

# Auctions of CO<sub>2</sub> allowances

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# Auctions for CO<sub>2</sub> allowances

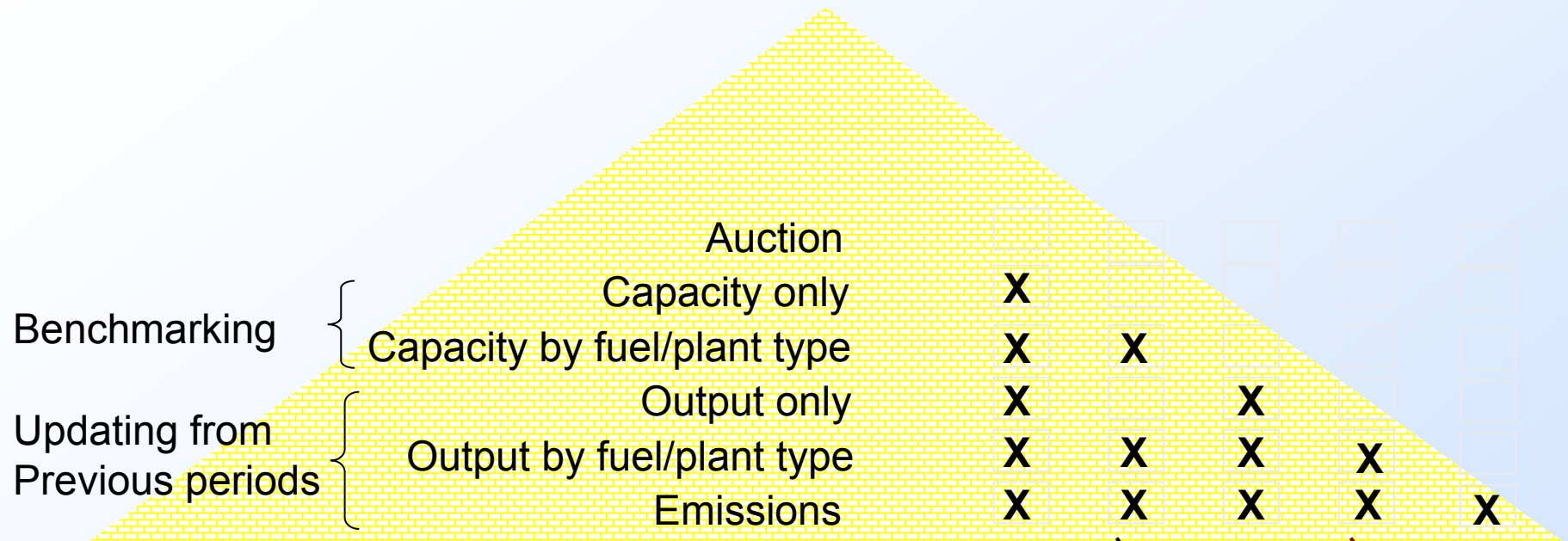
## Motivation for auctions

- Avoid distortions from free allowance allocation
- Avoid excessive compensation
- Competitiveness concerns – see next presentation

## Design of auctions

- Objective
- Frequency
- Format
- Institution
- Harmonisation

# The pyramid of distortions – we should move up there

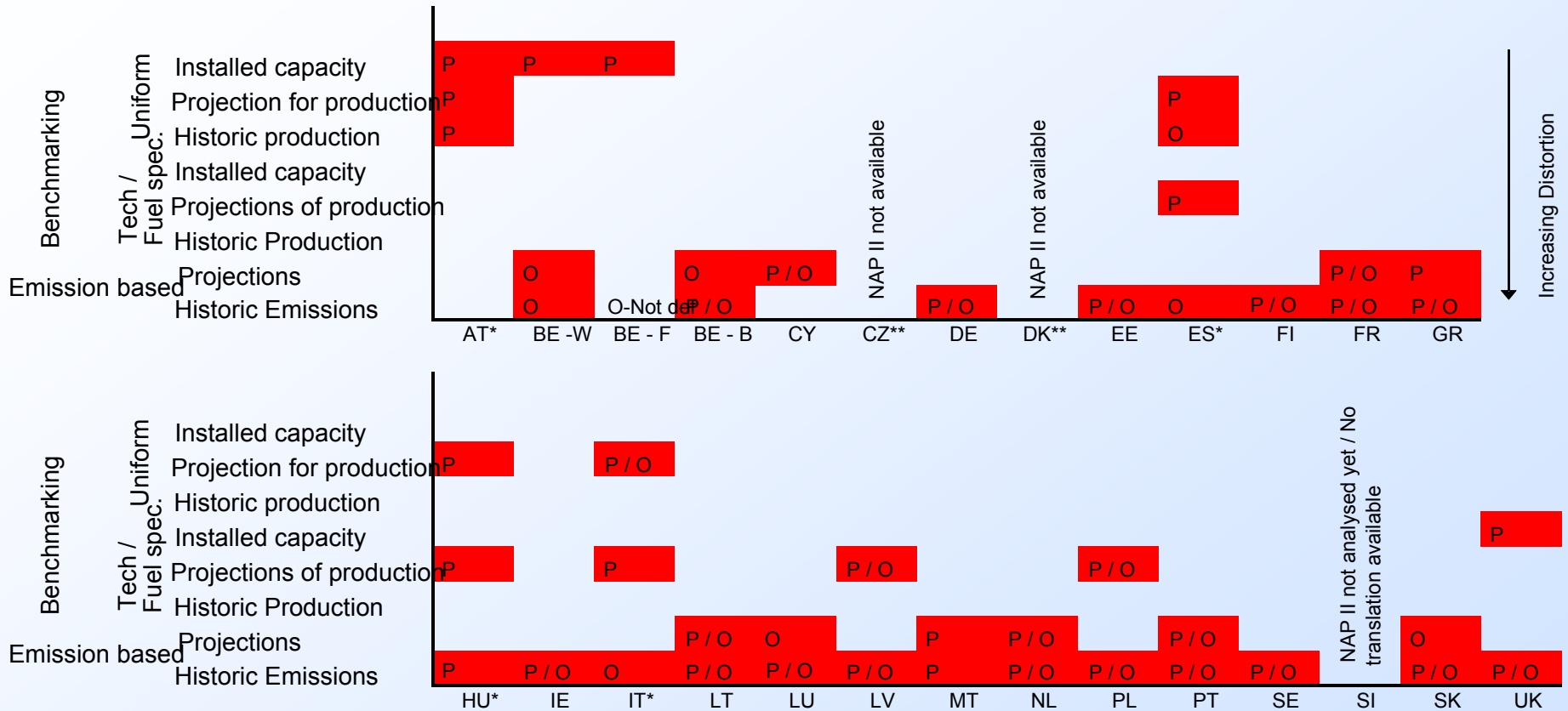


## Impacts

- Increased expenditure on extending plant-life
- **Inefficient fuel choice**
- **Less efficiency improvements**

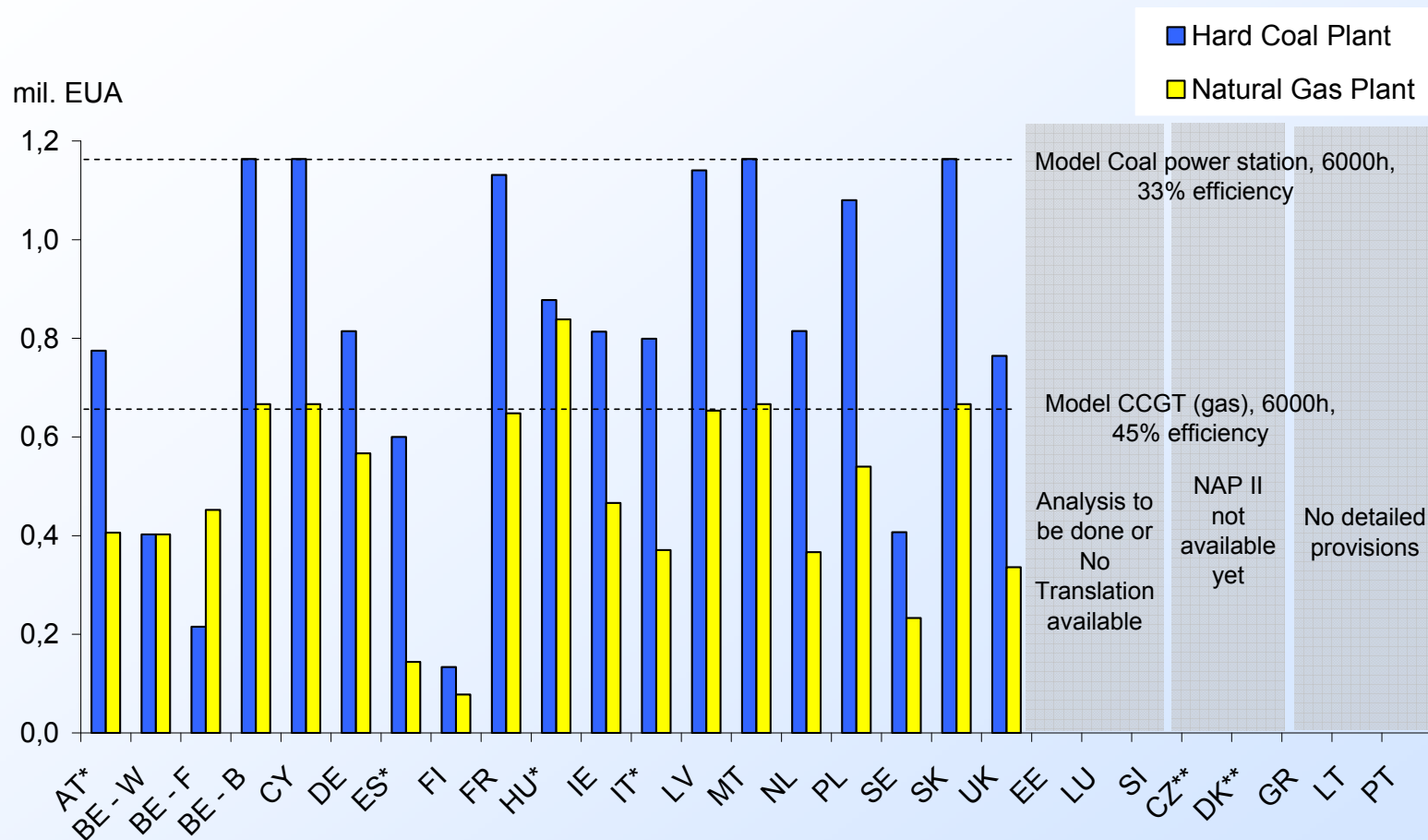
Discourage plant closure  
 Distortion biased towards coal  
 Shields output from average carbon cost  
 Distortion biased towards coal  
 Reduce incentives for  
 Efficiency-improving investment

... but we seem to have made little progress in NAP 2



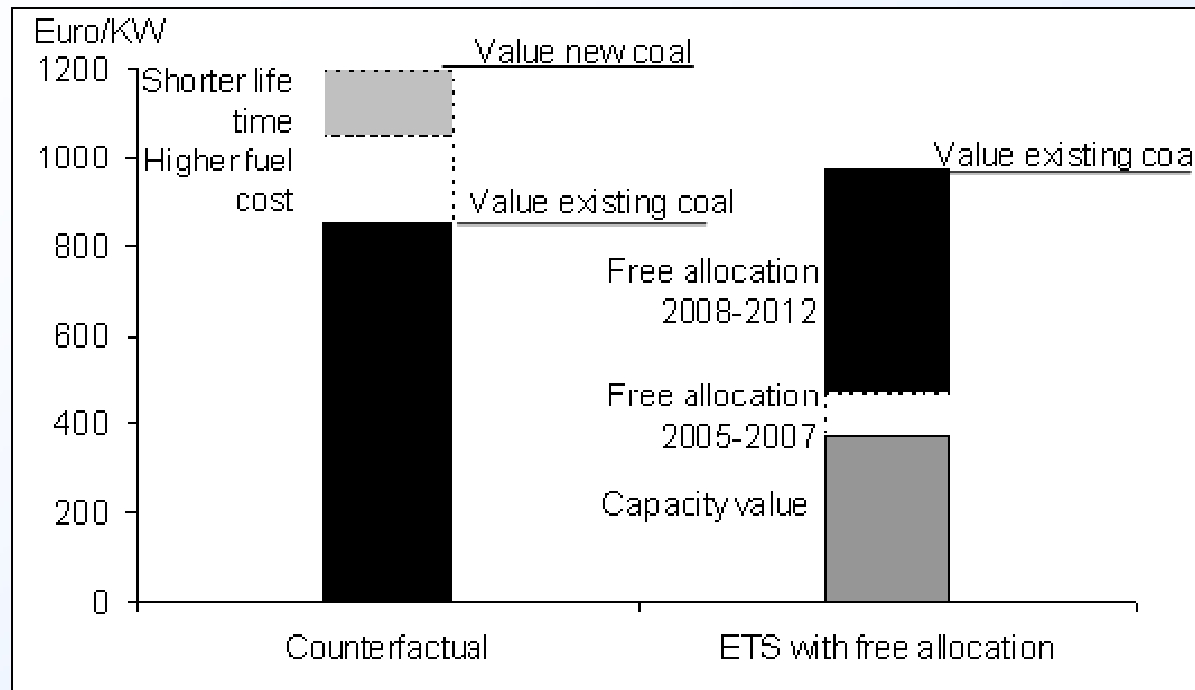
Source: Neuhoff, K., Rogge, K., Schleich, J., Sijm, J., Tuerk, A., Kettner, C., Walker, N., Åhman, M., Betz, R., Cludius, J., Ferrario, F., Holmgren, K., Pal, G., Grubb, M. and Matthes F., 2006, Implications of announced Phase 2 National Allocation Plans for the EU ETS, Climate Policy 6(5) pp. 411-422.

# And the level of allocation is not trivial



Source: Neuhoff, K., Rogge, K., Schleich, J., Sijm, J., Tuerk, A., Kettner, C., Walker, N., Åhman, M., Betz, R., Cludius, J., Ferrario, F., Holmgren, K., Pal, G., Grubb, M. and Matthes F., 2006, Implications of announced Phase 2 National Allocation Plans for the EU ETS, Climate Policy 6(5) pp. 411-422.

# How does ETS change value of power stations?



- Counterfactual – continued investment in coal
  - ETS – Net revenue at peak hours ~ capacity value
    - Phase I: estimation, might be higher
    - Phase II: allocation as in German NAP
- > ETS profitable even with full auctioning post 2012

## Objectives of auction

- Simplicity and transparency
- No discrimination of bidders with less information
- Avoid cash flow difficulties and risks for emitters
- Market clearing price that reflects value of allowances

## Frequency of auction



### **Advantages of higher frequency**

- Small value / auction -> reduces risk of participation
- Emitters can buy at time to match requirements
- Emitters have to post smaller collateral
- Smaller risk of pre-emption (volume not big enough)
- If relevant – impact on secondary market smaller

### **Advantages of lower frequency**

- Allows more sophisticated auction format
- Lower frequency at fixed format might reduce costs



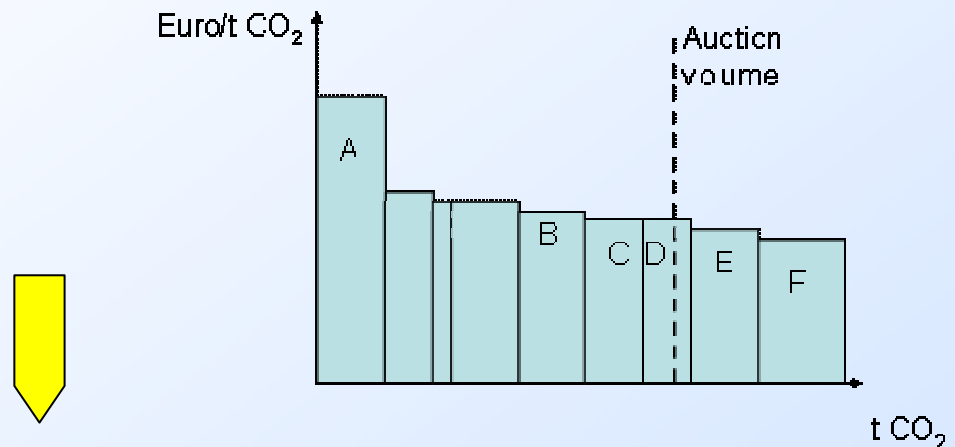
## Auction format – multiple rounds

### **Sealed bid**

#### **Ascending, descending clock etc.**

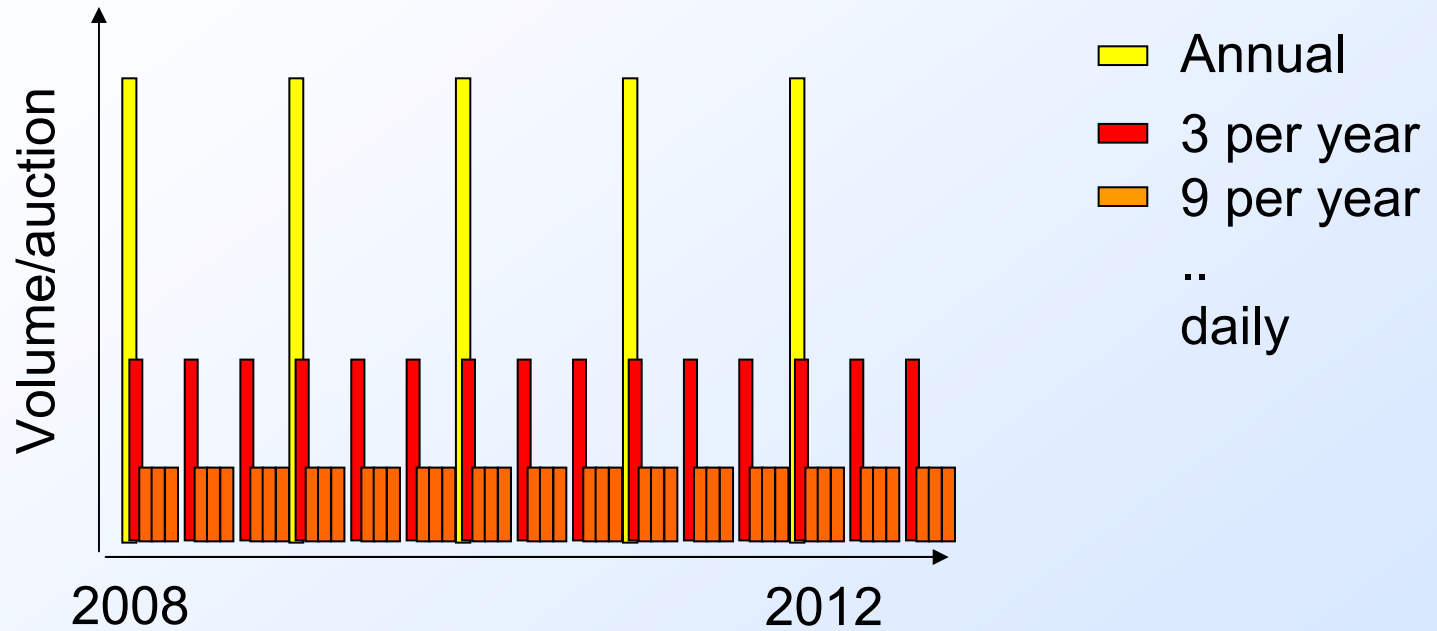
- Reveal information during auction, reduces risk
- But most information already in secondary market

# Auction format – calculation of clearing price

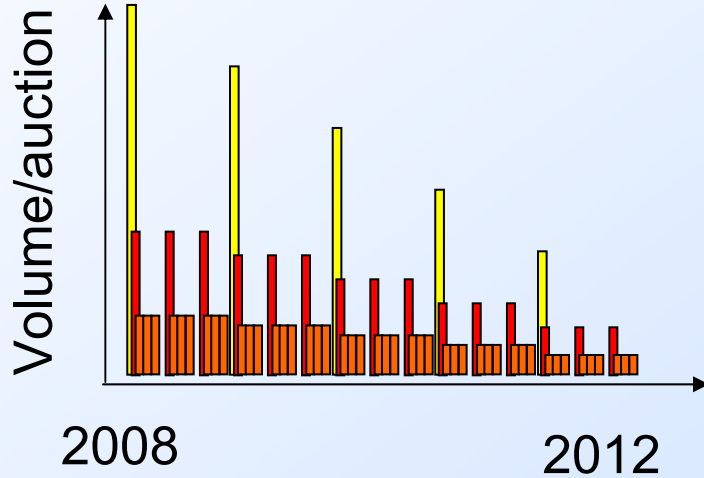


	<b>Uniform price auction</b>	<b>Discriminatory price auction</b>
Bid shedding	Risk with <ul style="list-style-type: none"> <li>• Big player</li> <li>• No active traders</li> </ul>	No
Value of market intelligence	Non	High, benefits active players
Discrimination	Non	Against uninformed

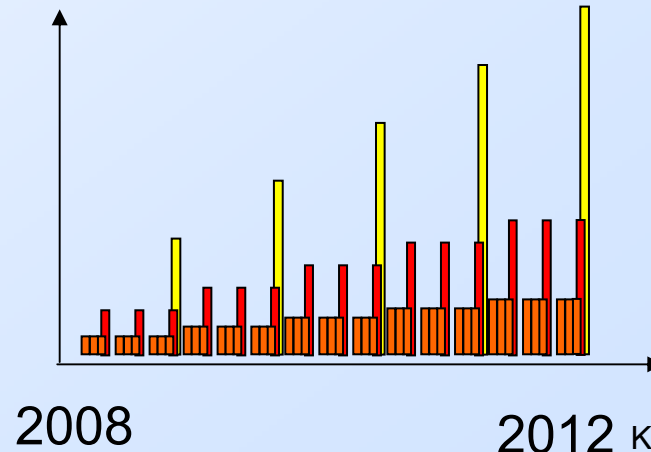
# How to distribute allowances across auctions?



Front-loaded – allows hedging



Back-loaded – match product sales



## Gaming opportunities

- Bid shedding
  - Unlikely good strategy with many participants
- Short squeezing
  - Buy allowances to create scarcity & resell
  - Only profitable if buying unobserved
  - Not viable with high frequency auction (One auction too small, but extra demand revealed)
- Price manipulation
  - Change spot price with unprofitable positions
  - Benefit in derivatives, other markets (electricity ...)
  - Also in bilateral market – ensure EU wide monitoring!!!

## Institutional set-up

### Objectives:

- Bid and IT management for quick turnaround
- Back office capacity to clear many bids

### Candidates:

- New governmental body
  - Track record of new IT systems ....
- Build on treasury bond auction experience
  - Not used to large number of bidders

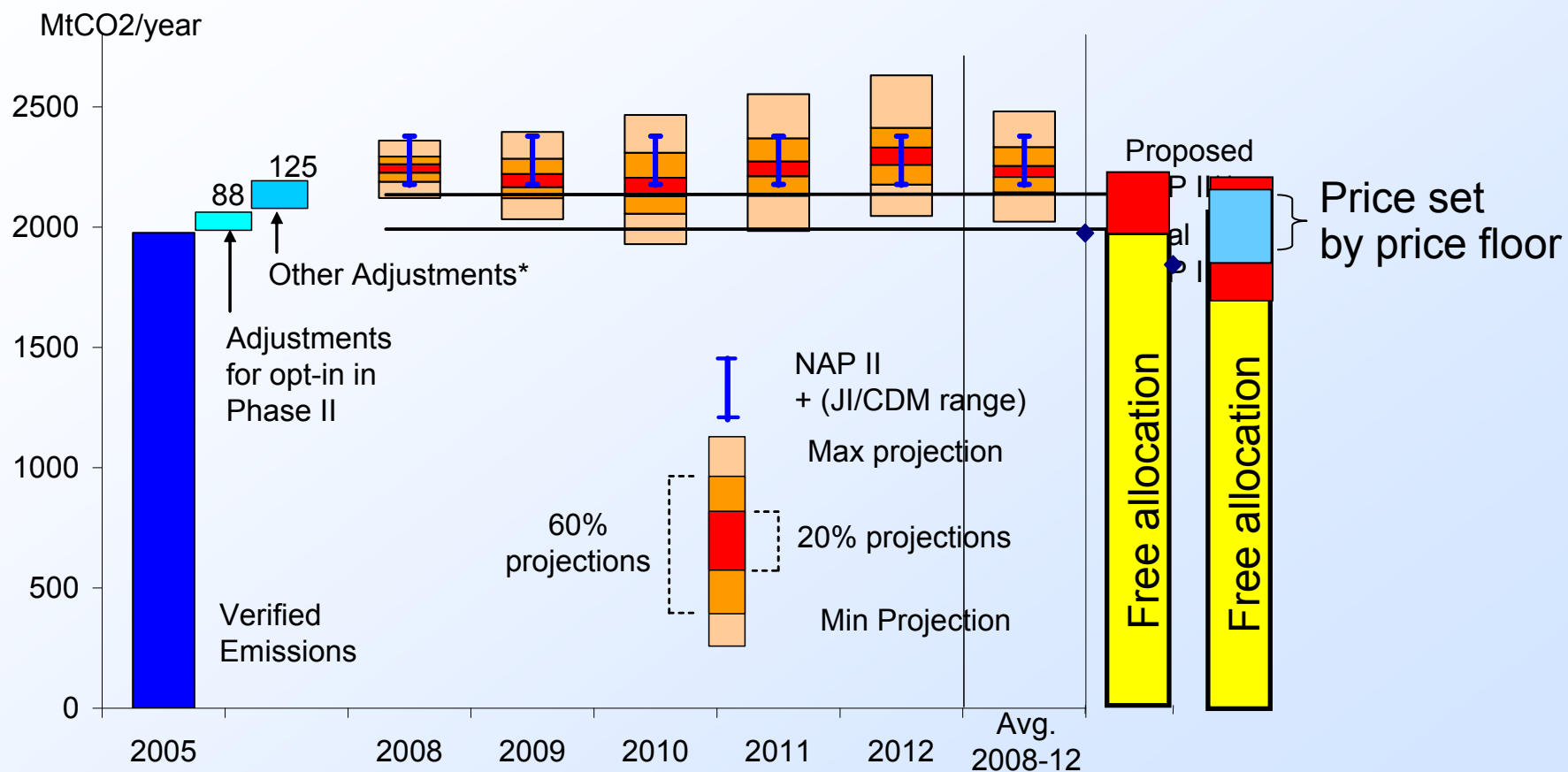


- Commission to institution with existing operations
  - CO<sub>2</sub> trading like ECX, EEX, Nordpool
  - Power exchanges like APX, UKPX, EEX, Nordpool
  - Financial market places

## Reserve price in auction

- (I) To 'protect' auction from unforeseen events
  - Perhaps 90% of previous day's market price
  - Announcing reserve price increases transparency
  - Keeping it secret prevents coordination at this price
  
- (II) To increase robustness of Carbon signal
  - Has to be announced ahead of time

# 10% auctions with price floor could facilitate investment



Coordinated auction with price floor can reduce risk of low prices

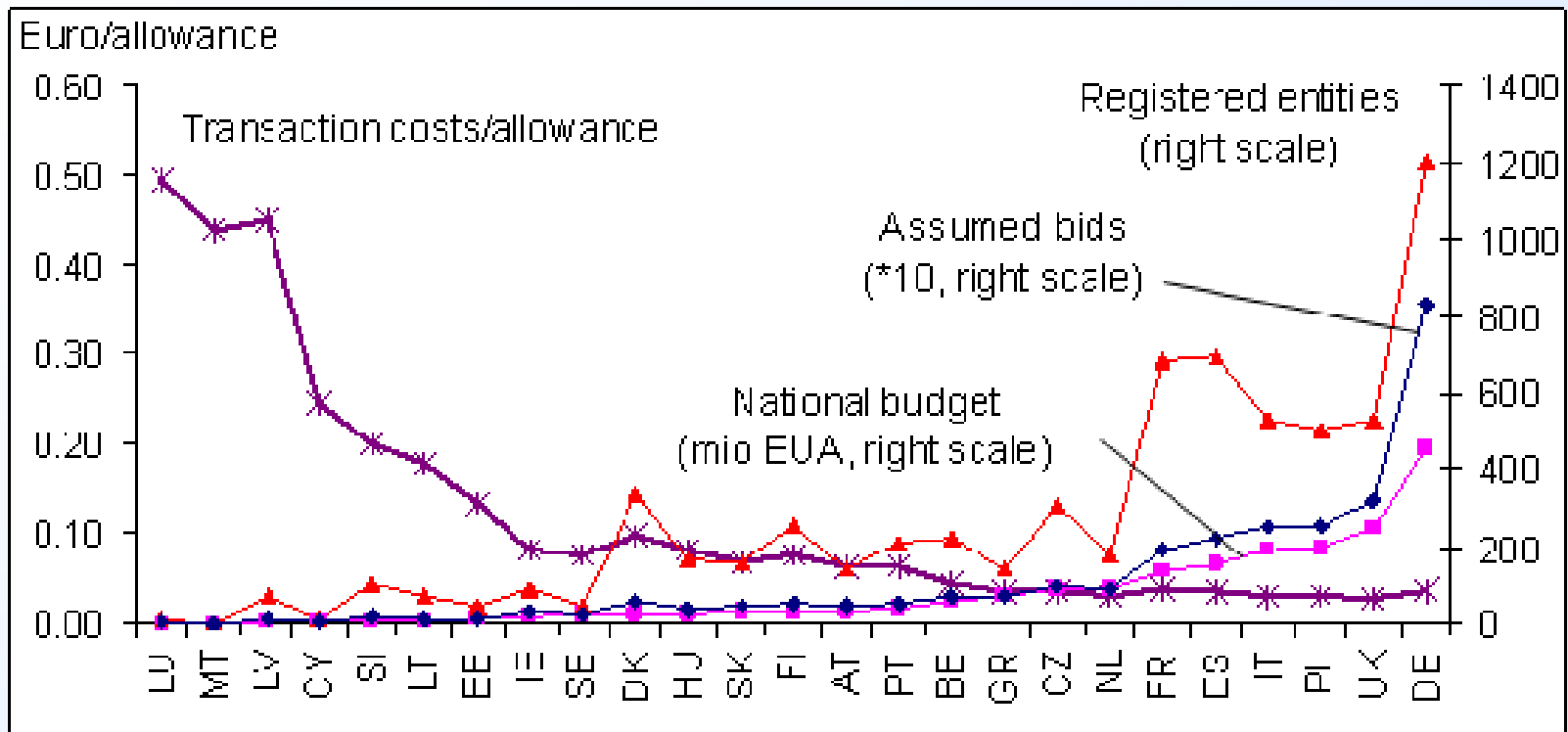
Source: Emissions Projections 2008-2012 versus NAP2 (2006) by Neuhoff, Ferrario, Grubb, Gabel, and Keats and . Published in Climate Policy 6(5), pp 395-410.

# Harmonised and joint auctions

<i>Indicative results (+ positive and - negative)</i>	Independent auctions	Harmonised design	Commissioning same institution	Joint auction	Auctions under EU cap
Number of auction places in EU	25	25	1-few	1	1
Subsidiarity principle	+		+		
Risk of failed implementation	-		-	-	-
Transaction costs seller	-	-			



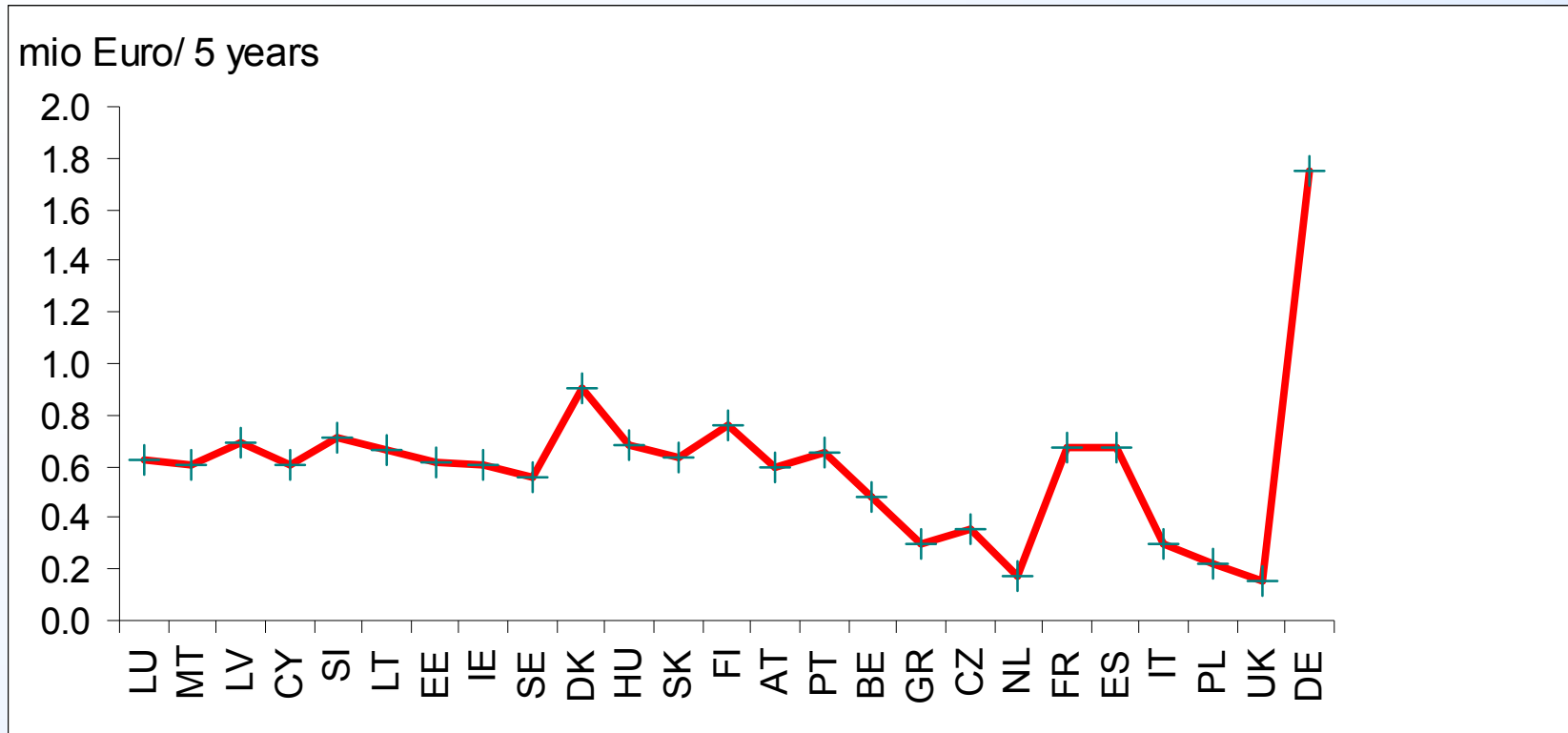
# Estimated costs for auctioning allowances (seller side)



## Assumptions

Euro	Initial IT	Fixed cost/auction	Cost/registration	Cost/bid
Costs	500.000	25.000	100	150

## Estimated savings from joining auctions (seller side)



For details please see auction paper on [www.electricitypolicy.org.uk/tsec/2](http://www.electricitypolicy.org.uk/tsec/2)

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Risk of failed implementation		-		-	-	-
Transaction costs seller		-	-			
Participants perspective	Only one registration required			+	+	+
	Frequent auction available			+	+	+
	Simplicity of ETS scheme		+	+	+	+
Coordination	Attention/demand fatigue if auctions coincide	-	-			
	Governments pre-empting to maximise revenue	-	-			
	Lock in to 'random' national designs	-				
Predictability	Reserve price can support price floor			+	+	+

## Do auctions reduce liquidity in secondary markets?

- Passive strategy no longer viable
  - Increase overall market participation and hedging
- Concerns from early experience US SO<sub>2</sub> auctions
  - Illiquid market
  - Long lead times for auctions
  - Auction also used to resell on behalf of market
  - > Not really relevant
- Experience of T-Bill auctions
  - Work with Vanessa Smith and Andreas Pick
  - Trading volume increased when bonds reissued

## Conclusion

- Motivation for auction
  - Commitment to mainly auction avoids distortions
  - Avoids distributional imbalances
  - Other instruments for sub-sectors really exposed
- Simple auction design wins participants
  - Sealed bid, uniform, frequent
  - Commission to institution with existing operations
  - Distribution across auctions – uniform?
  - Can we use reserve price to support price floor?
- Harmonisation of auctions – simple but effective
  - Simplicity, facilitates participation, avoids lock in
  - Consider jointly commissioning to one institution