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Energy security and low carbon societies

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Background and content

- Research program: Climate policy and Energy Security
- How do climate mitigation and energy security policies interact?

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EU Energy Policy

- Security, Environment, Economic competitiveness

- ”energy security in the long term is also intrinsically linked to the EU becoming a competitive, low-carbon economy… …Energy security and decarbonisation are actually two sides of the same coin”

  Barroso, may 21th 2014

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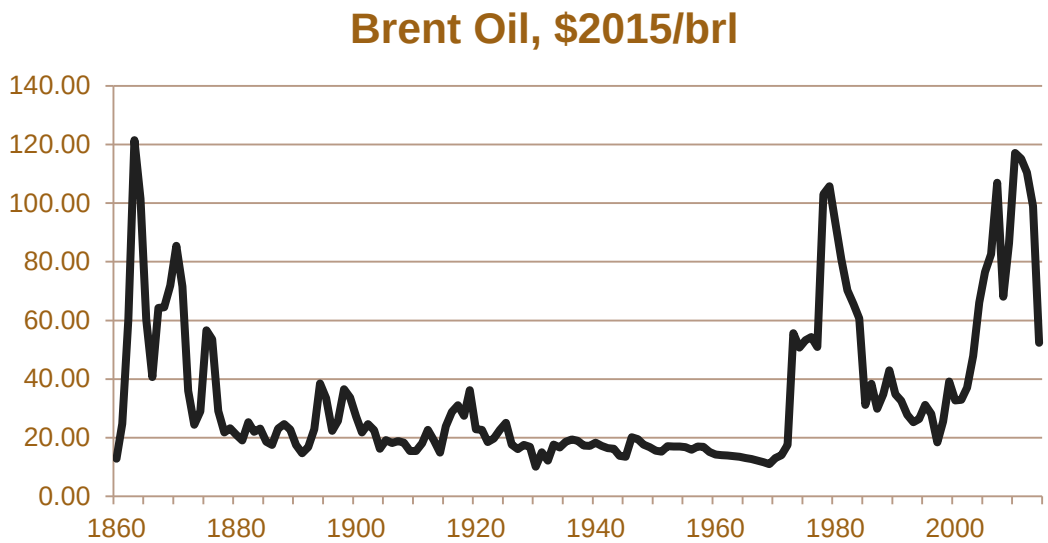
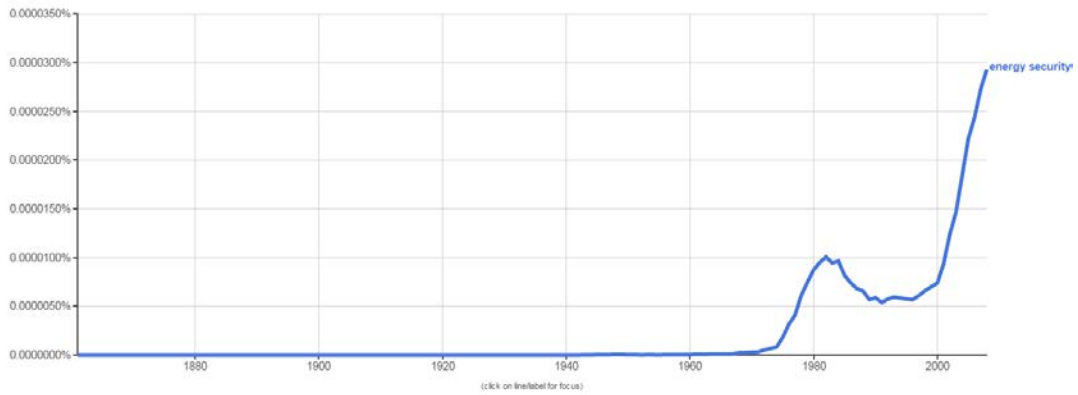
Fluctuating interest in Energy Security





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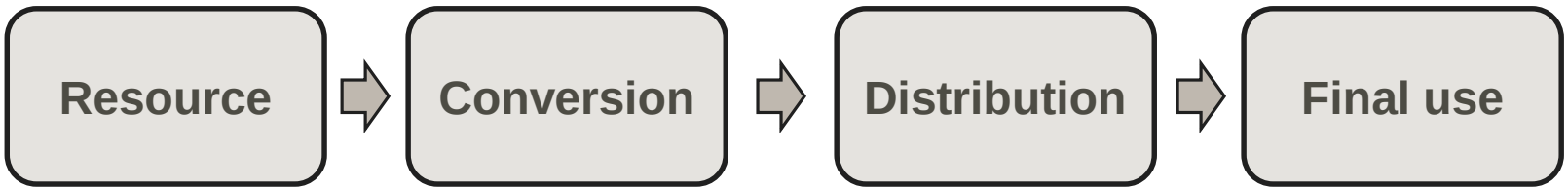
Energy security: More than just supply security

- Available, Affordable, Accessible
- Threats can impact different parts of the supply chain



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Evaluating Energy Security

Threats	• Technical failure • Natural event • Antagonistic attacks and accidents
Vulnerabilities and Capabilities	• Exposure to threats • Sensitivity to disturbances • Capacity to adapt
Consequences	• Quantifiable • Other
Valuation	• Preferences • Risk perception and aversion

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Improved energy efficiency

- Improved efficiency has many security advantages and few if any disadvantages
  - Lower variable energy cost reduces the exposure to high and volatile energy prices
  - A limited pool of resources can satisfy a larger demand, e.g. enables improved self sufficiency
  - Optimisation may reduce flexibility/redundancy
- “No-regret”

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Increased share of renewable energy

- Smaller and more numerous production units that utilise flows rather than extracting finite stocks
  - Centralised infrastructure can still be used and required to distribute or transport energy
  - Intermittency/variability/seasonality
  - It is generally more difficult to stockpile renewable energy than fossil energy
  - From political threats to technical issues (that can be managed..?)
- “It depends”

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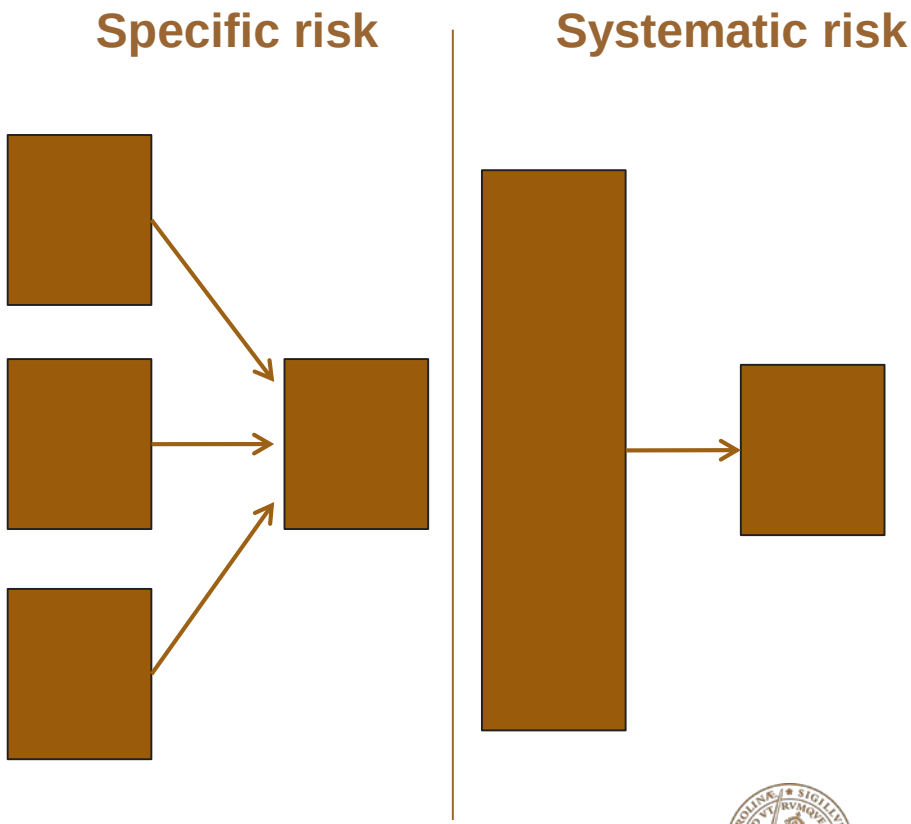
Renewable energy as an insecurity hedge

- Renewable energy is often claimed to increase diversity and hedge insecurity related to import of fossil fuels.
- The extent to which diversity increase is sometimes exaggerated. Dependencies on fossil supply chains restricts diversity (disparity).
- E.g. biofuels, agricultural markets and energy markets.



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Values: What to secure?

Referent object	Energy Supply	End use practices	Energy Services
Mind set	Stability	Technological Transition	Societal Transformation
Vulnerability and capability	Exposure to threat	Exposure to threat Sensitivity to disturbance	Adaptive capacity
Strategies (examples)	Protect supply chains against threats.	Replace finite energy resources. Increase efficiency.	Diversify the provision of energy services.

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Conclusions

- Improved efficiency has many security advantages
- Renewable energy affect security in different ways
- Interdependencies can restrict the possibility to hedge disruptions of fossil fuel using renewable energy
- “What to secure” influences the ability to obtain coherence between environmental and security policies
- Interdisciplinary research, e.g. infrastructural planning, transport and risk research

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