



economics<sub>for</sub>  
energy

INSTITUTO DE INVESTIGACIÓN TECNOLÓGICA - IIT

# Auctions for renewable energy support Back to the future?

Pedro Linares

Work in progress, joint with Pablo del Río and Gonzalo Saénz de Miera

Economic Challenges for Energy

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## A basic engineering/regulatory principle

If it works, don't touch it!

Then, why mess with RES support?



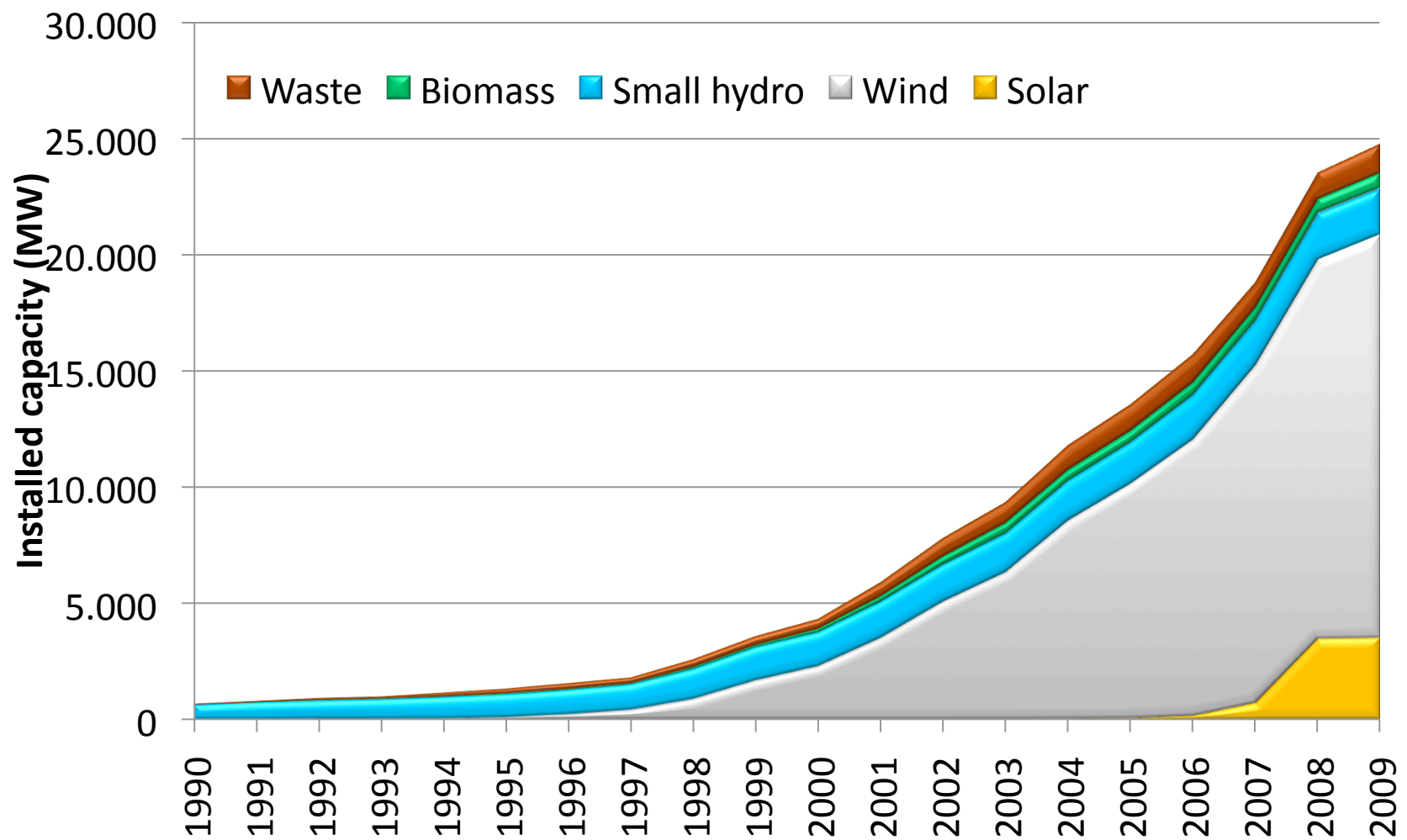
## Renewable energy in Spain, early 2008



## The success story

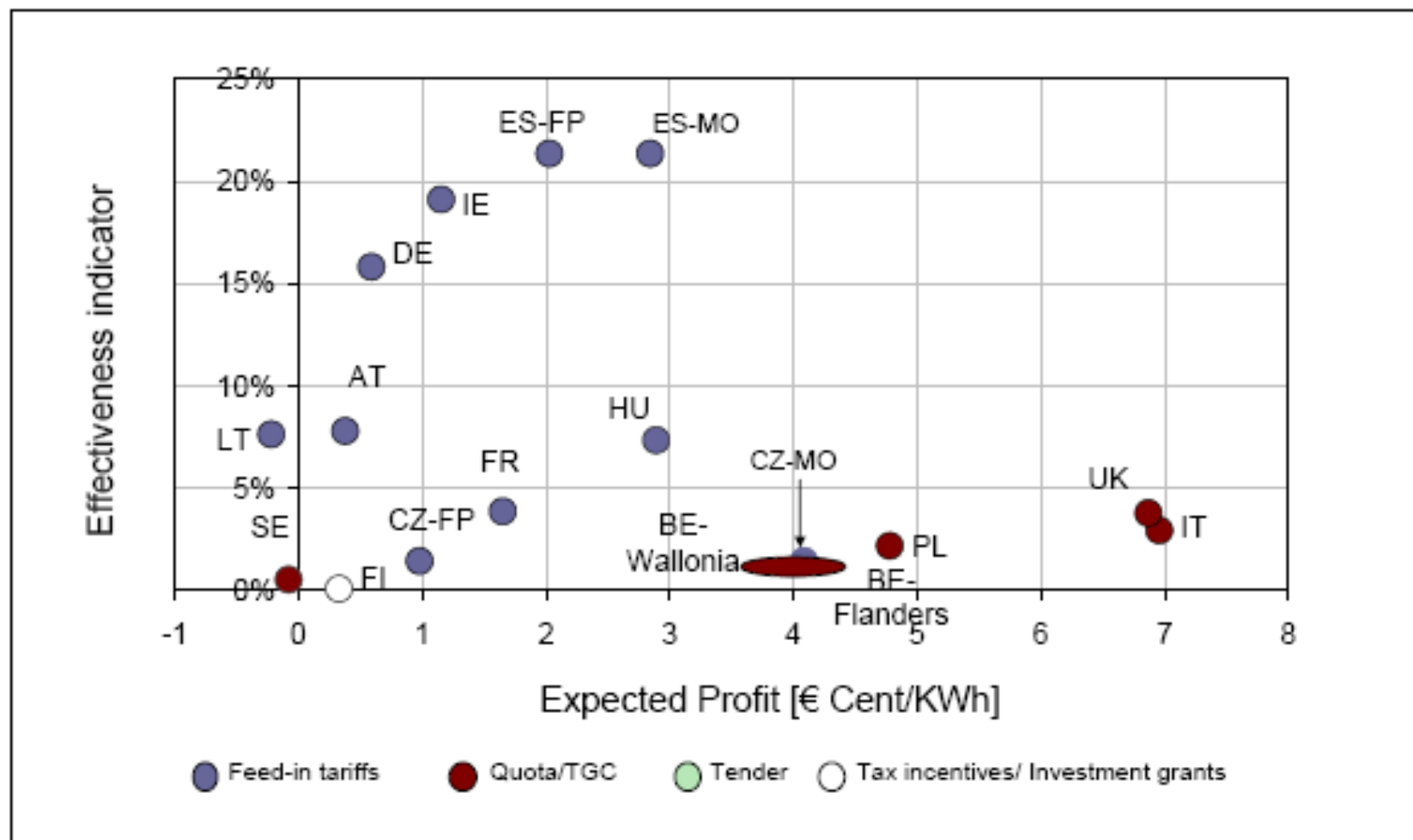
- The system has worked well for wind:
  - Balanced and consistent growth
  - At a contained cost
  - Solid industry framework
- Large installation of solar PV
  - Although at a very large cost (the update was not quick enough)
  - Exceeding targets
- Not so good: ineffective for others

# RES installed capacity in Spain



Source: CNE (2010)

## FIT: a success also in Europe



**But then came the crisis...**

**...the blanket became smaller...**



**...and all the feet came out of the bed**



# Renewable energy in Spain, nowadays

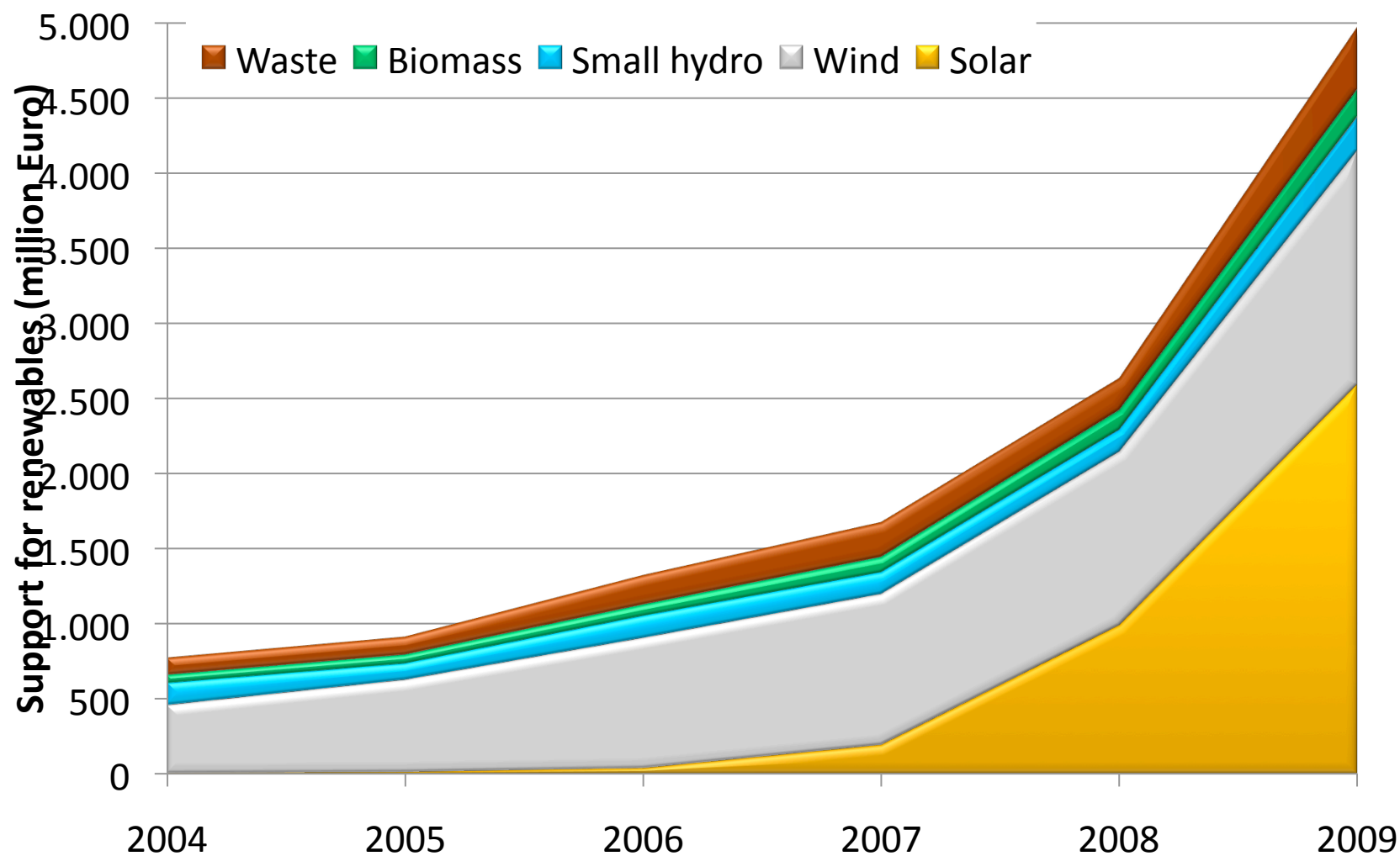




## The problems

- Costs of support
- Lack of coordination
- Financing
- Learning curves
- Regulatory failure

## The cost of the support (I)



Source: CNE (2010)

## The cost of the support (II)

- In 2009 the total support for renewable was 4,600 mill € (17% of the total cost of the power system in Spain)

	Share of total system costs	Share of electricity demand
Wind	6	15,2
Small hydro	1	2,3
Biomass and waste	3	1,1
Solar	10	3

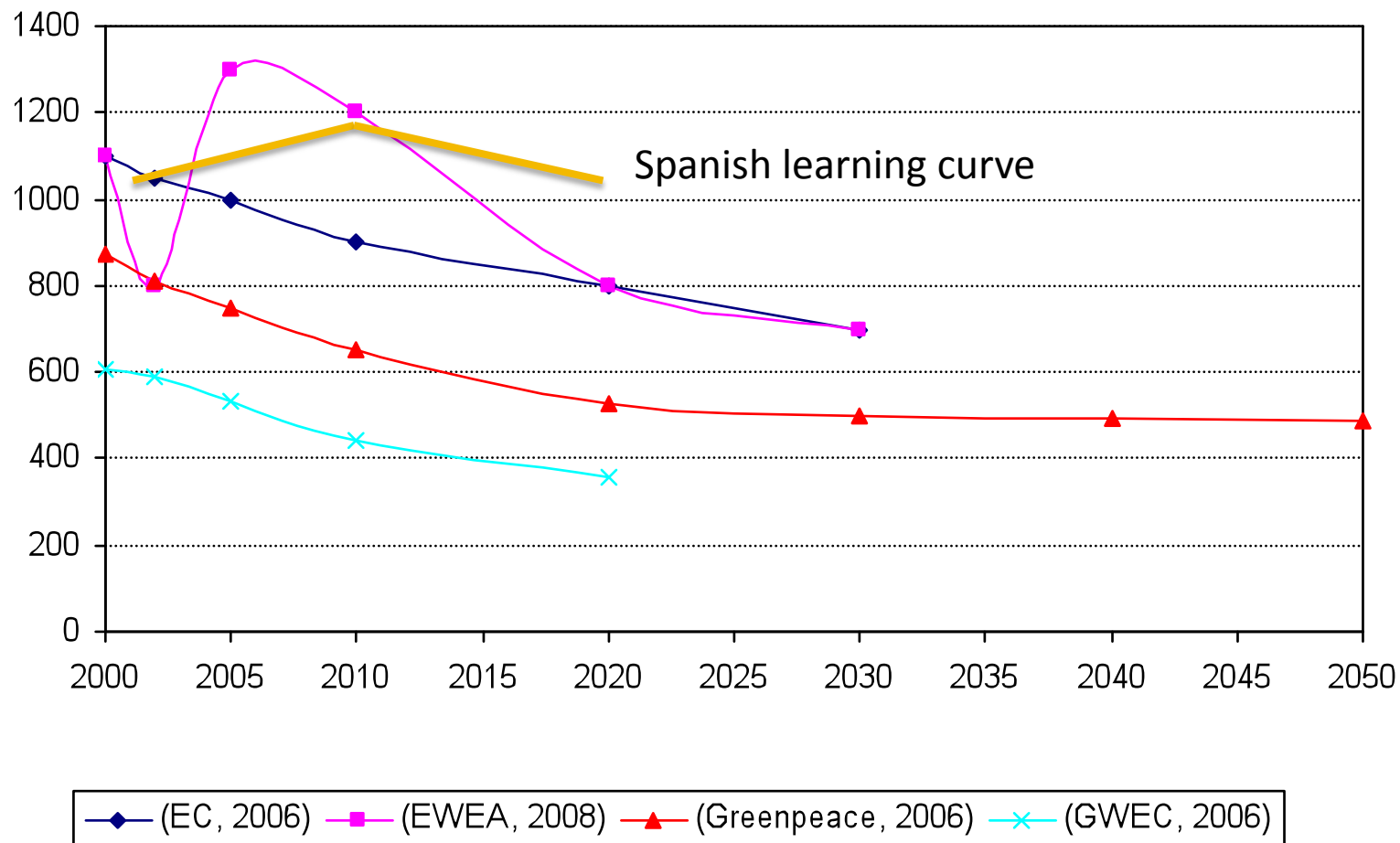
Source: CNE (2010)



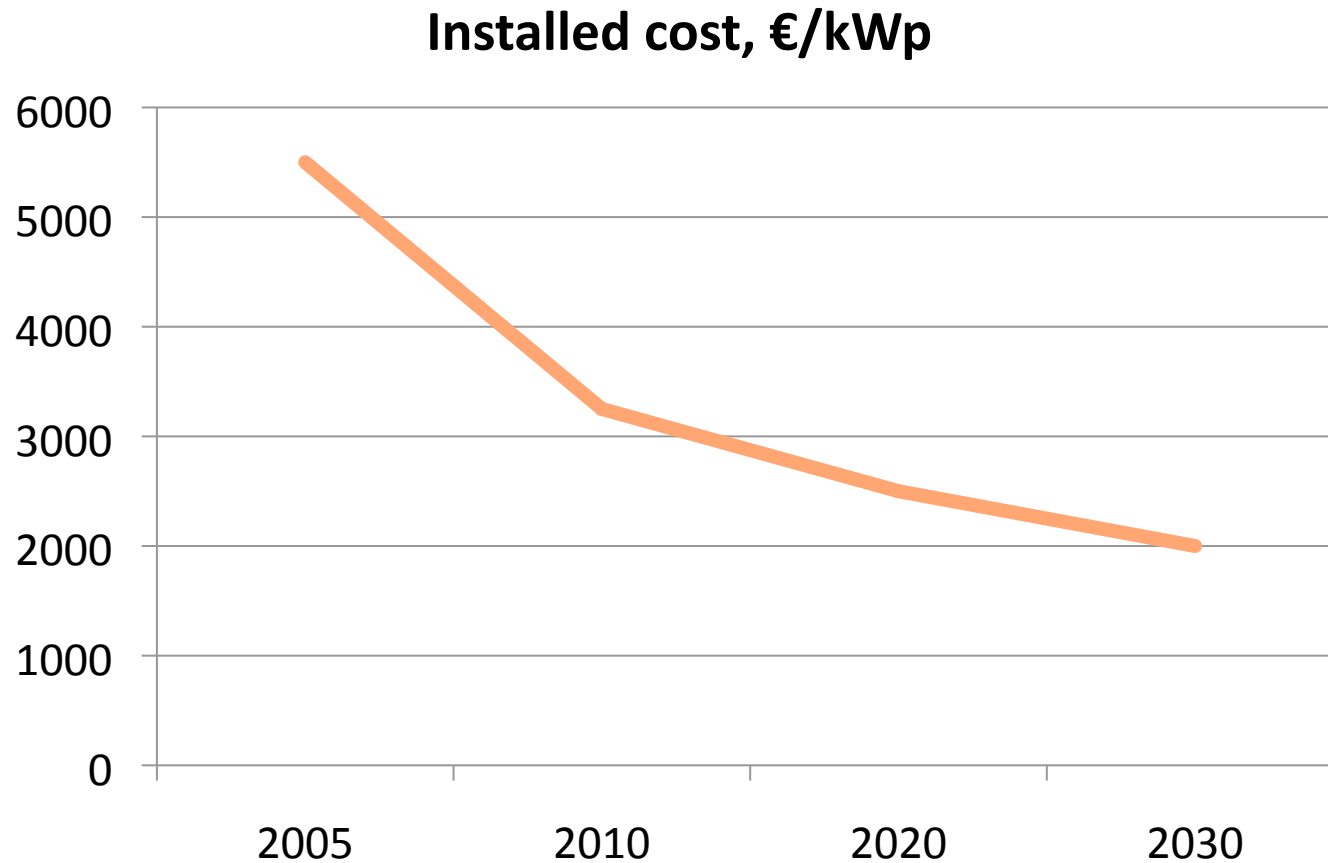
## Lack of coordination

- Feed-in tariffs have been used by some regions to finance industrial policy
- Others are not RE-friendly
  - RES have been installed in the “easiest” regions, not necessarily in the best ones
- Different administrative regulations
- Lack of communication resulted in not knowing about when targets were reached
- Given that the final say is with the regions, it is difficult to plan ex-ante

# Learning curves: Wind



## Learning curves: Solar



Has Spain paid for this global development?

## Regulatory risk and failures

- Boom-and-bust regulation for PV
  - Regulation was not fast enough to adapt
- Has consequences on other RES
  - Major halt in wind
  - Some of the proposed changes may be retroactive
- Although history may repeat itself with solar thermal



## What are the alternatives?

- Re-design of FIT
  - Tradable green certificates
  - Auctions
- 
- With additional challenges
    - EU harmonization



## Why not auctions?

- Theoretically has advantages
  - Long-term security for investors
  - Market price discovery (lower costs)
- But, of course, also disadvantages
  - Some inherent to the instrument
  - Some depending on the design
- Other instruments have also shown to have problems: The devil is in the details

## Past and current experiences

- RES auctions have not been very successful (UK, France, Ireland,
- In other countries, the jury is still out (Brazil, Chile)
- However, auctions have not only been used for RES
  - E.g., in Latin America they have been used extensively for conventional electricity
  - All around the world, for: radio frequencies, etc.



## Problems identified

- Directly related to the instrument
  - High transaction costs
  - Possibility for market power
  - Opacity
- Related to the design
  - Little effectiveness
  - Lower exposure to market signals
  - Uncertainty



## Additional issues

- Coordination with regional/local governments
  - Zoning rules may interfere severely with this instrument
- Budgetary constraints
  - Controlling the total subsidy is very relevant now
  - For auctions, reserve prices are needed
    - But setting them well is difficult, and may partially determine the outcome

## Addressing the problems (I)

- Low effectiveness
  - Penalties for non compliance: not enough
  - Auctions must be site-based (local authorizations cleared)
    - Critical for wind or solar thermal, not for PV
    - The distribution may take into account not only resource availability
- Uncertainty
  - Predetermined sequence of auctions
  - Long-term contracts

## Addressing the problems (II)

- Coordination
  - Already addressed before: site-specific
- Budgetary constraints
  - Auctions for the subsidy, not for the power
  - Of course this may mean not reaching targets, but...
  - Two-sided auctions may increase funds available
- Market signals
  - The bid is for a premium over the electricity price



## Addressing the problems (III)

- Transaction costs
  - Difficult to remove
  - But site-specificity helps
- Market power
  - Hybrid auction design: Clock + Sealed-bid
  - Different sites / different products: Pay-as-bid
  - Strategy-proof mechanisms



## Basic elements of the proposal

- Starting point: list of pre-approved sites
- Two-sided auction
- Bids must be site-specific, and formulated in MWh/€ (premiums over electricity prices)
- Long-term contracts (15 yr or +)
- The auction ends when funds run out (considering the two sides)
- Auctions are repeated regularly (e.g. each fiscal year): regularity and high frequency are desirable

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