

T7.6: How to compare offshore grid solutions? A CBA methodology

Wim van der Veen (DNV GL), PROMOTioN mid-term conference



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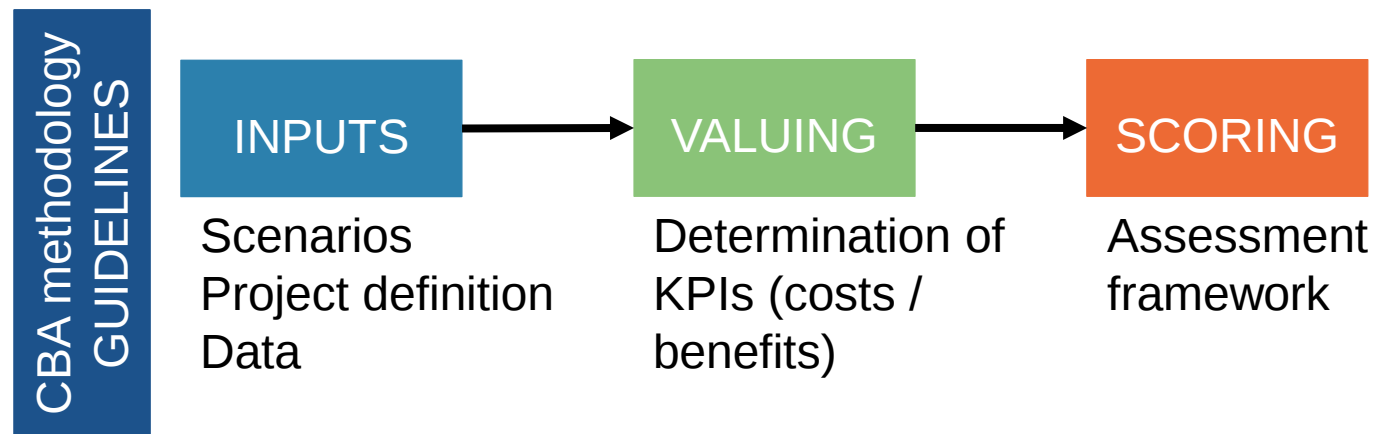
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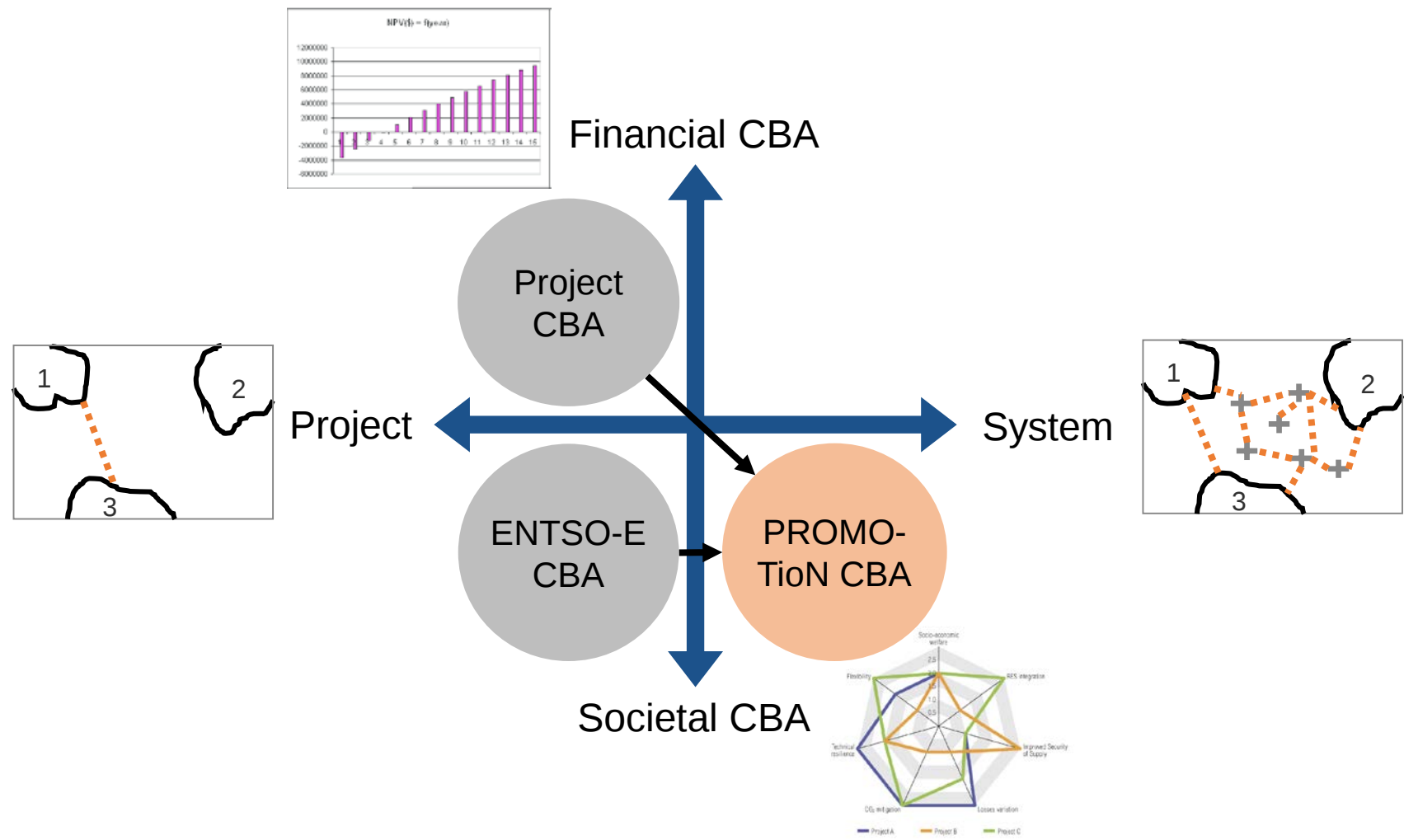
- **CBA methodology for offshore grids**
- Challenges in comparing offshore grid solutions
- KPIs
- Conclusions

Aim of the CBA

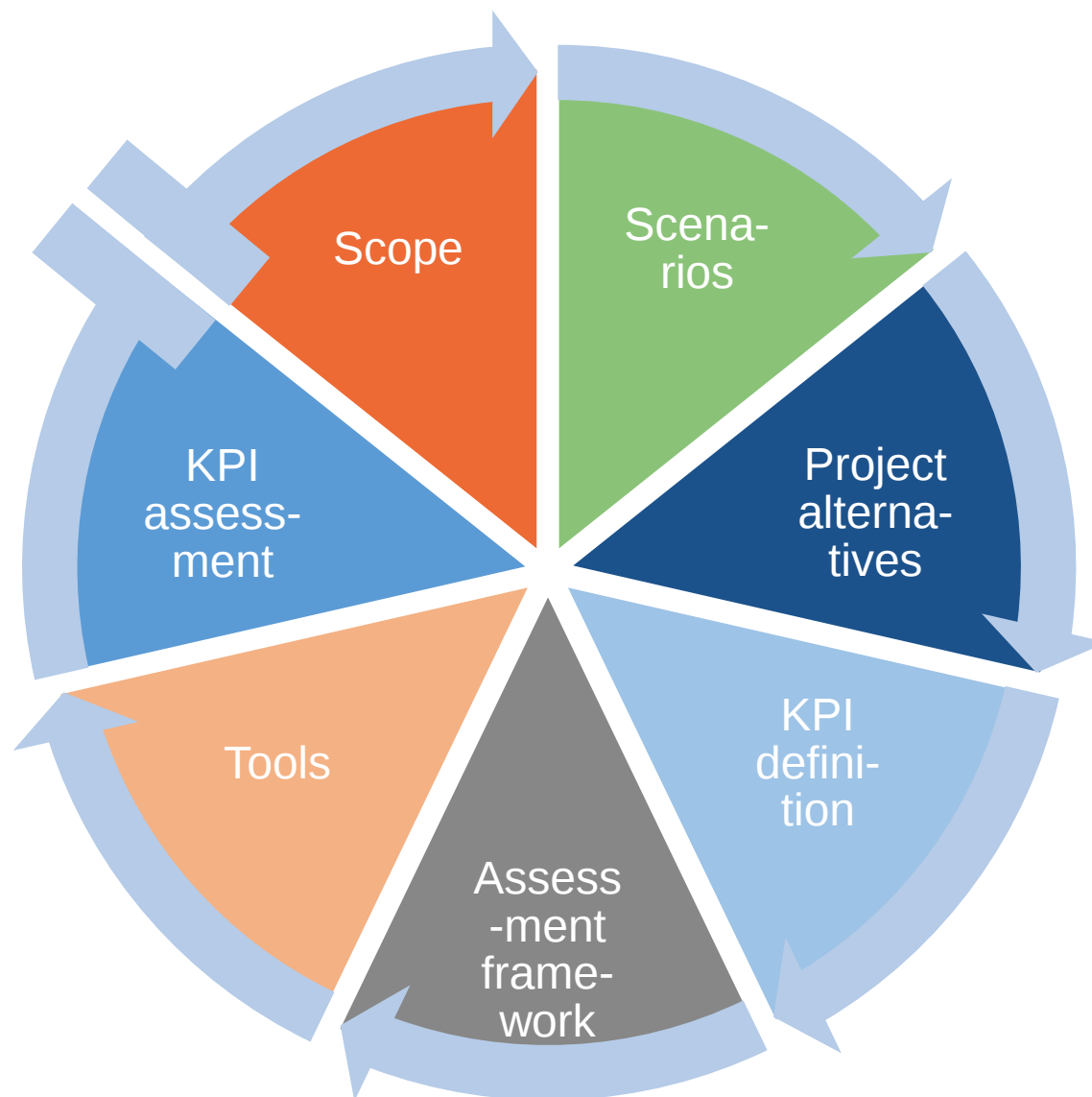
- To develop a CBA methodology able to identify the “best” offshore grid design
- Compare different project alternatives (offshore grid topologies)



Scope



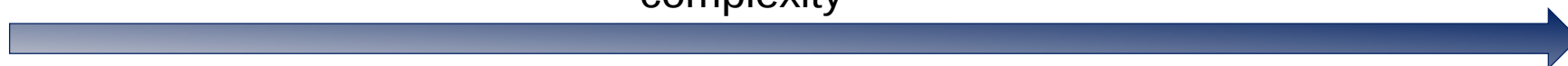
Dimensions



Pragmatic versus ideal methodology

- for each dimension -

complexity



Dimension	Activity	Options			
Scope	CBA	Value to society	Value to each (surrounding / North Sea) state	Value to society & each (surrounding/North Sea) state	Value to all stakeholders
		Non-monetised CBA	Augmented CBA (hybrid)	Financial CBA (full monetisation)	
	Purpose of project	Offshore grid for evacuation of wind	Offshore grid for evacuation of wind & market integration	Offshore & onshore grid for evacuation of wind	Offshore & onshore grid for evacuation of wind & market integration



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PROMOTiON – Challenges

Scenarios

- How to evaluate project alternatives?

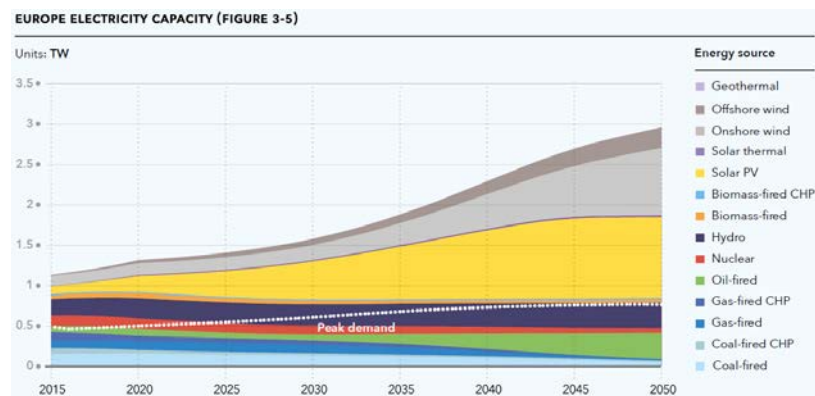
Onshore
scenarios

Offshore
scenarios

Technologies

Market design

Grid
development



Source: ETO, DNV GL

AC

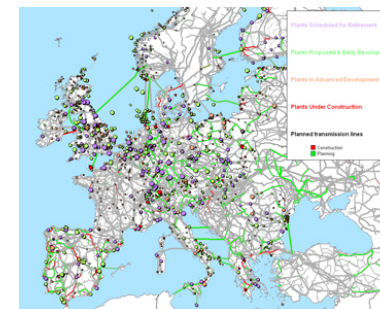
HVDC



Source: DNV GL



Source: TenneT

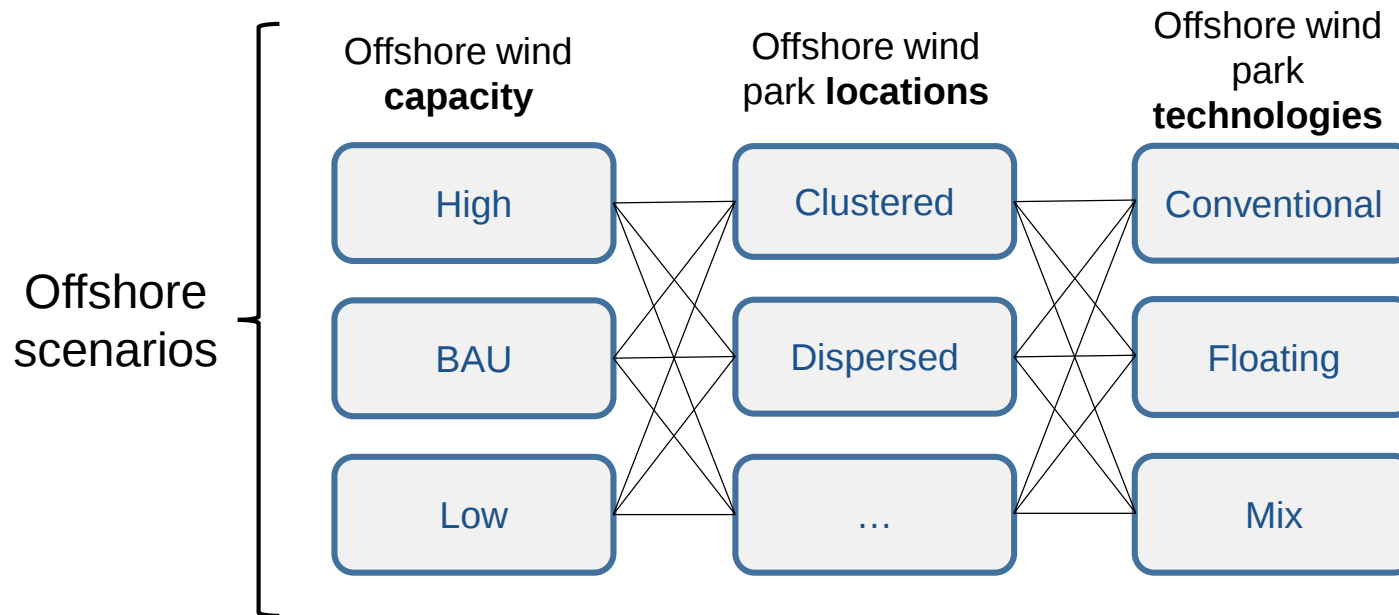
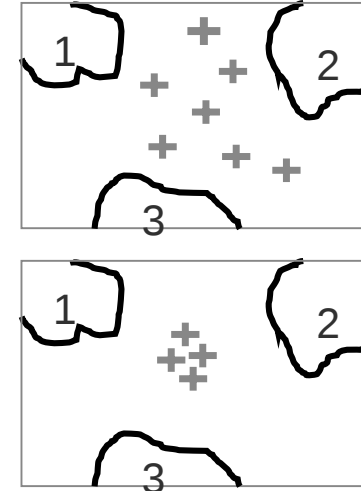


Source: Platts



Scenarios

- Guidelines on scope of scenarios to avoid bias
- Onshore and offshore scenarios
- Ideal vs practical



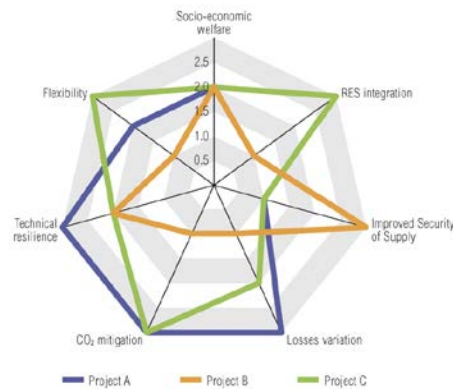
Assessment framework - reference

- PINT vs TOOT
- Reference for project assessment
 - Null-alternative = base-case = BAU

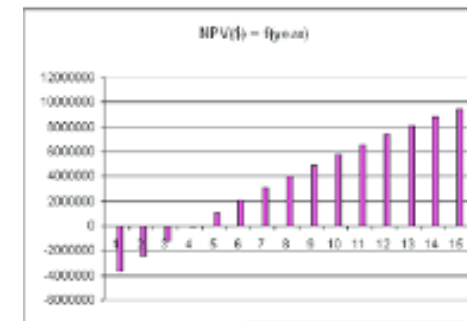


Assessment framework

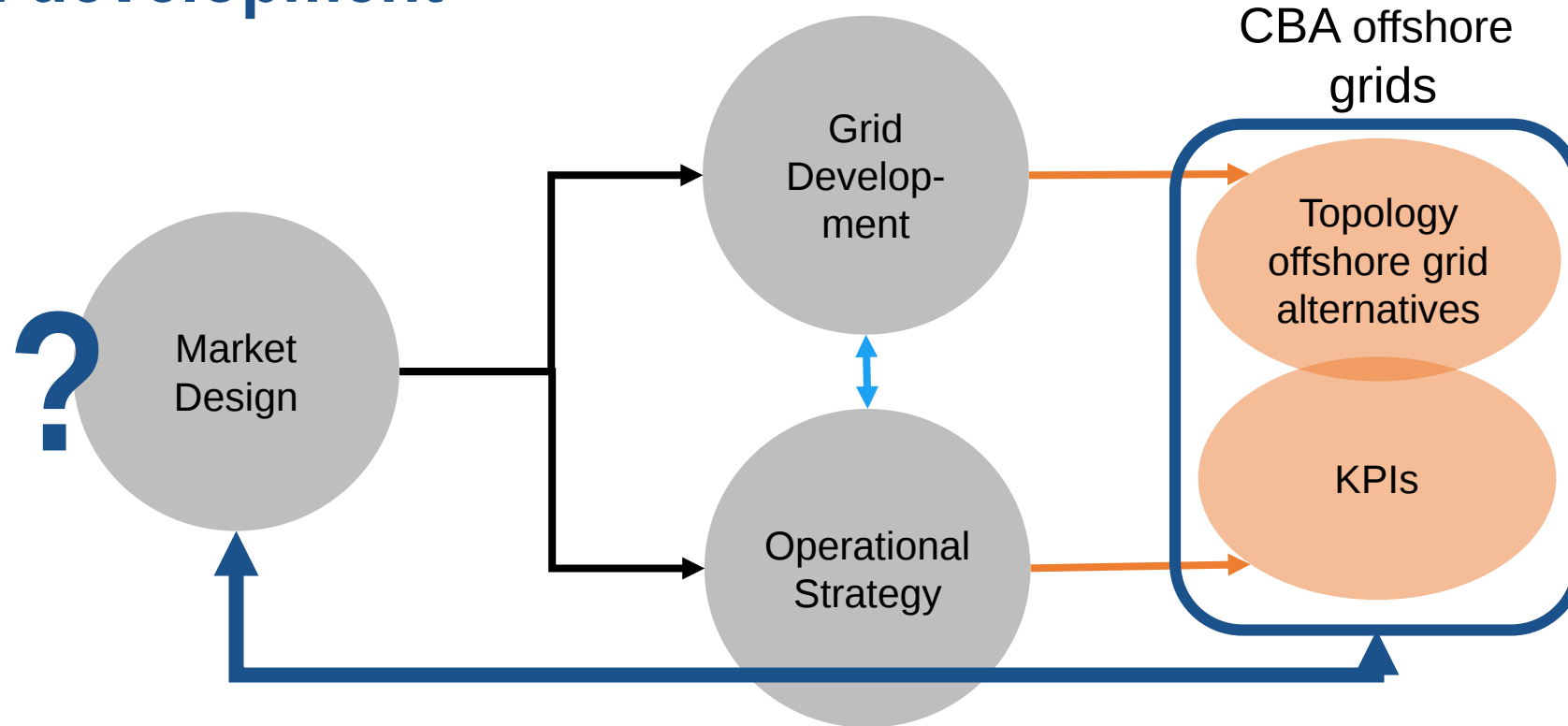
- Project comparison
- Limits on full monetisation of KPIs
- Objective KPIs and weights
- Ideal vs practical



Degree of
quantification and monetisation



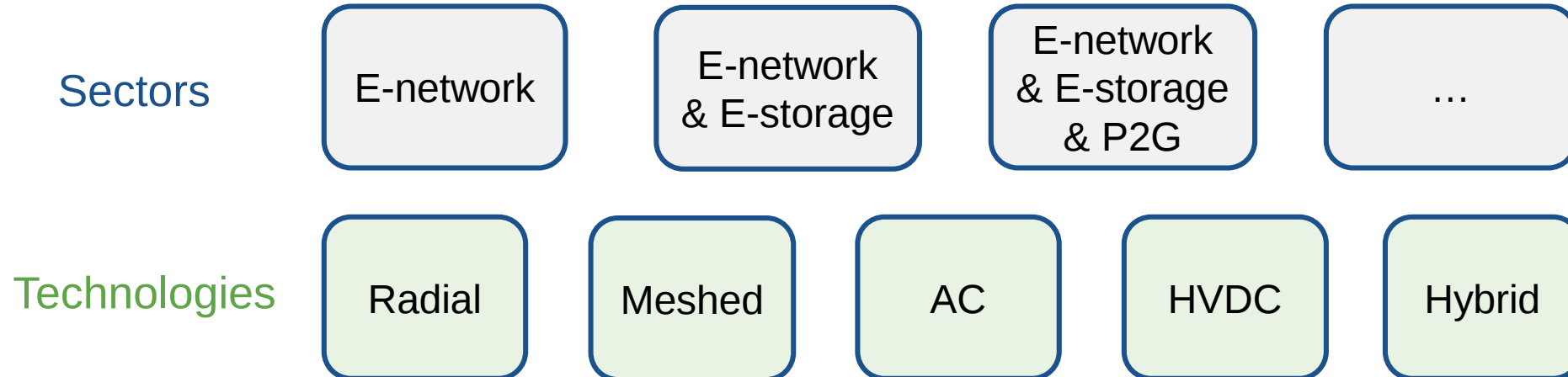
System development



CBA methodology might differ
depending on concept

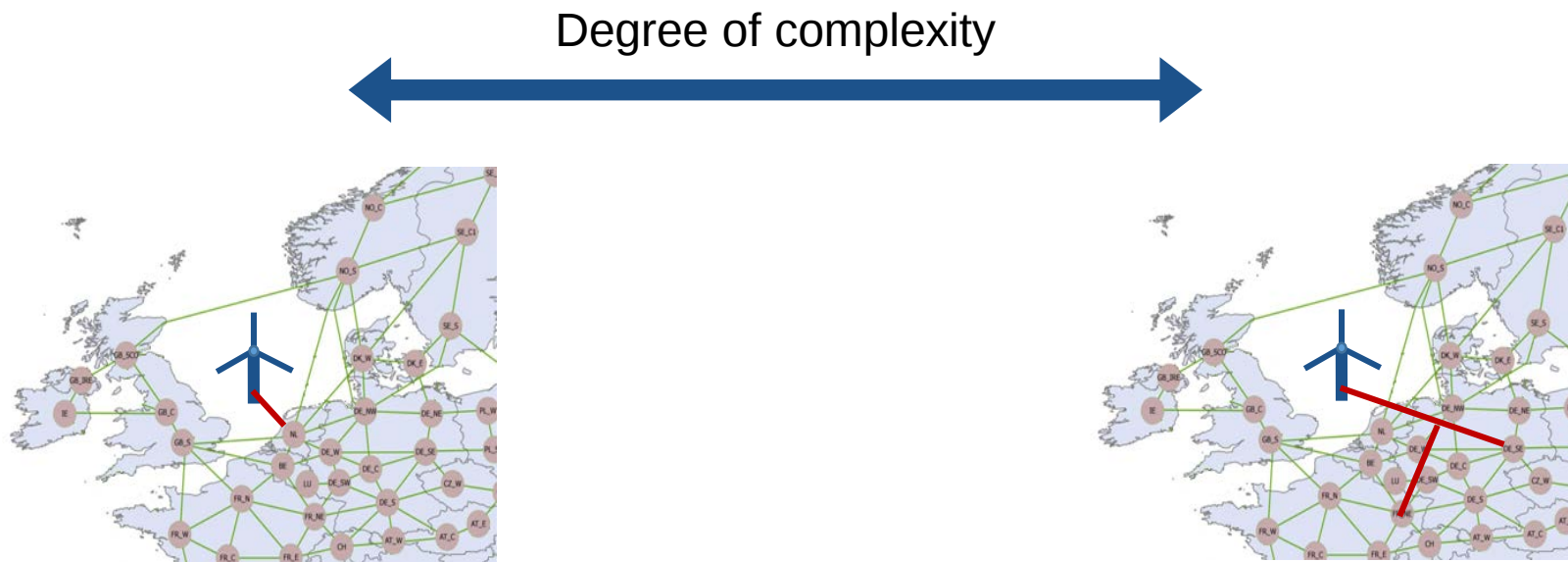
Project alternatives - scope

- Purpose of the project
- Sectors/technologies where project alternatives can draw from
- Ideal versus practical



Project alternatives - boundaries

- How to deal with the onshore grid?
- Connection points
- Ideal vs practical





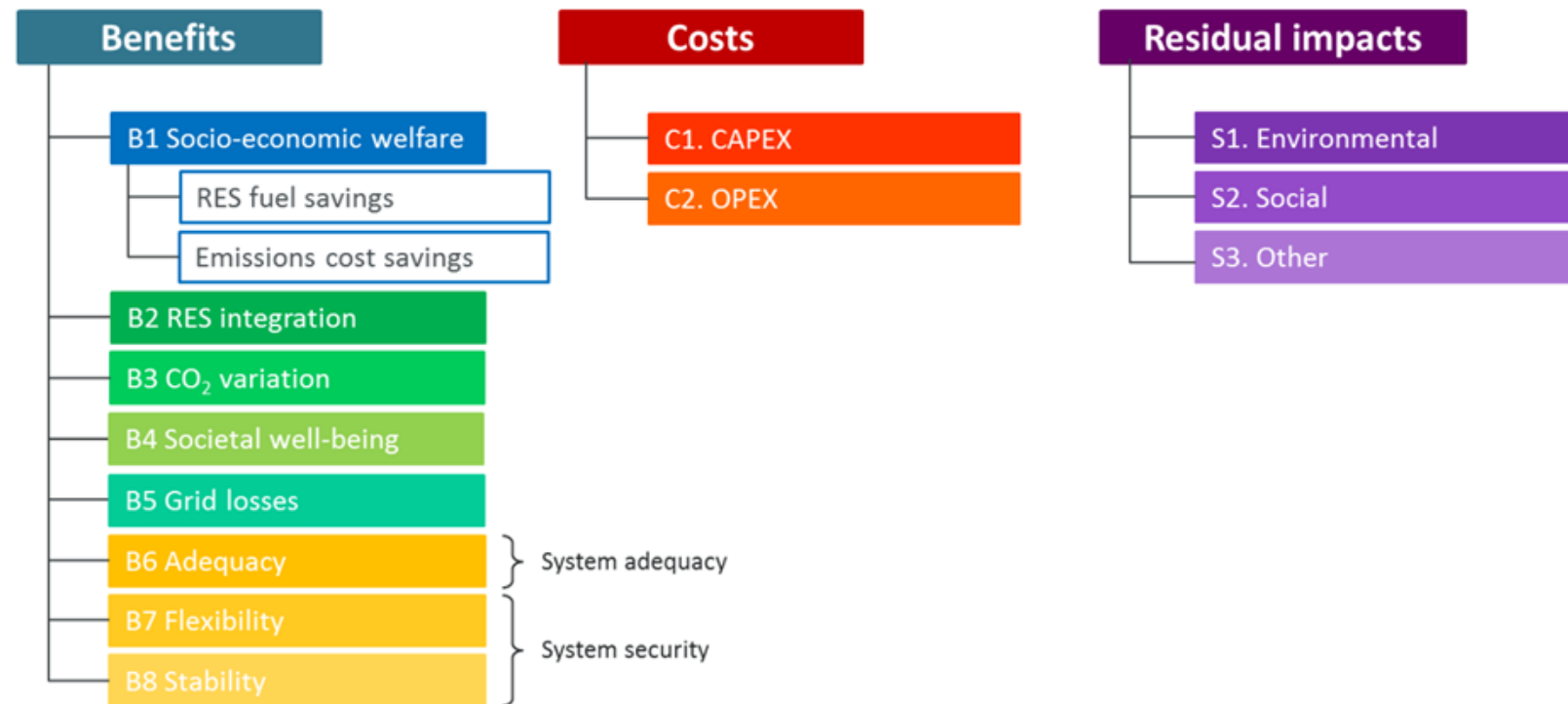
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- **KPIs**
- Conclusions

KPIs

- ENTSO-E Guideline V2.0
- Relevance for offshore grid
- Degree of quantification/monetisation



KPIs

For each KPI:

- Definition
- Relevance for the CBA for offshore grids
- How to calculate the KPI?
 - Ideal vs practical execution
- What is the interaction with other KPIs?
 - Double counting





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Challenges in comparing offshore grid solutions

- Complexity in CBA dimensions
- Single project vs system
- Financial vs societal CBA
- Ideal vs practical methodology
- CBA approach may differ between evaluated project alternatives



APPENDIX

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The opinions in this presentation are those of the author and do not commit in any way the European Commission

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