

# Grid Development and Public Acceptance: An Economist's View

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# Overview

- ❖ About CSEI
- ❖ Background
- ❖ Applying economic theory concepts
- ❖ An alternative approach
  
- ❖ Summing up



# Copenhagen School of Infrastructure (CSEI)

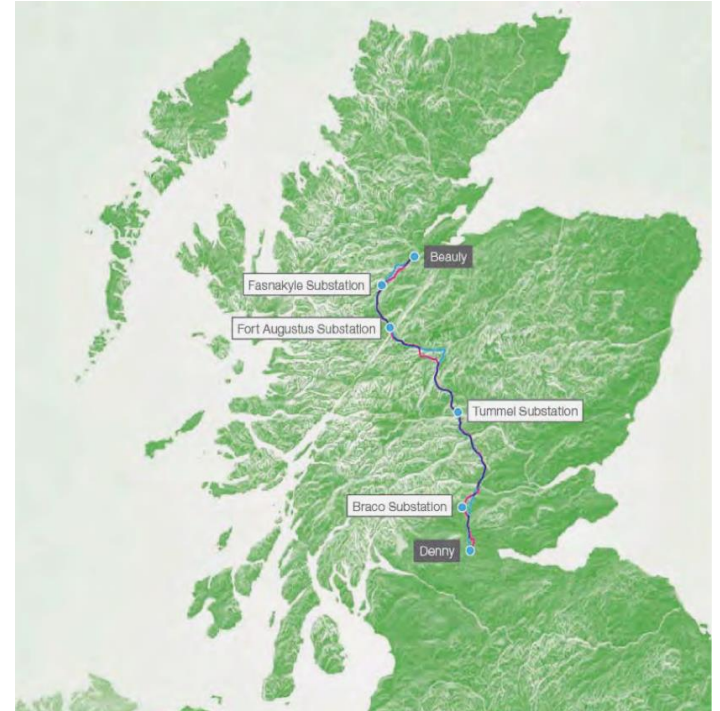
- ❖ Idea by the EU Commission
- ❖ CSEI as part of the annual EU Commission's Energy Infrastructure Forum hosted in Copenhagen
- ❖ Research Center at CBS' Department of Economics
- ❖ Endowed Professorship and junior faculty
- ❖ Funded by seven major partners

# Background

- ❖ Timely development of infrastructure associated with significant economic and social returns
  - Airports, Roads, Energy infrastructure, Waste disposal
- ❖ Adverse environmental and economic impacts of grid on communities lead to opposition
- ❖ Failing to reach agreement on siting causes lengthy and costly delays
- ❖ Some examples:
  - Beaully-Denny in Scotland
  - Hardanger in Norway
  - Spain-France interconnection

# Beauly-Denny Transmission Line

- ❖ 220km long
- ❖ Total investment: >£750
- ❖ Built to connect renewable energy in the north
- ❖ Ten year long planning process
- ❖ Over 20,000 objections
- ❖ Longest running public enquiry in Scotland



# Characteristics of opposition

- ❖ Communities and NGOs opposed the planned overhead line, but supported undergrounding
  - Health aspects
  - Visual amenity
  - Environmental effect
  - Property prices
  - Tourism
  
- ❖ The Beaulieu Denny Landscape Group (collection of NGOs) prepared a parliamentary briefing against the project
  - Challenged the need-case
  - Poor economic justification
  - Failure to consider other alternatives

# Need for a new framework

- ❖ Gird developments involve vested social, economic and political interests
- ❖ Conflicts between stakeholders - Indicate that the existing decision frameworks / process are now less fit for the purpose
- ❖ Need for new approaches and institutional framework

***How can economics help reduce social and political conflict?***

# Economic characteristics of grid development

## Some relevant concepts

- ❖ Natural monopoly
- ❖ Large sunk costs
- ❖ Public goods
- ❖ Information asymmetry
  
- ❖ Many stakeholders
- ❖ Externalities
- ❖ Uneven distribution of costs / benefits



# Economic approach to foster public acceptance

- ❖ Market failure generally justifies government intervention. However, the nature of the intervention is up for debate
- ❖ An economic approach could aim to redistribute the costs and benefits such that a socially acceptable outcome could emerge
- ❖ This may be resolved through redefining and reallocation of property rights

# Allocation of property rights

## ❖ In practice:

- Decide, announce, defend
- Governmental supremacy
- Compensatory measures

## ❖ Theoretical approaches:

- Pigovian taxation
- Negotiation
- Mergers
- Artificial market
- Incentive mechanism
- Direct intervention

# Methods to foster public acceptance of grid

- ❖ **Financial compensation (e.g., one-off payments, annual payments)**
  - Intended to internalise externality
  - Theoretically straightforward
  - Complicated to apply in practice
- ❖ **Community Benefit Schemes (e.g., local investments, part-ownerships)**
  - Investments in local infrastructure
  - Popular in wind developments – e.g. in Denmark, Spain and Germany

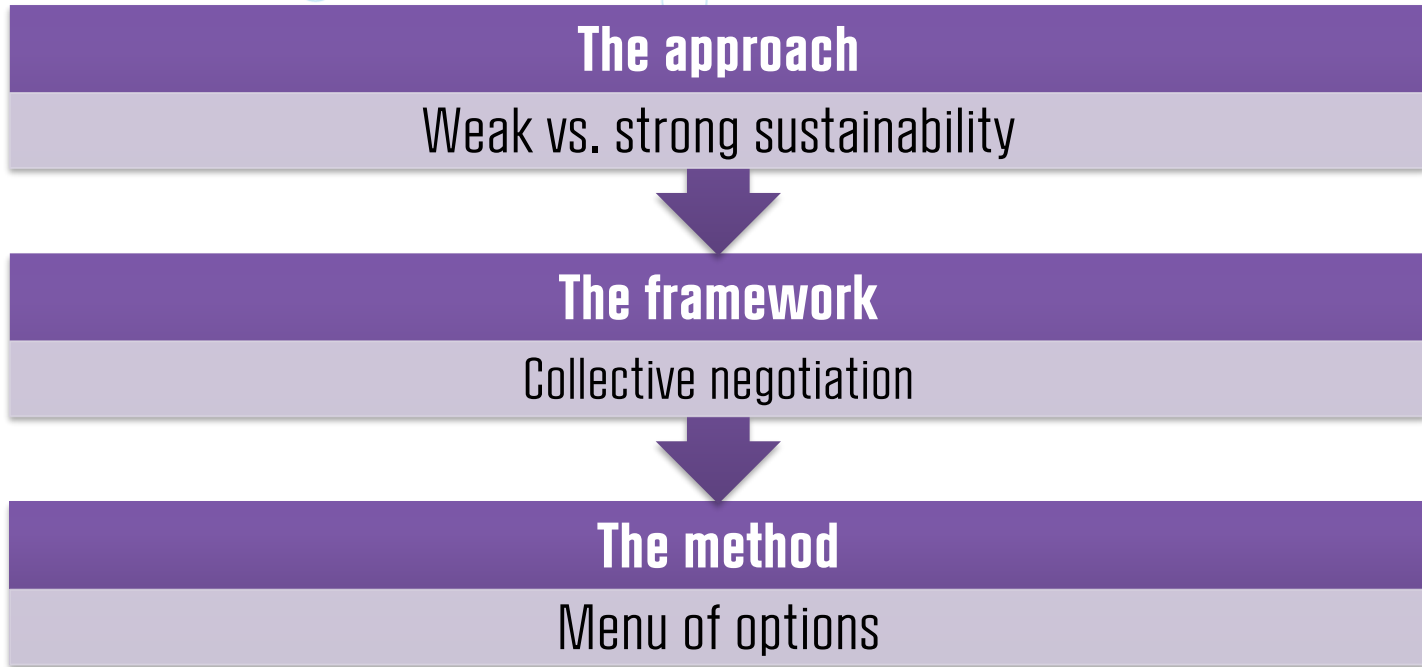
***Bribery? The customer vs. citizen distinction overlooked***

# Issues with financial compensation and benefit-sharing

- ❖ Linear grid infrastructure different to single location projects. Thus, experience from them not directly transferable
  - Geographical stretch
  - Number of stakeholders
  - Regulated industry
  - Technical differences
  - Cost / benefits difficult to quantify
  
- ❖ Impression of compensation as a bribe
- ❖ Short-term approaches

***Who has the property right to nature/landscape?***

# An economic sustainability approach



## Weak vs. strong sustainability

- ❖ **Strong sustainability** --> the total value of a resource or natural asset is to be maintained for current and future generations if an equivalent value of environmental asset can be created from the rents
- ❖ **Weak sustainability** --> some form of financial, natural, or social capital (in this case community capital) of the same value can be created from the benefits of the project

***Society must choose the extent of transformation of assets and the use of economic rent / surplus of projects***

# Collective negotiation

- ❖ Negotiated settlements reduce regulatory workload, decreased delays and increase efficiency
- ❖ Identify specific needs and opinions
- ❖ Utilise local knowledge
- ❖ Decrease transaction costs and information asymmetry
  
- ❖ Two-way discussions tend to increase public support

# Menu of options

- ❖ Theoretically appealing, and sometimes practiced by regulators
- ❖ Can reduce uncertainty, information asymmetry, and transaction costs
- ❖ The cost of alternative menus can be constant at a reference level  
- e.g. the difference between cost of overhead line and underground cable
- ❖ The community can value some menu of options over the others
- ❖ Potential to increase efficiency and social welfare

***Challenge - How to develop the menus***





## Summing up

- ❖ Need for a institutional and legislative policy change
- ❖ Option - Sustainability based approach, than transaction
- ❖ Compensation to nature, but with collective community deliberation
- ❖ Deliberation based around Menu of Options
  
- ❖ Upper limit set at the cost of undergrounding

**Thank you for your attention!**



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# Appendix



## Hydropower then

- ❖ Locally desired facility
- ❖ Local ownership and cooperation
- ❖ Utilisation of local knowledge
  
- ❖ Bottom-up decision making
- ❖ Benefits perceived to be high
- ❖ Perceived to be needed
- ❖ Environment less scarce

### Benefit sharing

## Grid now

- ❖ Locally unwanted
- ❖ Centralised
- ❖ Local knowledge ignored
- ❖ Perceived as for commercial profit
  
- ❖ Top-down decision making
- ❖ Perceived to be of low benefit
- ❖ More visible
- ❖ Environment scarce

### Compensation

# Theoretical approach: New Institutional Economics

- ❖ Neoclassical Economics assumes costless transactions, rational actors and perfect information → Unrealistic
- ❖ New Institutional Economics central concepts
  - Transaction cost
  - Property-rights
  - Principal-Agent relationships
  - Market failure
- ❖ The concepts are connected through the costs of transacting
  - Uncertainty, opportunism, incomplete contracts, ill-defined property rights and miscommunicated principal-agent relationships increase these costs

# Conceptual governance model

- ❖ Market based or non-market based
  - Coase (1937), Williamson (1979)
- ❖ The optimal (cost minimising) governance structure determined from the characteristics of a specific activity

