Systems analysis for problem structuring

Part 2: the multi-actor perspective

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The multi-actor situation

1. Recapitulation
2. From mono-to multi-actor systems analysis
3. Analysis and interpretation
4. Example: wind power
5. Concluding remarks

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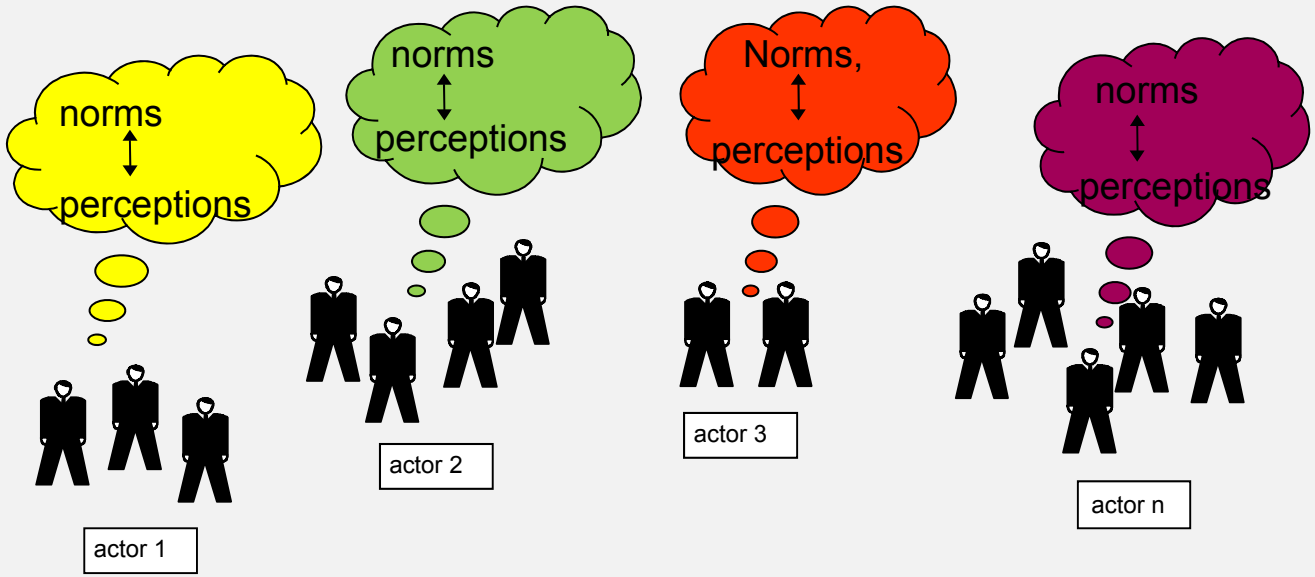
The multi-actor context



From mono- to multi-actor systems analysis

Explore what factors may be influenced by other actors

Explore how use of the means of the problem owner may affect other actor's interests

Perform the actor-network analysis, identify the critical actors

For the critical actors:

- Identify objectives, criteria, means, causal relations
- Extend the mono-actor analysis
- Iterate and check for consistency!

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Analysis and interpretation

- Common goals?
- Conflicting values?
- Analyse cross- impacts
- Potential for coalitions, arrangements between actors?
- Knowledge gaps?

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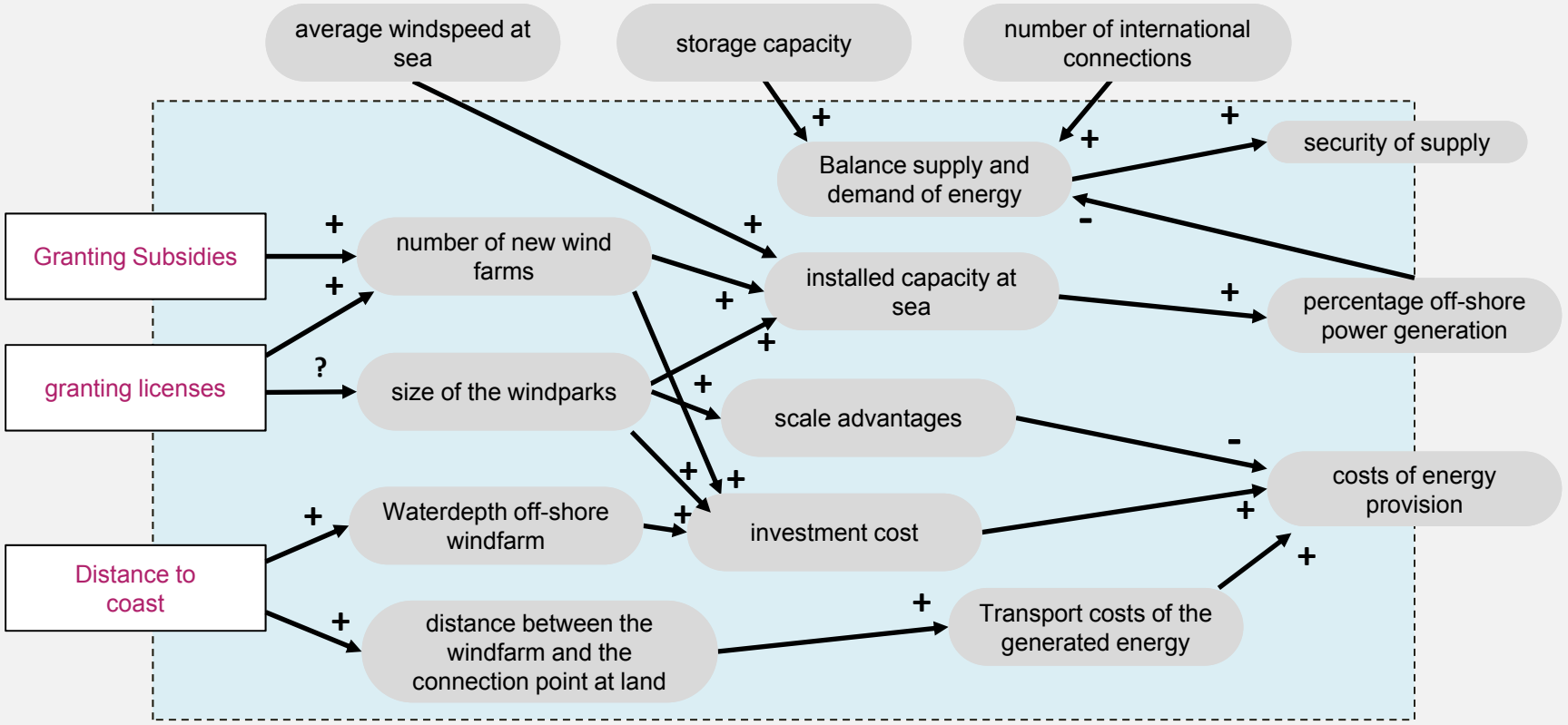
Example: Wind Power at Sea

Dep. of Energy (DE) mono-actor diagram



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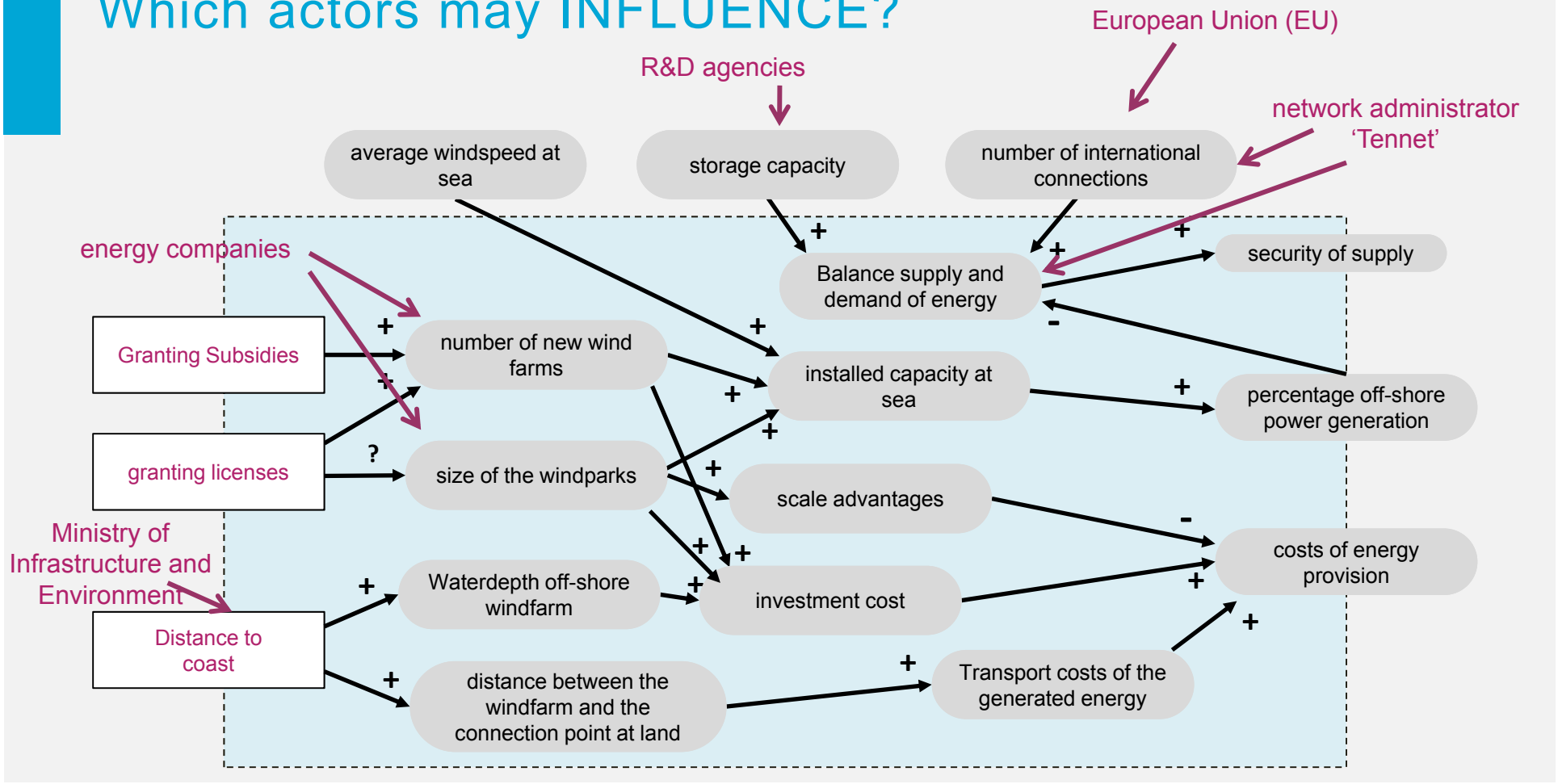
Which actors may INFLUENCE?



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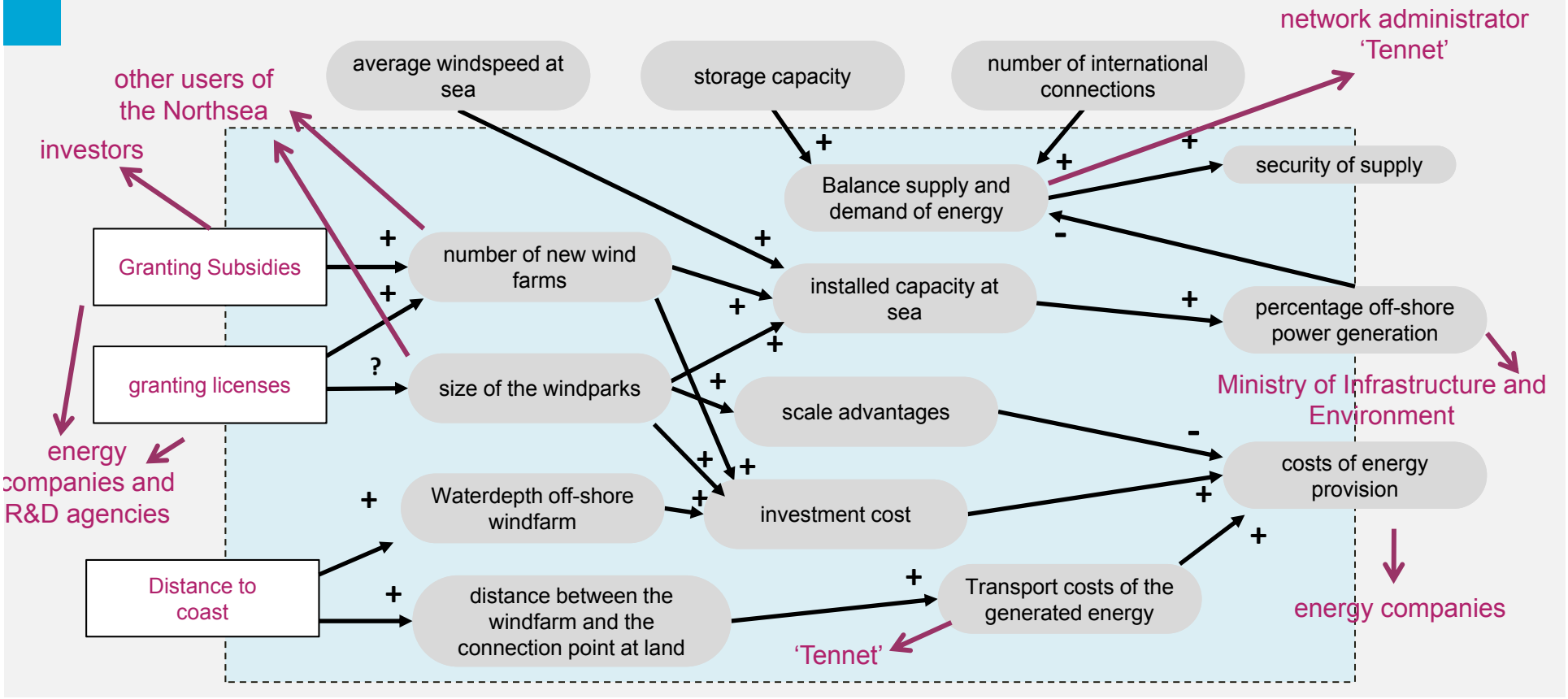
Which actors hold an INTEREST or may be affected?



From mono- to multi-actor systems analysis

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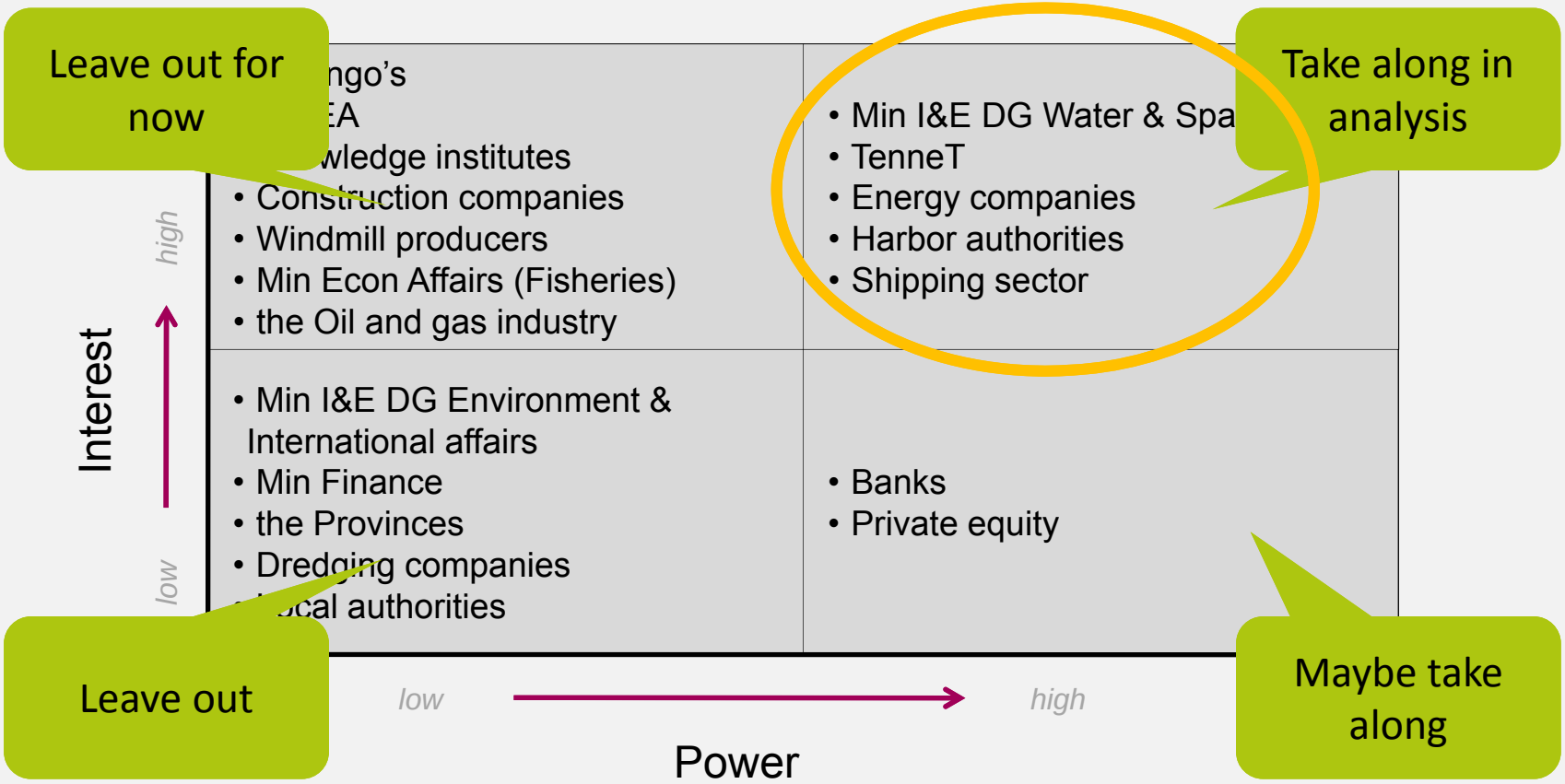
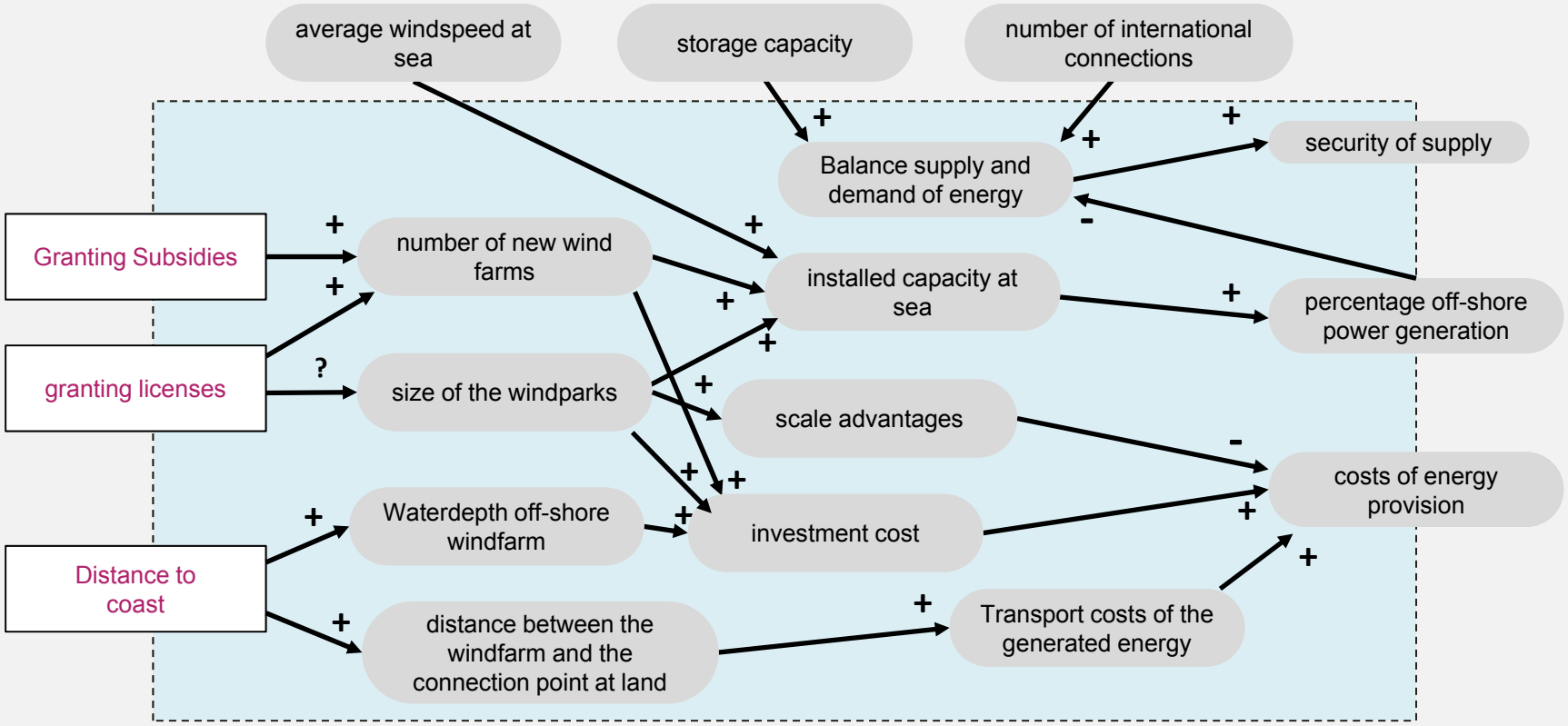
Main conclusions actor-network analysis



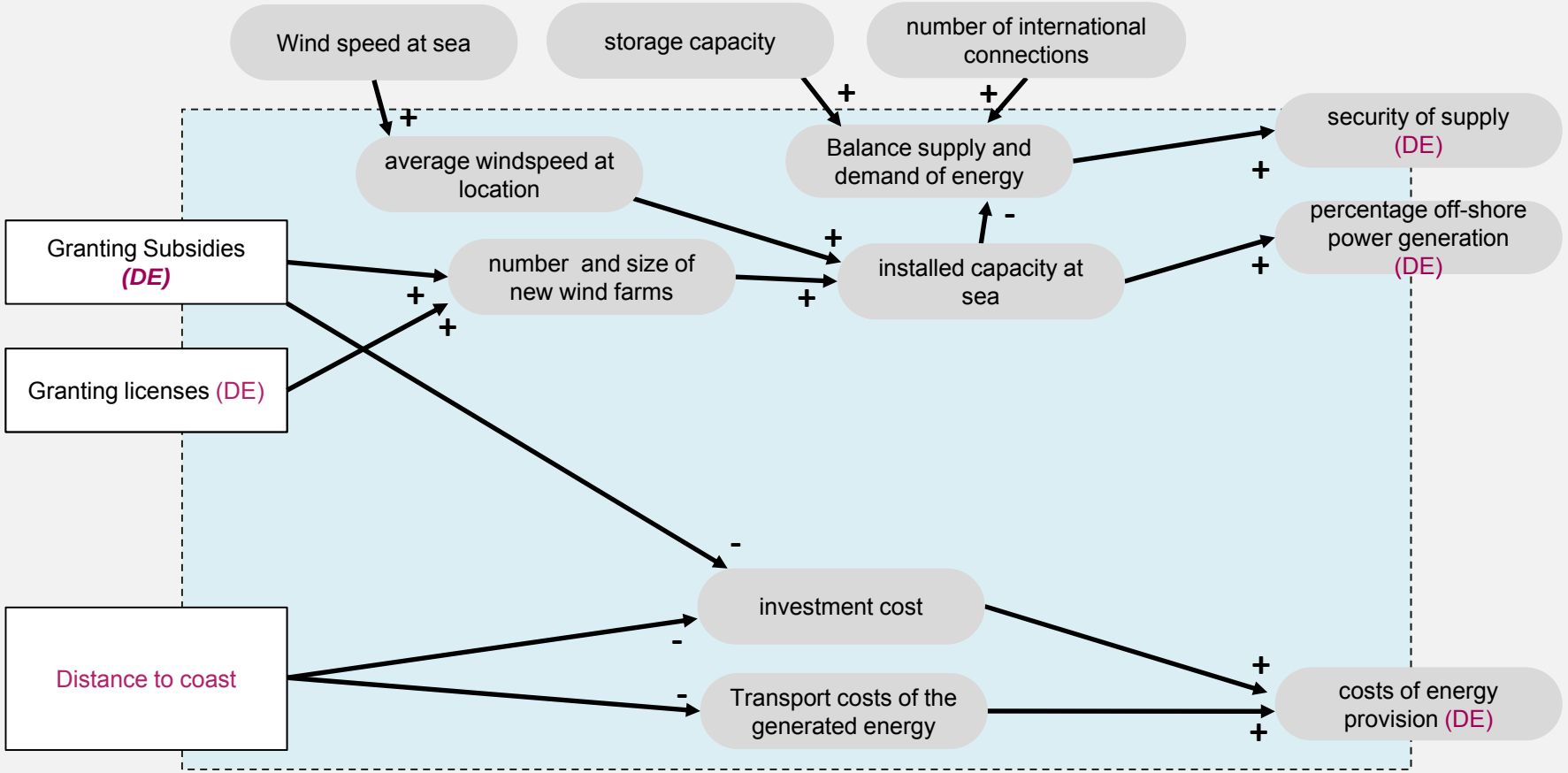
From mono- to multi-actor systems analysis

- Explore what factors may be influenced by other actors
- Explore how use of the means of the problem owner may affect other actor's interests
- Perform the actor-network analysis, identify the critical actors
- **For the critical actors:**
  - **Identify objectives, criteria, means, causal relations**
  - **Extend the mono-actor analysis**
  - **Iterate and check for consistency!**

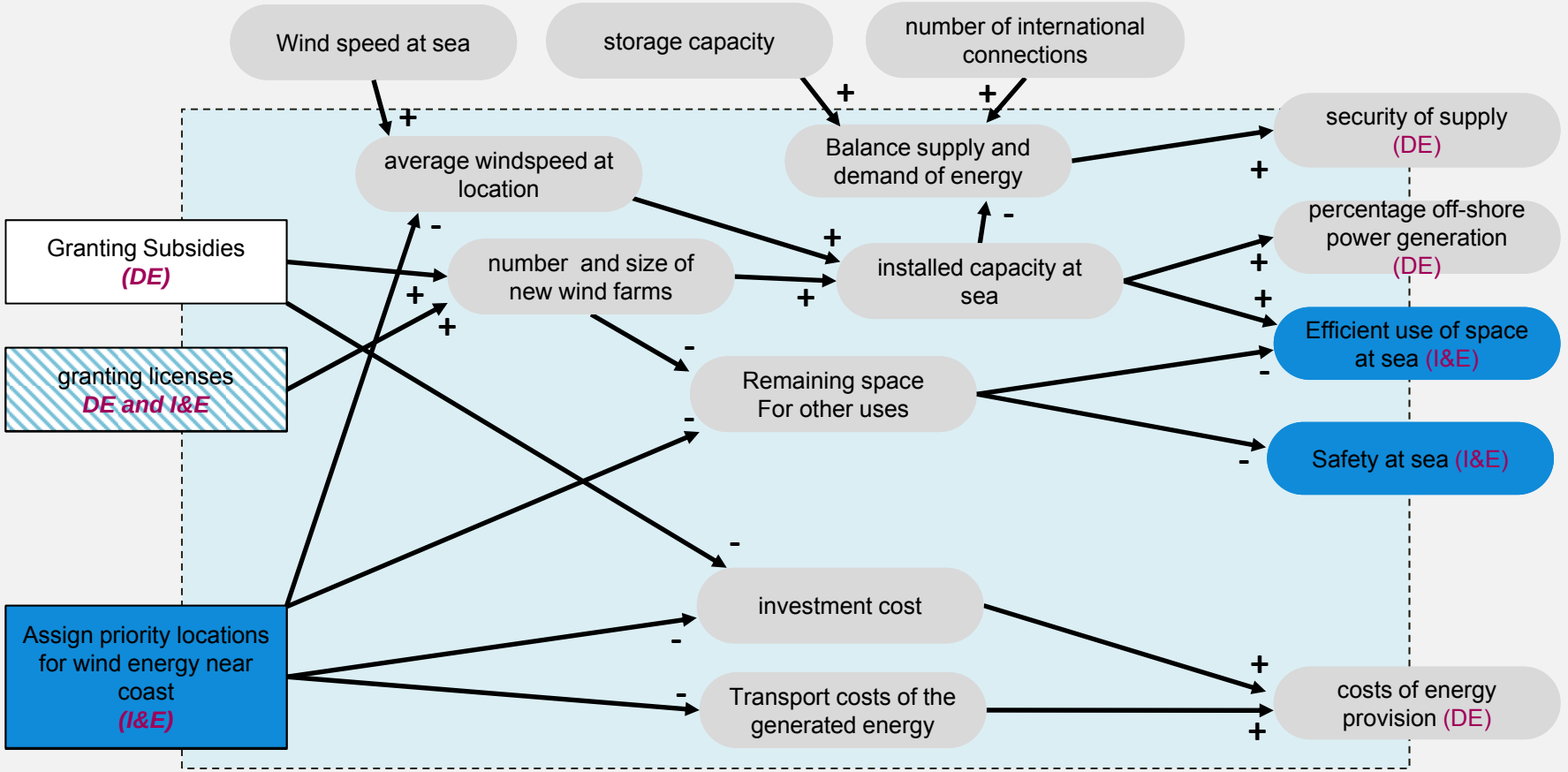
Department of Energy (DE) mono-actor diagram



Mono-actor diagram: simplified



Focus: Min. of Infra. and Environment (*I&E*)



Score card Dept. Energy(DE) & Min. Infrastructure and Environment (I&E)

→ Criteria ↓ Means	Security of supply DE and Energy companies	Percentage off-shore power DE	Efficiency use of Space at sea I&E	Safety at Sea I&E	Costs of energy provision DE
Giving Subsidies DE	-	+	?	-	+
Granting Licences DE and I&E	-	+	?	-	+
Shorter distance to coast I&E	0	0	?	?	-

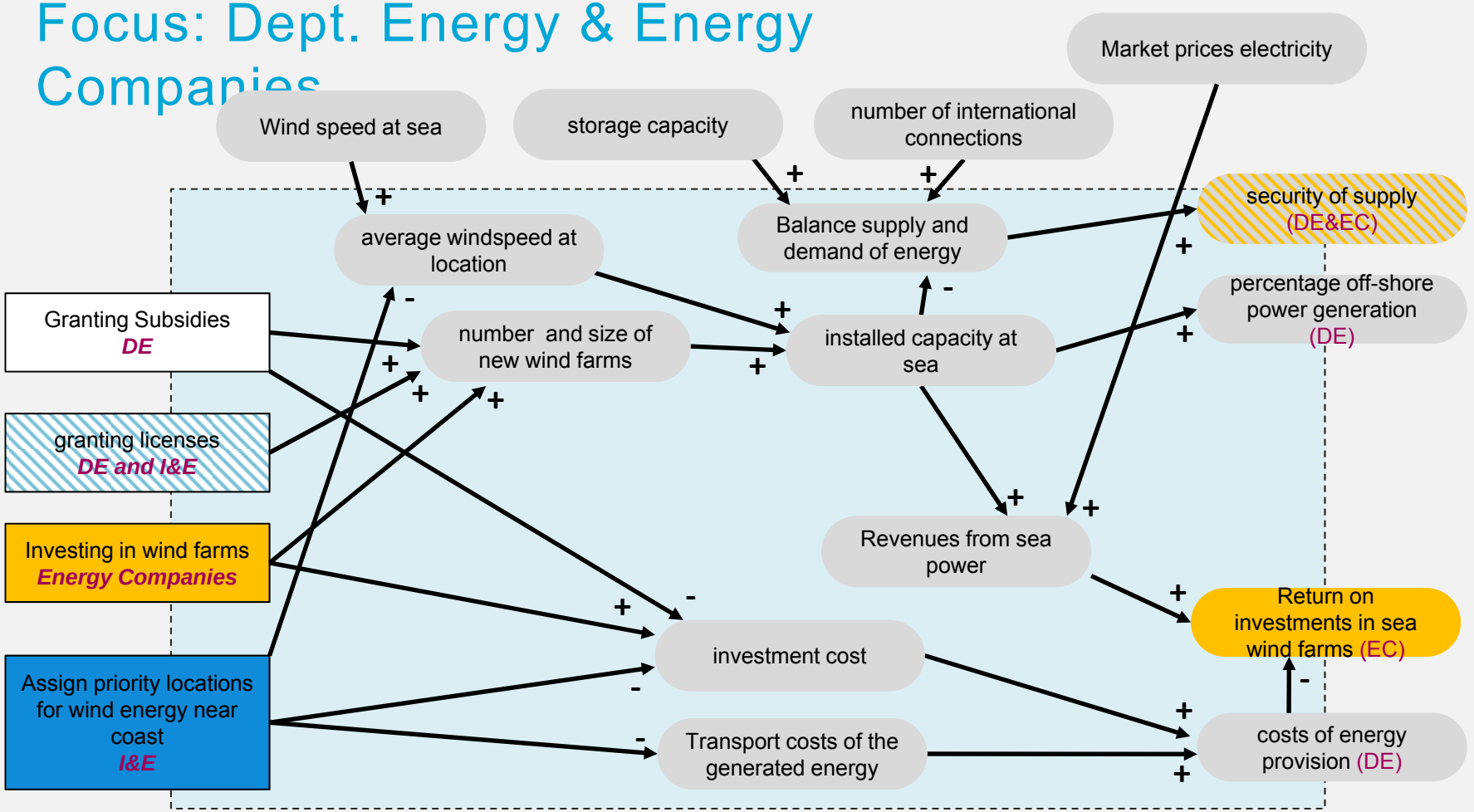
Conclusions for I&E

No direct value conflicts, but:

- All actions stimulating wind power may negatively impact safety at sea!
- Impacts on efficiency of use uncertain, depend on opportunity costs other uses, location, other factors

→ I&E will not be a natural ally for DE!

Focus: Dept. Energy & Energy Companies



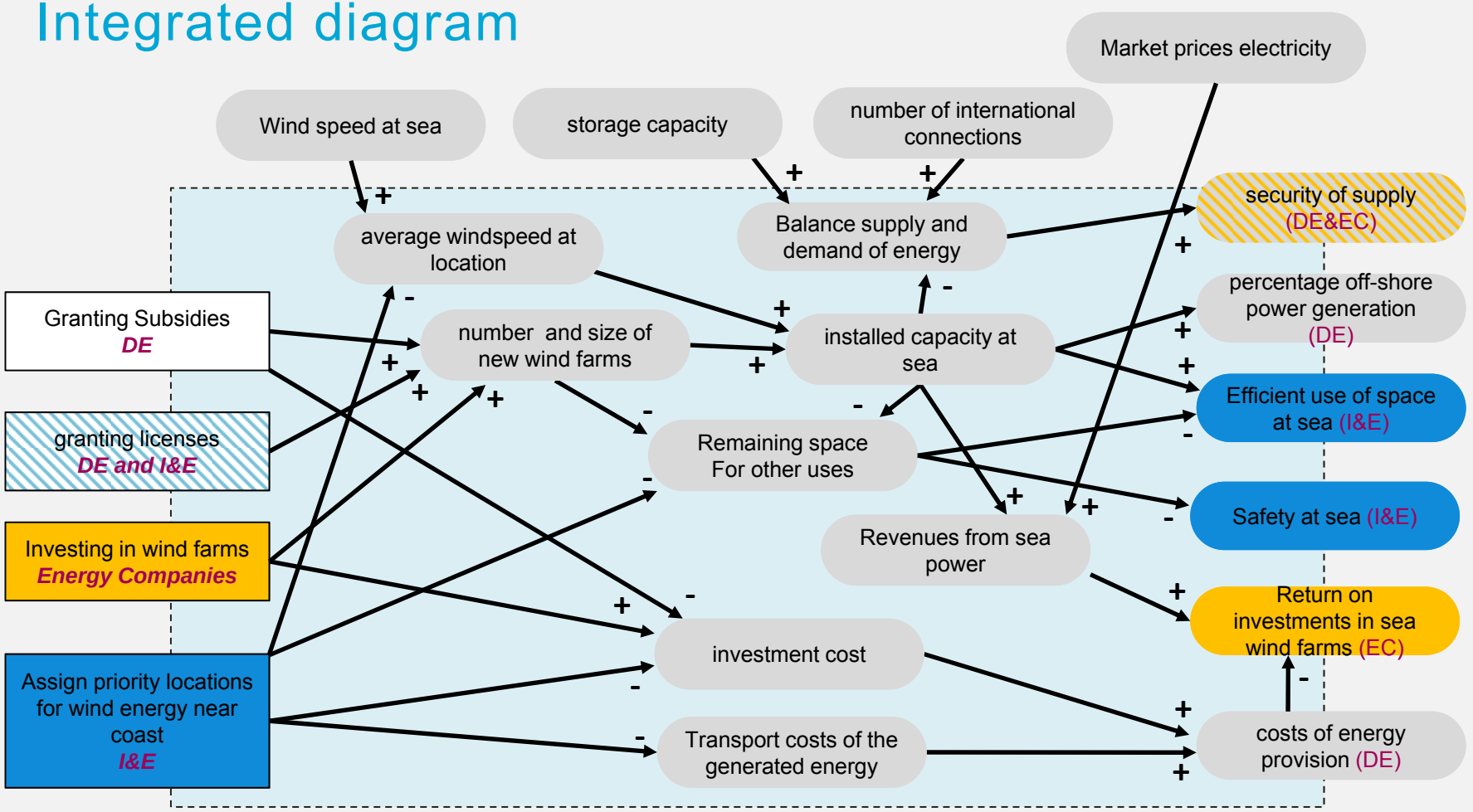
Score card Dep. Energy(DE) & Energy Companies(EC)

→ Criteria ↓ Means	Security of supply DE and Energy companies	Percentage off-shore power DE	Return on investment Energy companies	Costs of energy provision DE
Giving Subsidies DE	-	+	+	+
Granting Licences DE and I&E	-	+	+	+
Shorter distance to coast I&E	0	0	+	-
Investing in wind farms Energy companies	-	+	?	+

Conclusions for energy companies

- Energy companies share some of the goals of the Department of Energy and the same dilemma
- Energy companies have a strong interest in close to coast locations
- Actions of DE will also benefit Energy companies
- Return on investment depends on many factors, some outside the model (e.g., electricity prices that depend on global energy resource prices)

Integrated diagram



Score card three main actors

→ Criteria ↓ Means	Security of supply DE and Energy companies	Percentage off-shore power DE	Efficiency use of Space at sea I&E	Safety at Sea I&E	Return on investment Energy companies	Costs of energy provision DE
Giving Subsidies DE	-	+	?	-	+	+
Granting Licences DE and I&E	-	+	?	-	+	+
Shorter distance to coast I&E	0	0	?	?	+	-
Investing in wind farms Energy companies	-	+	?	-	?	+

Overall conclusions

- No immediate conflicts with the two other actors
- Support by ministry Infrastructure and Environment is crucial
- Willingness of energy companies to invest also depends on uncertain outside factors
- Security of supply remains a concern -- involve other actors
- Extend analysis for Tennet, shipping companies

Knowledge gaps

- Search for locations
  - with little interference with other uses
  - where wind farms do not jeopardize safety
- Investigate conditions for attractive return on energy company investments
  - Influence of location choice on costs
  - Possible influence of external factors
  - Sensitivity to subsidies
- Investigate factors and actors affecting security of supply

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