

Energy markets and regulation

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Market:

«... three women and one hen make a market...»

Old Tuscan Proverb



Demand

Exchange



Supply

Why regulating Energy Markets ?

Structural elements:

- natural monopoly in transmission
- loop flow (in electricity)
- reliability requirements / quality
- security of supply
- ...

Devilish details:

- market power mitigation
- coordination for competition
- long term *vs* short term investment
- ...

Social and economic issues:

- merit goods, positive externalities for the whole society
- essential goods/services for economic growth
- ...

How to regulate Energy Markets ?

Sector Regulation: design of pricing rules, service obligation, rules for entry and supply, auction design...

Contract Regulation: procurement, franchising, fix-price, cost-plus, Public-Private Partnership (PPP), project financing (PF)...



2014 Nobel in Economics to
prof. Jean Tirole

Prize motivation: "for his analysis
of market power and regulation"

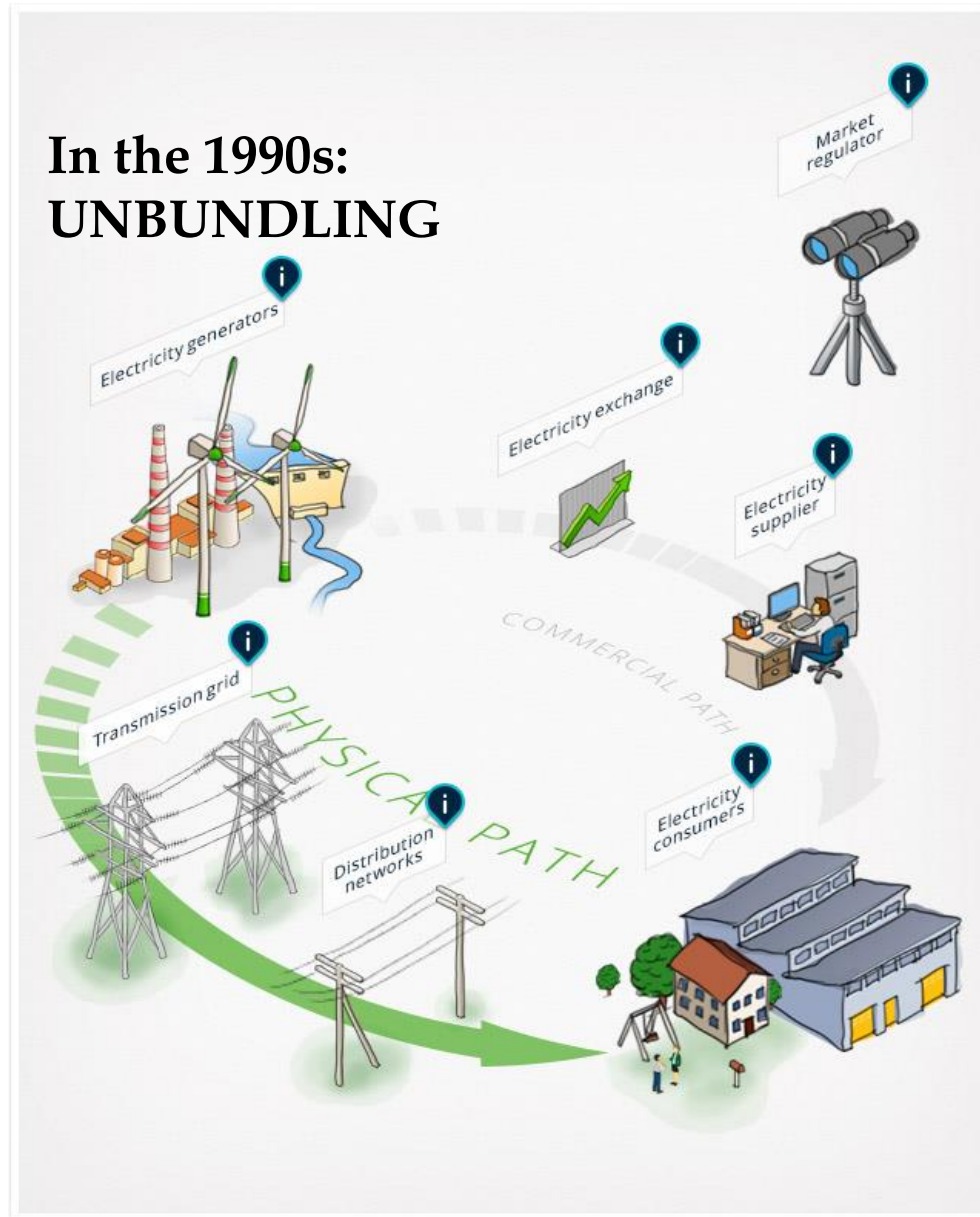


Electricity Sector

Before 1990:
VERTICAL INTEGRATION
*Generation,
 Transmission,
 Distribution.*

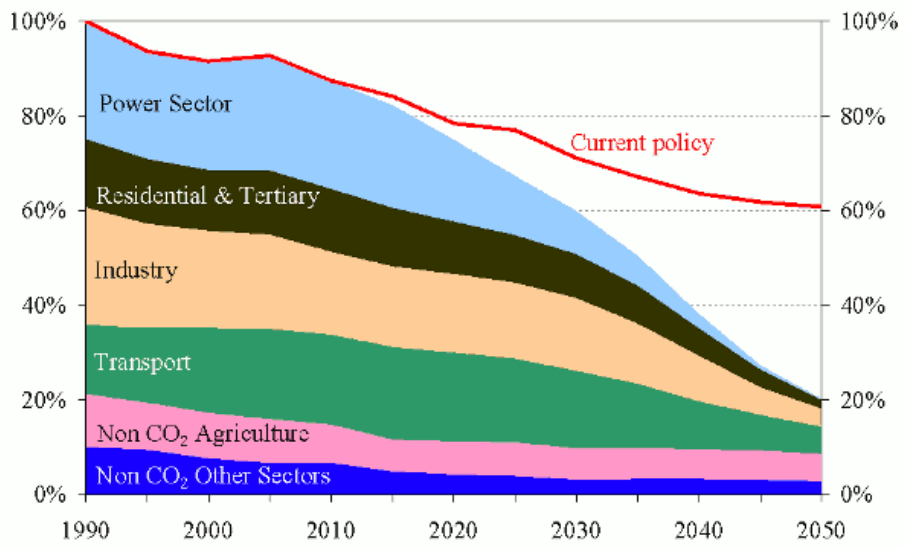


In the 1990s:
UNBUNDLING

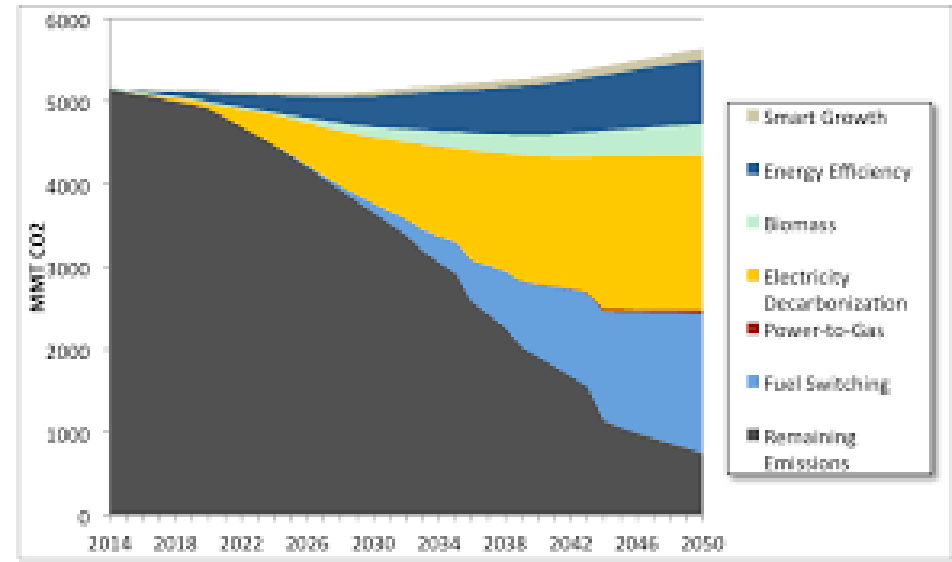


Huge Change: **DECARBONIZATION**

IN EUROPE:



IN USA:



1. RENEWABLES

- Variability
- Uncertainty
- Location

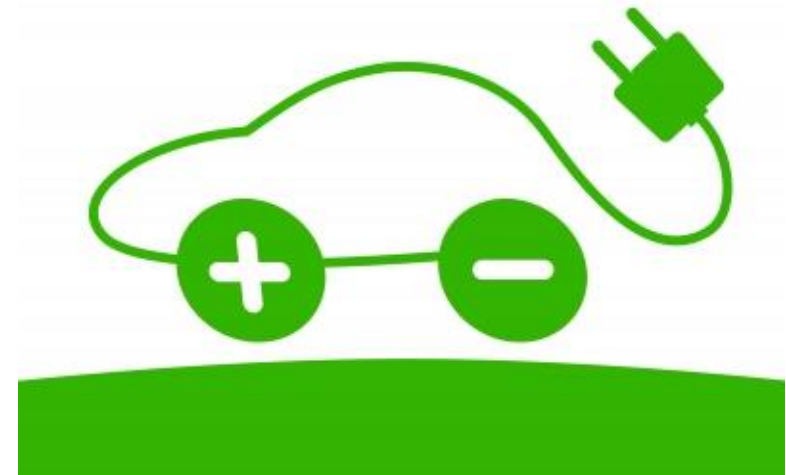
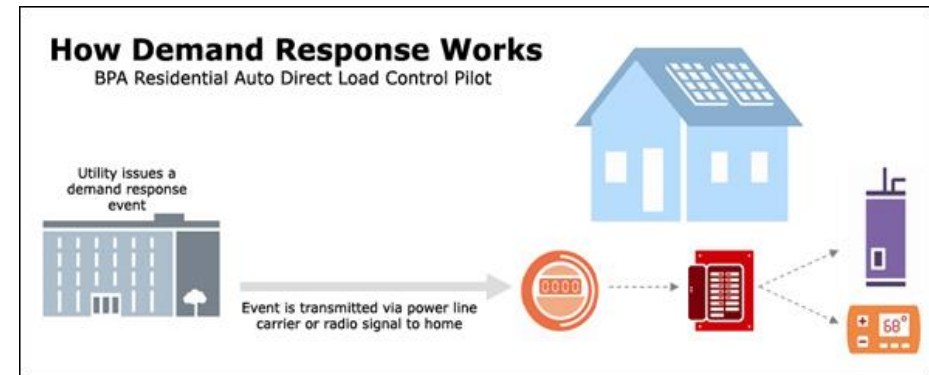
➔ Accomodation



2. TRANSFORMATION/REV

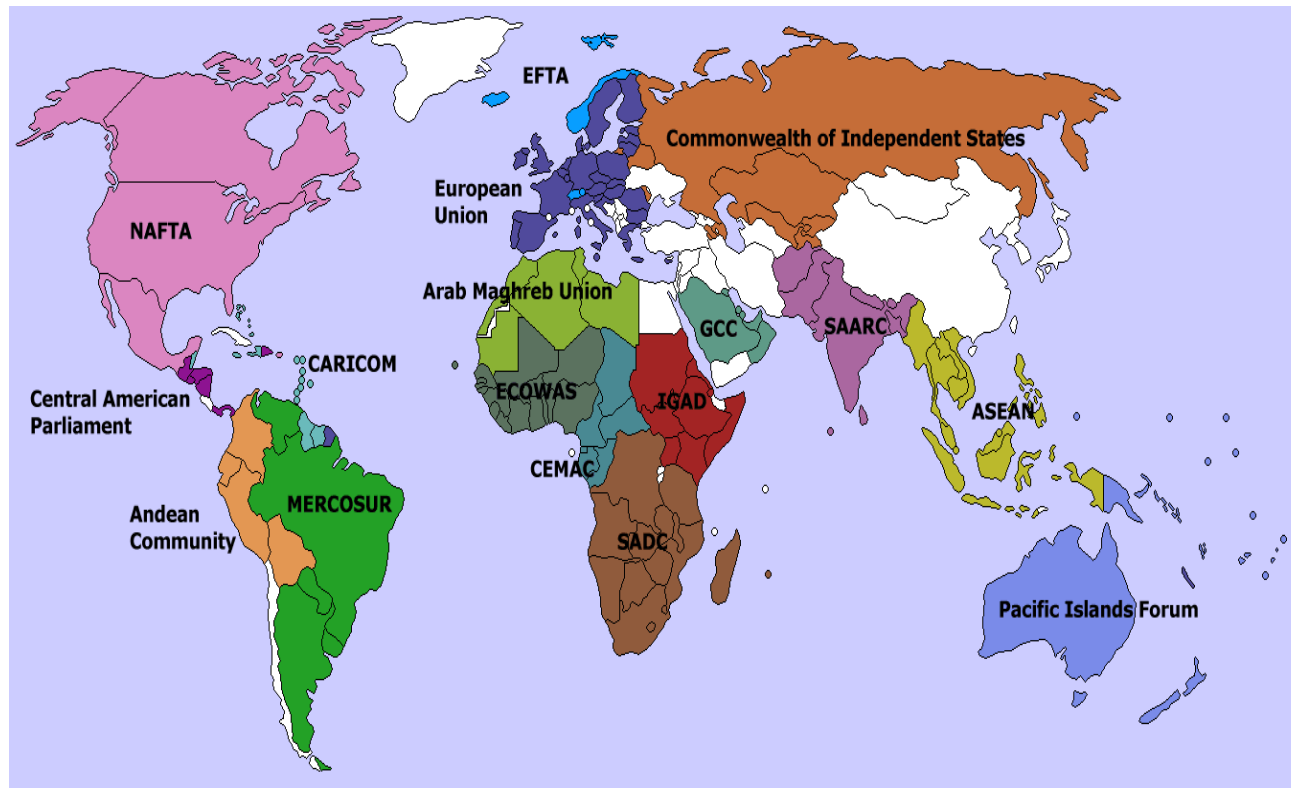
- Demand Response
- Distributed Generation
- Distributed Storage and Electric Vehicles

(All these transformations supported by ICT)



➔ New business models in the sector

3. INTEGRATION OF POWER SYSTEMS

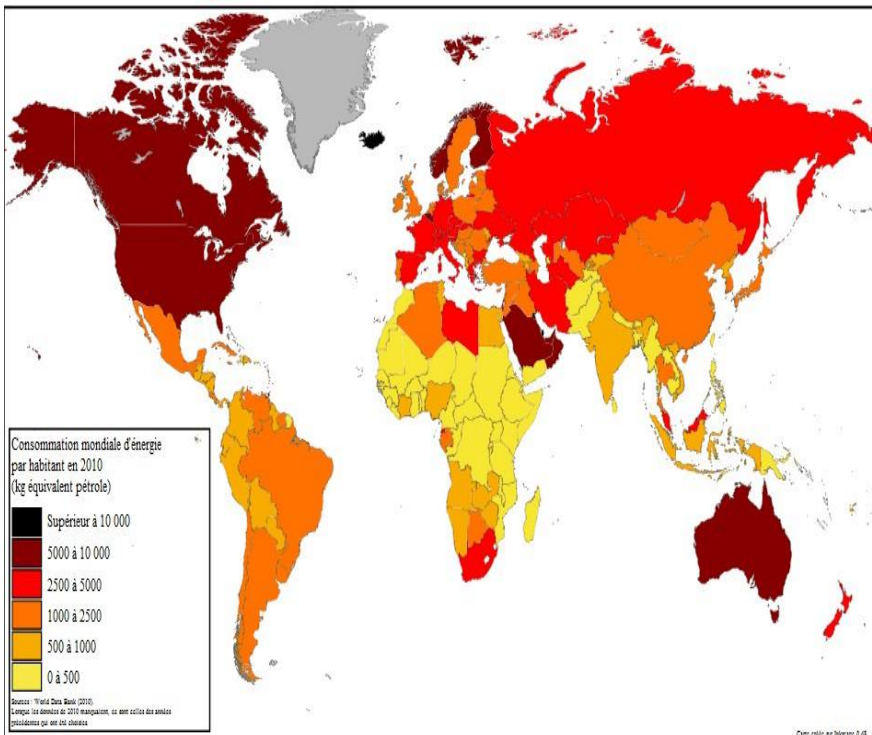


- New interconnections among regional power markets
- ➔ Rationalization in supply and related advantages

4. ENERGY CONSUMPTIONS:

ACCESS

1.5 billion people do not have even access to electricity



AFFORDABILITY

Italy: % of families for which the electricity bill is not affordable:

1998: 8,32% ;

2011: 17,17%

(Minaici, Scarpa and Valbonesi, 2014: Energy Policy)

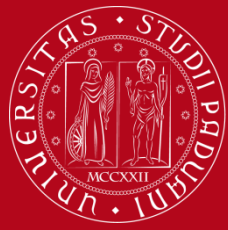
EU: Different trends/levels in different countries, new attention and room for further investigations

(Deller, Waddams, 2015: CEER Report)

Research funded by LC in the area

Energy markets and regulation

- **3 YEARS RESEARCH PROJECT:** *Multi-unit Auctions' Design in Electricity Markets: new challenges after the growth of renewable power plant capacity*
P.I.: Stefano Galavotti - Team: L. Corazzini, P. Valbonesi (Dept. of Economics & Management); F. Bignucolo, A. Lazzaretto, A. Lorenzoni, N. Mazzi, S. Reich (Dept of Engineering)
- **3 YEARS Ph.D SCHOLARSHIP:** *Corporate Social Responsibility, non-profit market aggregators and third-sector entities in energy markets*
Ph.D Student: Silvia Blasi, Supervisor: F. Fontini (Dept. of Econ & Management)
- **2 YEARS POST DOC RESEARCH GRANT:** *Capacity markets and the pricing of Reliability Options*
Researcher: XXX, Supervisor: T. Vargiolu (Dept. of Mathematics)



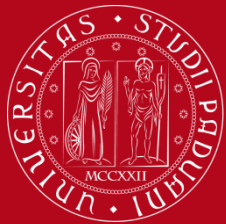
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Levi Cases Retreat Day
Monday, January 18th, 2016
Aula Magna – Pentagono – Agripolis, Legnaro (PD)



Thanks for your attention !

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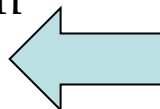
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Energy markets

Supplying energy to homes across Italy involves three key elements:

- making electricity through generation
- transporting gas and electricity
- selling it to the customer.



NATURAL MONOPOLY

Energy companies can work in any of these different areas, and some operate in all of three of them.

This means that companies make sure we have the energy that we need.

It also means that customers can choose which companies supply their energy.



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On-going research in this area, funded by Levi-Cases

- **3 years Project: Multi-unit Auctions' Design in Electricity Markets (MADEM): new challenges after the growth of renewable power plant capacity**
- **2 years Scholarship: Capacity markets and the pricing of Reliability Options**
- **Ph.D Scholarship: Economics of Energy Markets: Market design, Values and Efficiency**



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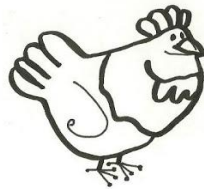


MARKET

Demand



Supply



Why do we regulate markets?
(banks, health, safety, the environment... etc)

Market failures...

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Regulation of Electricity Market today

SLIDE DA RIVEDERE

- **Financial Crisis** presents Conflicting Diagnoses
“Deregulation, or the failure of regulators to keep up with fast-moving markets, can become unbelievably costly, as we have seen.”
- **Going Green** implies a Major Transformation of the Electricity Sector Climate change policy and the expanded focus on renewables present a fast moving array of subsidies, regulations and mandates.
- **Electricity Restructuring** is not Electricity Deregulation Electricity markets with EU Reforms ..., Independent System Operators (ISOs).

But “failure of regulators to keep up with fast-moving markets, can become unbelievably costly, as we have seen.”