



**RÉPUBLIQUE
FRANÇAISE**

*Liberté
Égalité
Fraternité*

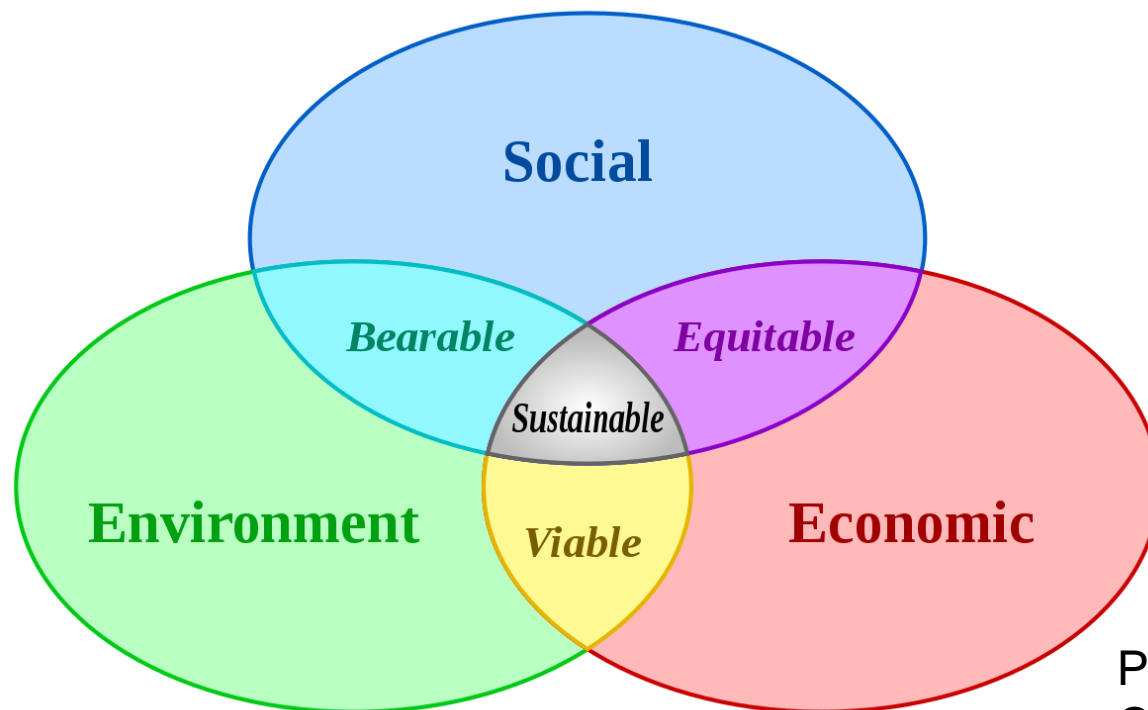


Solving a trilemma – cost, grid integration and environmental impacts

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Jobs
Stake holder coactivity sharing
Social acceptance



Reduce GHG emissions
Biodiversity conservation
Human Health

...

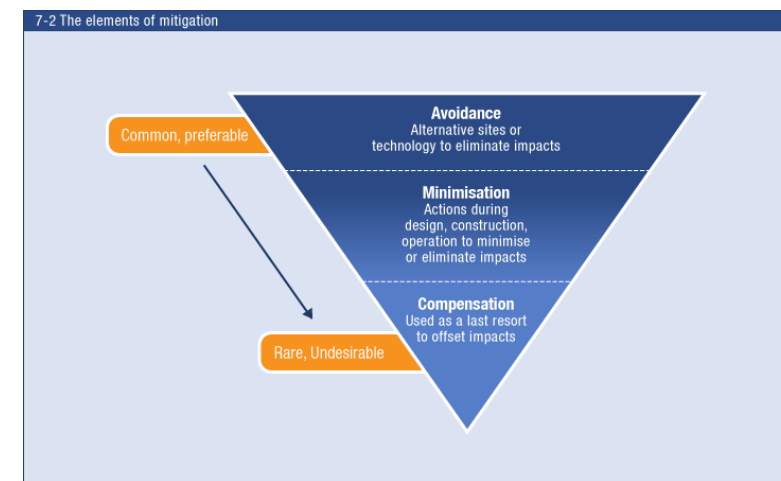
Production of energy
Cost of electricity
Competitiveness
Profitability

❑ Environmental Impacts effects on Costs

- Avoidance – mitigation – compensation approach => low effect on project costs
- Avoidance can push project far offshore => High effects on projects costs
- Avoidance can cancel a project => very high impact
- Export grid landing is not an easy task for an EI point of view

❑ Environmental Impacts need project feedback

- Absence of offshore wind feedback in France causes fears and anguishes leading to strong opposition
- Programs of EI surveys have to be discussed by stake holders



❑ Social impacts versus costs

- Globalisation vs localisation

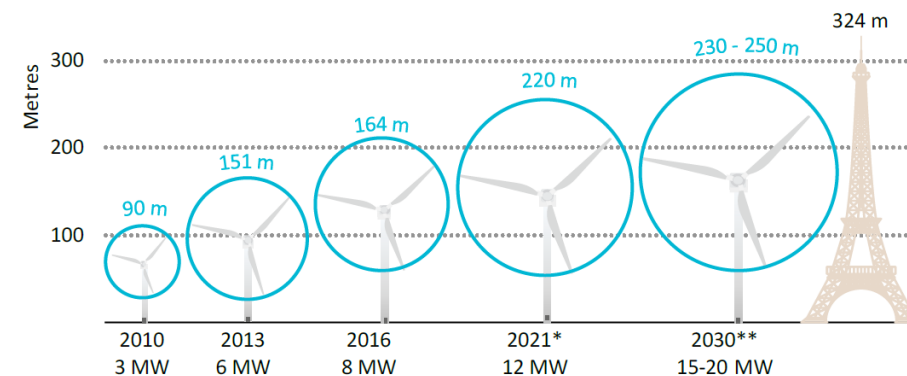
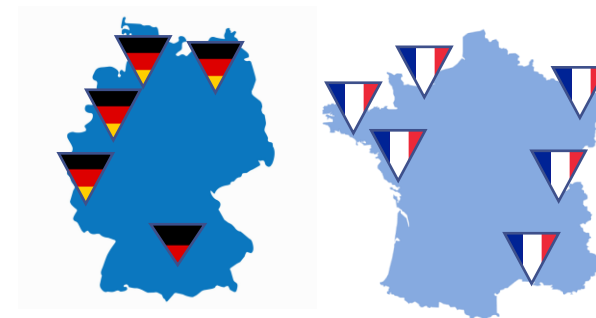
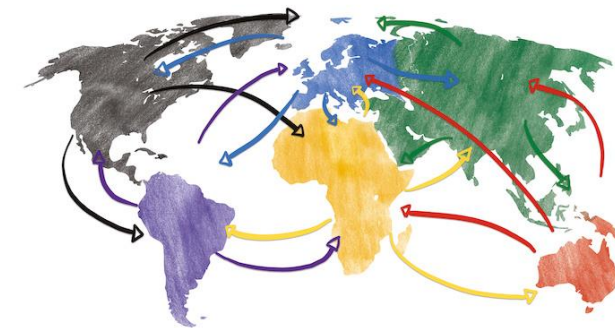
✓ We want both local AND competitive jobs

❑ Social acceptance may add expensive constraints to projects


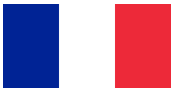
- Landscape reduction (far offshore projects, smaller wind turbines, non optimised wind farm layout, fewer wind turbines, smaller installed capacities, ...)

❑ Technological aspects versus costs

- Choose the most recent wind turbines need anticipation

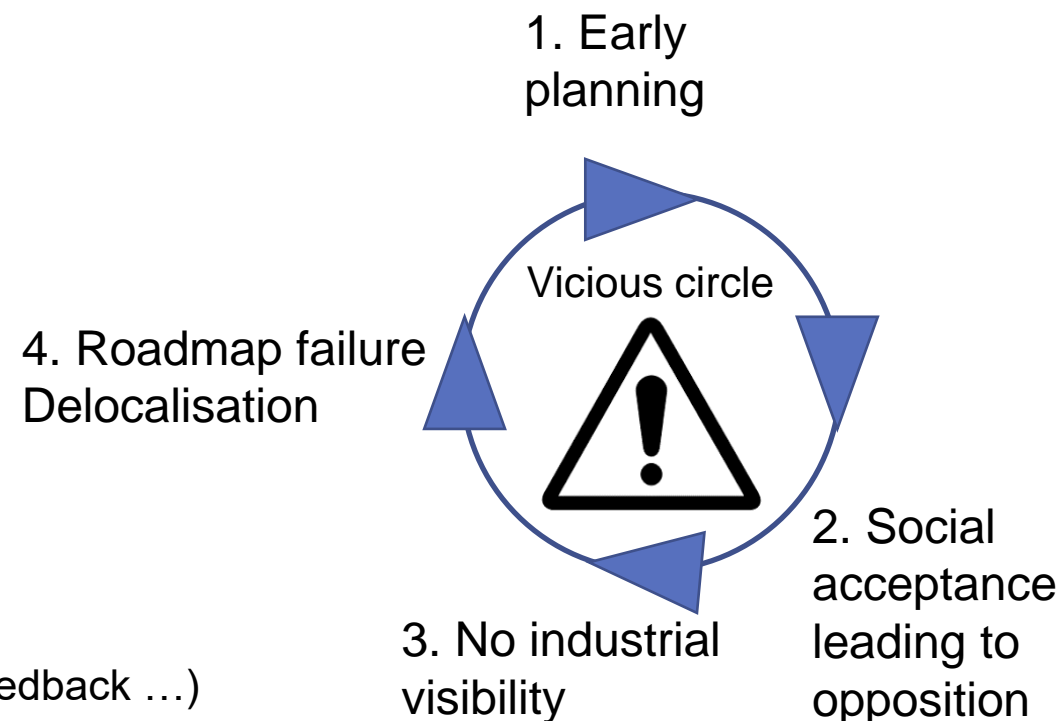


❑ Specific national issues for offshore wind development

	
Onshore and offshore wind surcapacities in North Germany	Possibility to distribute the offshore wind capacity (with floating in the Mediterranean)
Mature offshore wind industry	Not mature in France (mainly export)
10 year offshore wind feedback	No feedback
High emissions levels for electricity production (~ 400 g / KWh in 2018)	Low emissions levels for electricity production (~ 44 g / KWh in 2018)
...	...

❑ So what could be the solutions ?

- Early planning
 - ✓ Grid network planning
 - ✓ Strategic plan, energy plan
 - ✓ Envelope permit
- Transnational cooperation (merged offshore grids, collecting feedback ...)
- Give industrial visibility for industrial investments (clear roadmaps, call of tender agenda)
- Public and stakeholder consultation /expression at early stage
- Operational wind farm follow-up (environmental, economical and social surveys)



❑ These solutions are being experienced, others solutions or best practices ?