION

UNBUNDLING

PERFORMANCE-BASED

OLD REGULATION VIM