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TEN PERSPECTIVES
on NORDIC ENERGY



Perspective no. 1

Costly early learnings from the EU ETS

- Unforeseen price levels hit industries hard

- “Shaky” price formation: Pessimistic baseline projections and lack of market data
- Still immature market: Asymmetries in the market continue to boost prices
- Power generators are able to pass on costs to end-users – industries are not
- Allocation of free allowances obscure investment decisions

Perspective no. 2

Market based support schemes

- Do they work as intended?

- The ETS and the Swedish Electricity Certificate markets are two cases in point:
- Are governments able to create adequate fundamentals in “synthetic” markets?
- The risks involved may be too high!

Perspective no. 3

New decade in the Nordic energy markets

- New challenges face the Nordic electricity and district heating markets:
 - ✓ New policy mechanisms
 - ✓ Increased integration
 - ✓ Need for new investments
 - ✓ Diminishing fossil fuel reserves
- The cards are shifting and stakes are high: Who is winning and who is losing?



Perspective no. 4

Reduced CO₂ emissions and more renewables - Are we getting there or not?

- A mixed picture in the Nordic area:
 - ✓ Sweden on track to reach CO₂ target
 - ✓ Denmark among the top RES performers
 - ✓ But overall emissions are increasing
- Models yield predictions: There is no guarantee that targets will be met

Perspective no. 5

Interpretation of financial requirements - An impediment to sound investments?

- In reality, many agents in the energy markets apply stricter financial requirements than they think or intend:
- Economical investments may not be carried out
- Especially harmful to environmentally sound investments since the share of fixed costs is high

Perspective no. 6

Who should invest in infrastructure - Public or private investors?

- Conventional wisdom:
 - ✓ Private owners are concerned with economic gains
 - ✓ Public owners take environmental, social, local and industrial benefits into account
- But public owners increasingly demand profitability: This has implications for sector regulation

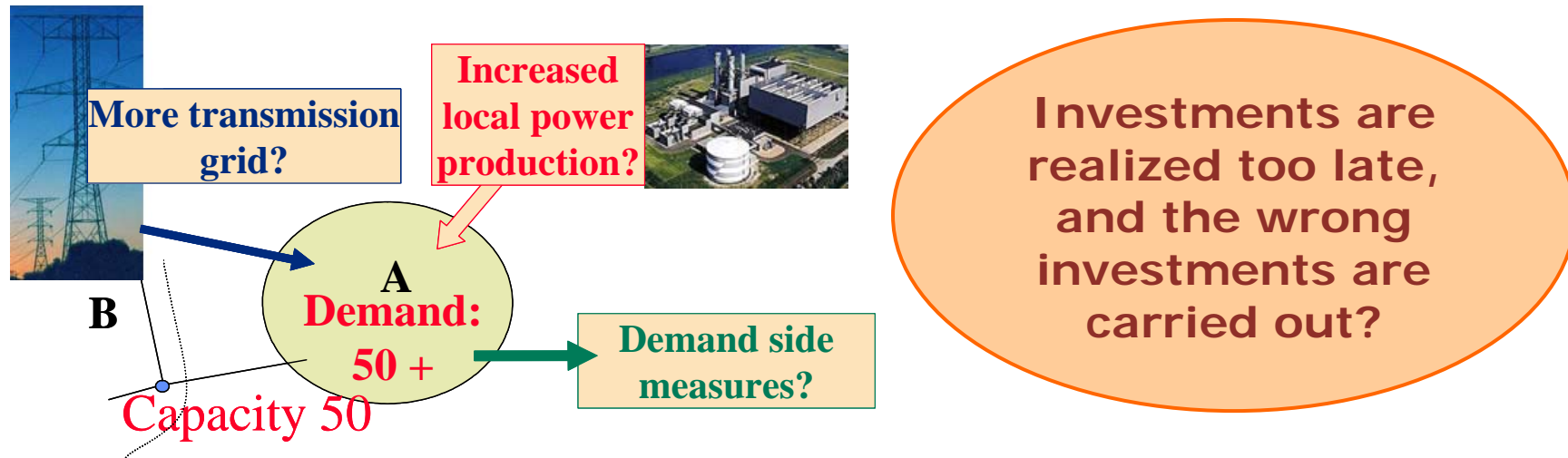
Perspective no. 7

Reregulation is not the answer

- Need for coordination calls for a visible hand?

- Challenges:
 - ✓ Incentives for profitable investments in generation
 - ✓ Correct trade-offs between production and transmission
 - ✓ Introduction of new infrastructures
- Investments in generation and transmission follow different logics but are interrelated
 - ✓ The market generate important price signals that a planning model lacks
- New infrastructures: Incomprehensive regulatory system often presents barriers to introduction of new energy carriers

Trade-off between generation and transmission in a deficit area: The Midt-Norge case



- Welfare economic optimal solution: Invest in generation
 - ✓ TSO can only invest in infrastructure
 - ✓ Generation not privately profitable, partly due to political issues:
 - Gas power: CO₂ capture and storage
 - Wind power: NIMBY issues

Solution: TSO as a visible hand in the market?

- Implies greater overall responsibility
 - ✓ Seek alternatives to grid investments
 - ✓ Coordinate investments
- Advantages
 - ✓ Improved trade-off grid/generation/demand
 - ✓ Improved location of generation
- Challenges
 - ✓ Planning does not remove uncertainty
 - ✓ Surveillance of TSO
 - ✓ Nordic coordination



Perspective no. 8

Increased infrastructure investments

- Due to EU ETS and support schemes for RES

- Shifts in investment patterns:
 - ✓ More international trade?
- New infrastructure needs:
 - ✓ Gas, coal: CO₂ “value chain” – gas pipes?
 - ✓ Biomass: District heating networks
 - ✓ Wind: New locations and system needs

Perspective no. 9

Energy, welfare and industry

- Complex links make policy making difficult

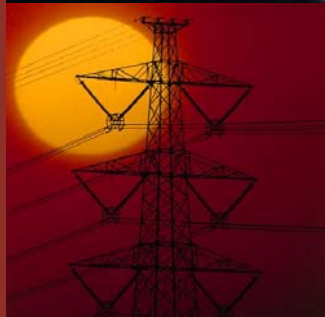
- How do (policies which yield) increased electricity prices affect welfare and economic growth?
- Economies are complex systems with an ability to adjust
 - ✓ Model simulations indicate low welfare costs associated with the ETS
 - ✓ But to what extent do different models capture the relevant and true effects?

Perspective no. 10

”Fuel” for an energy policy discussion - A Nordic energy policy agenda?

- **Ambition: A more coordinated Nordic energy policy**
 - ✓ What is the Nordic perspective?
 - ✓ Awareness of interlinkages and common interests, e.g. security of supply
 - ✓ Large similarities in policy coverage, but important differences in policy priorities
- **A possible agenda**
 - ✓ What differences matter?
 - ✓ Dare to choose political direction! Point to inconsistencies and main effects
 - ✓ Be careful about changes in policy! Analyses with Nordic focus required
 - ✓ Is a stable political framework a utopia? If so: What are the consequences?





Thank you!

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