

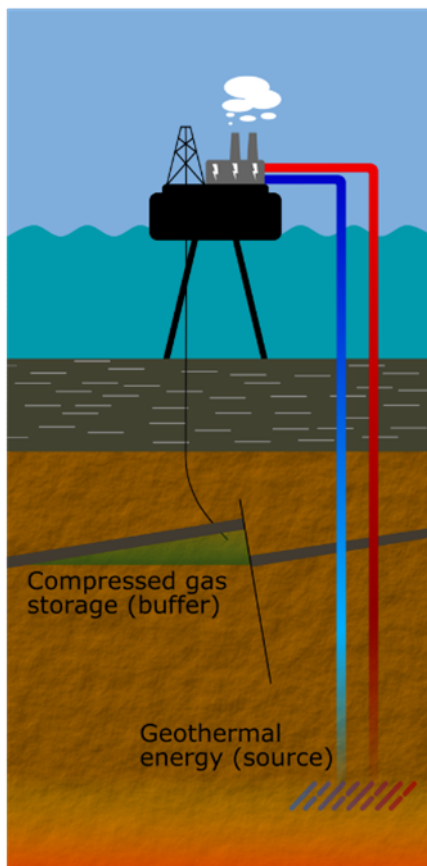
Prolonging life and repurposing oil and gas assets

Rene Peters
Ewald Breunese

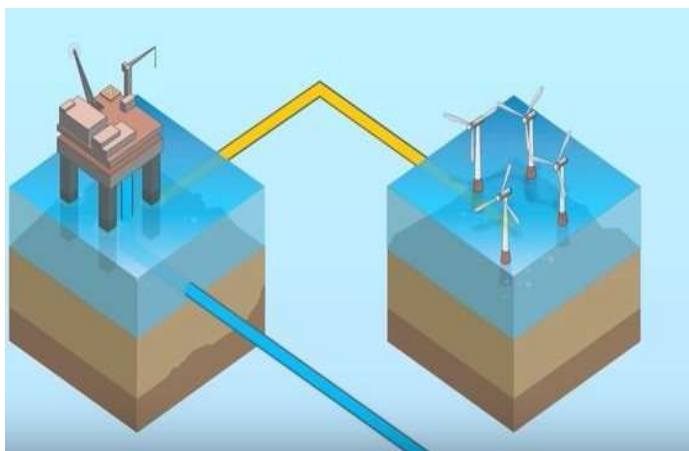


Options for prolong, reuse and repurpose of oil and gas assets

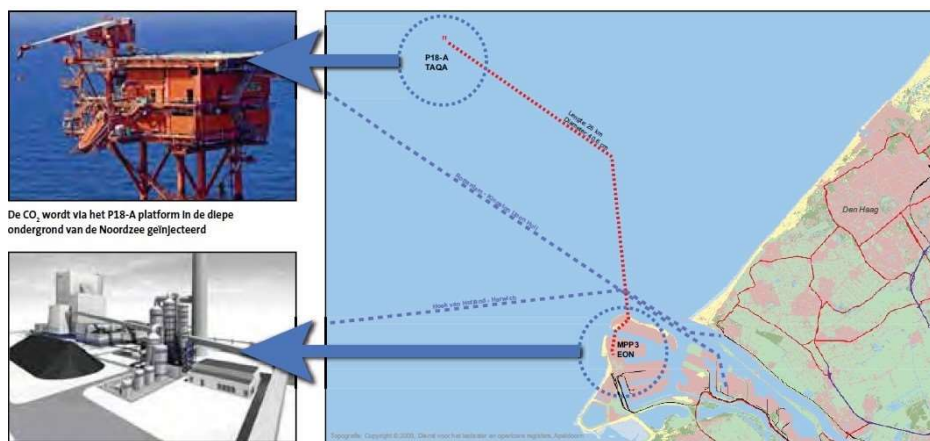
Electrification of platforms



Geothermal energy

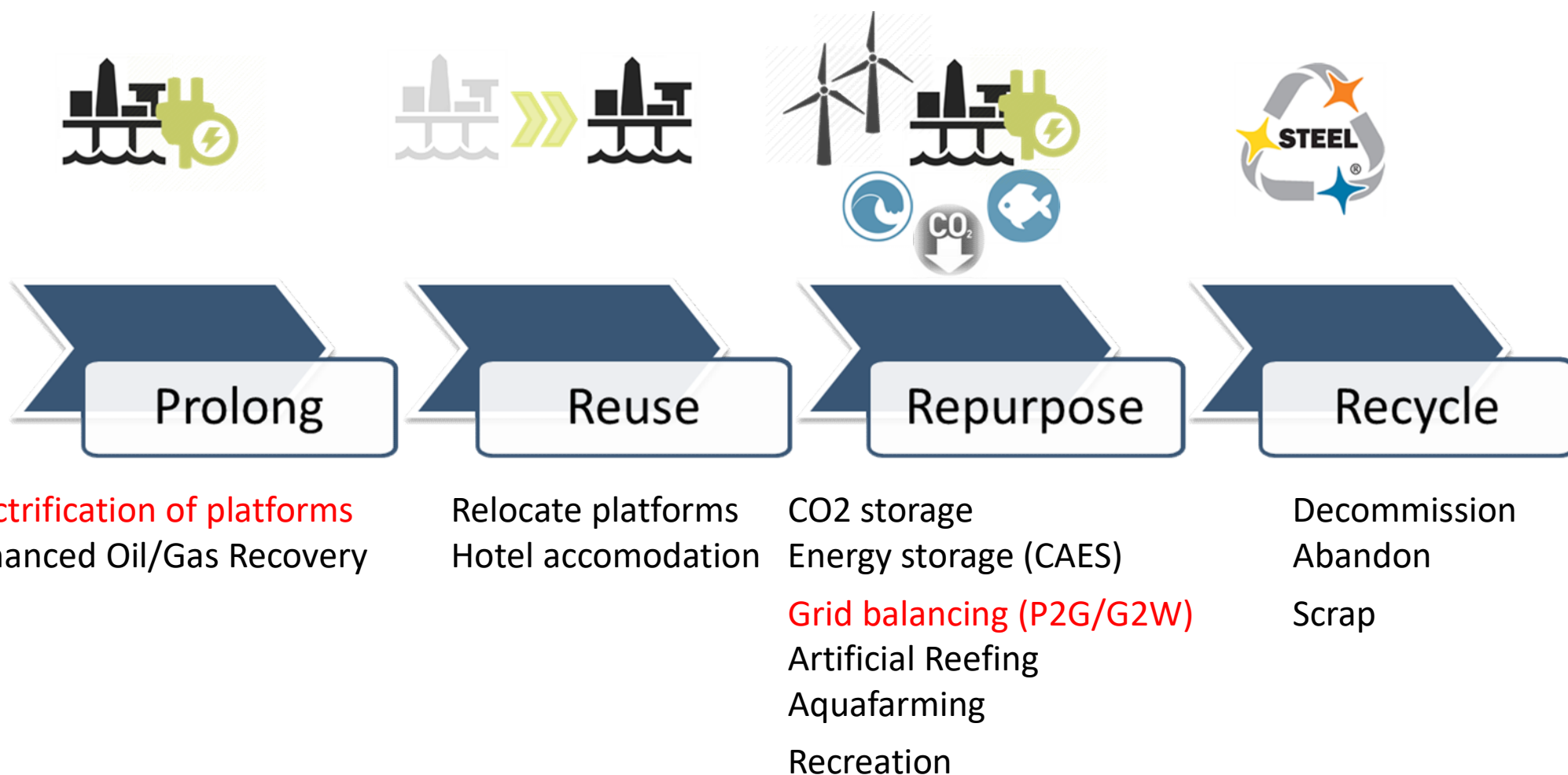


Offshore hotel and diving resort



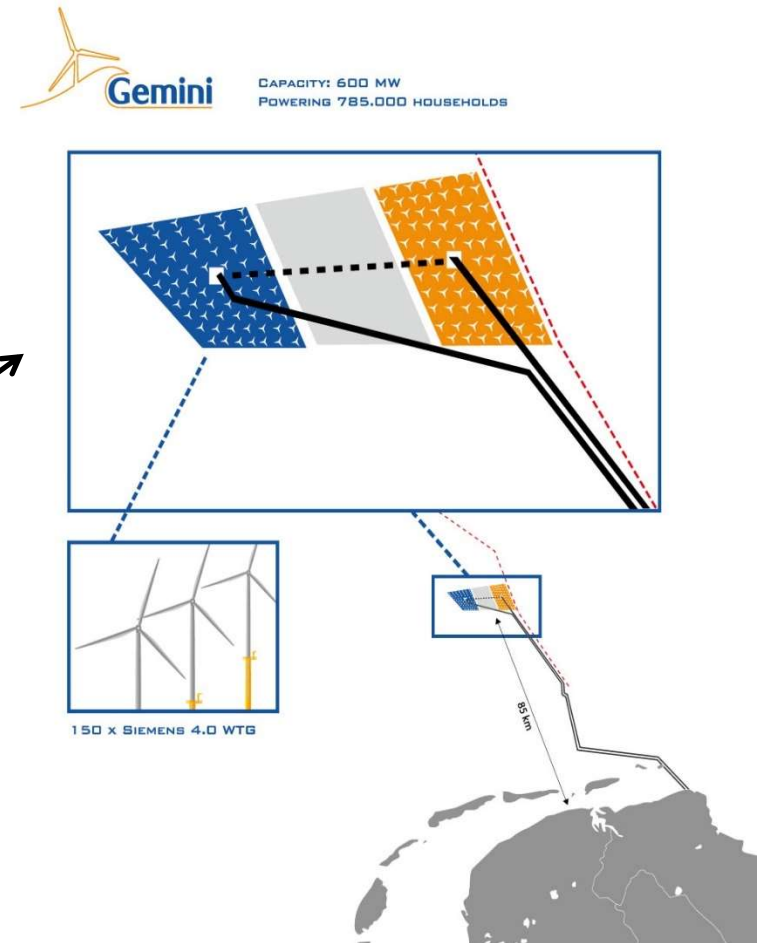
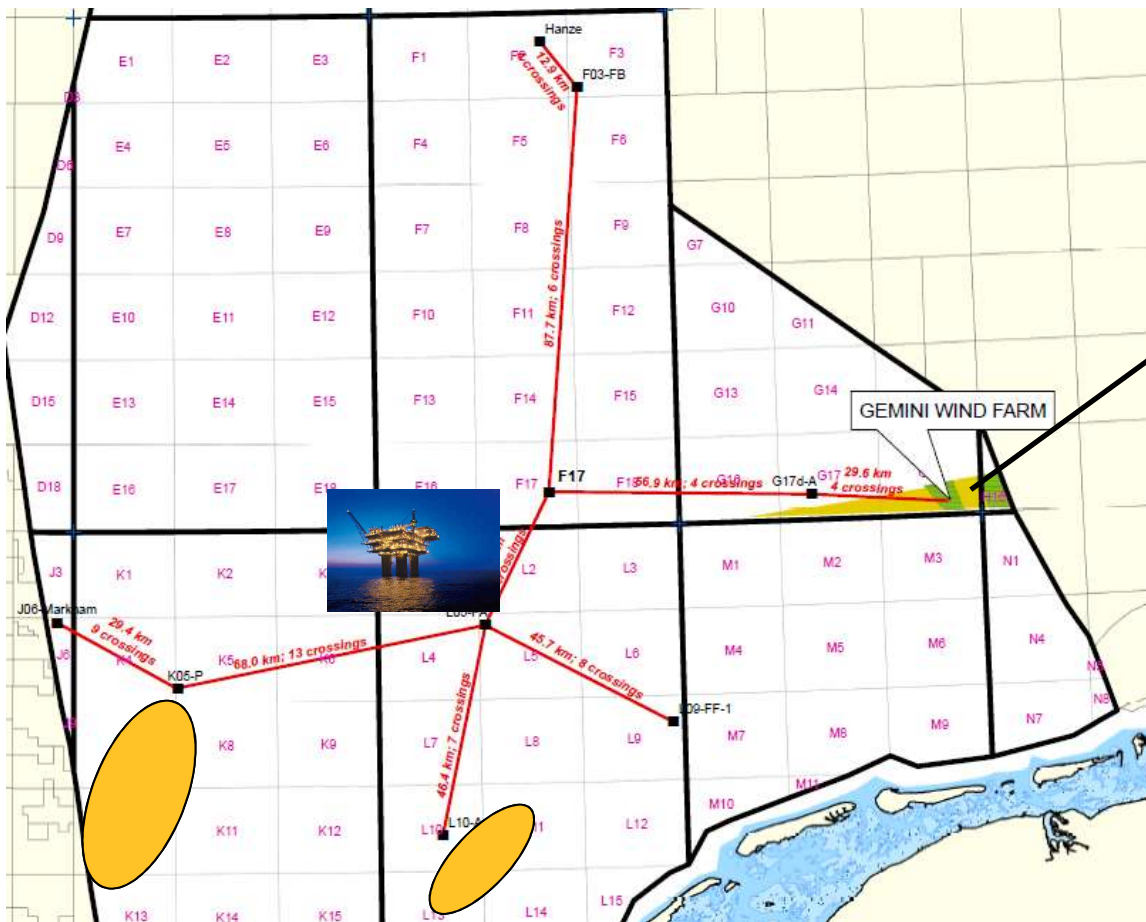
CO2 storage

Options for system integration offshore wind and oil and gas assets



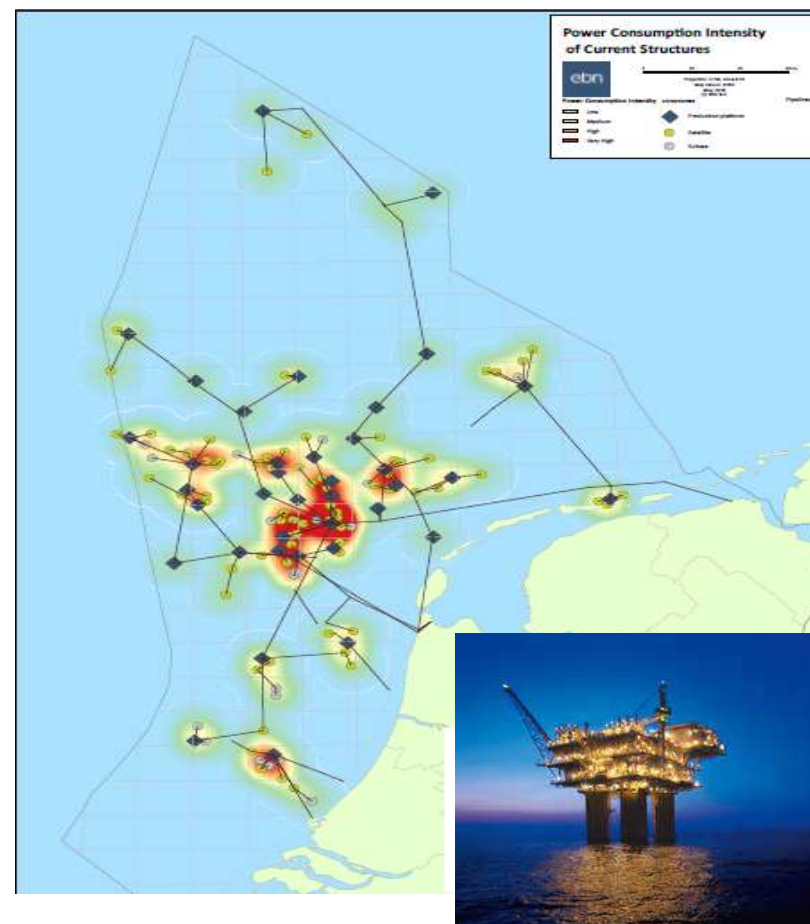
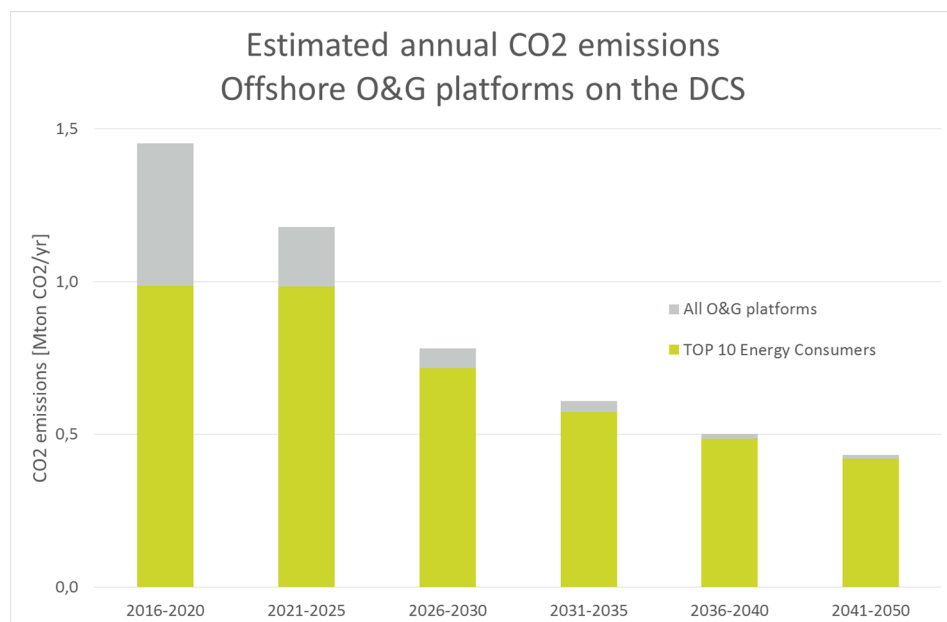
Offshore grid development connect wind farms to platforms

Electrification of platforms to reduce emissions to zero en reduce OPEX



Power consumption offshore platforms and CO2 emissions

10% of the platforms emit 70% of the GHG

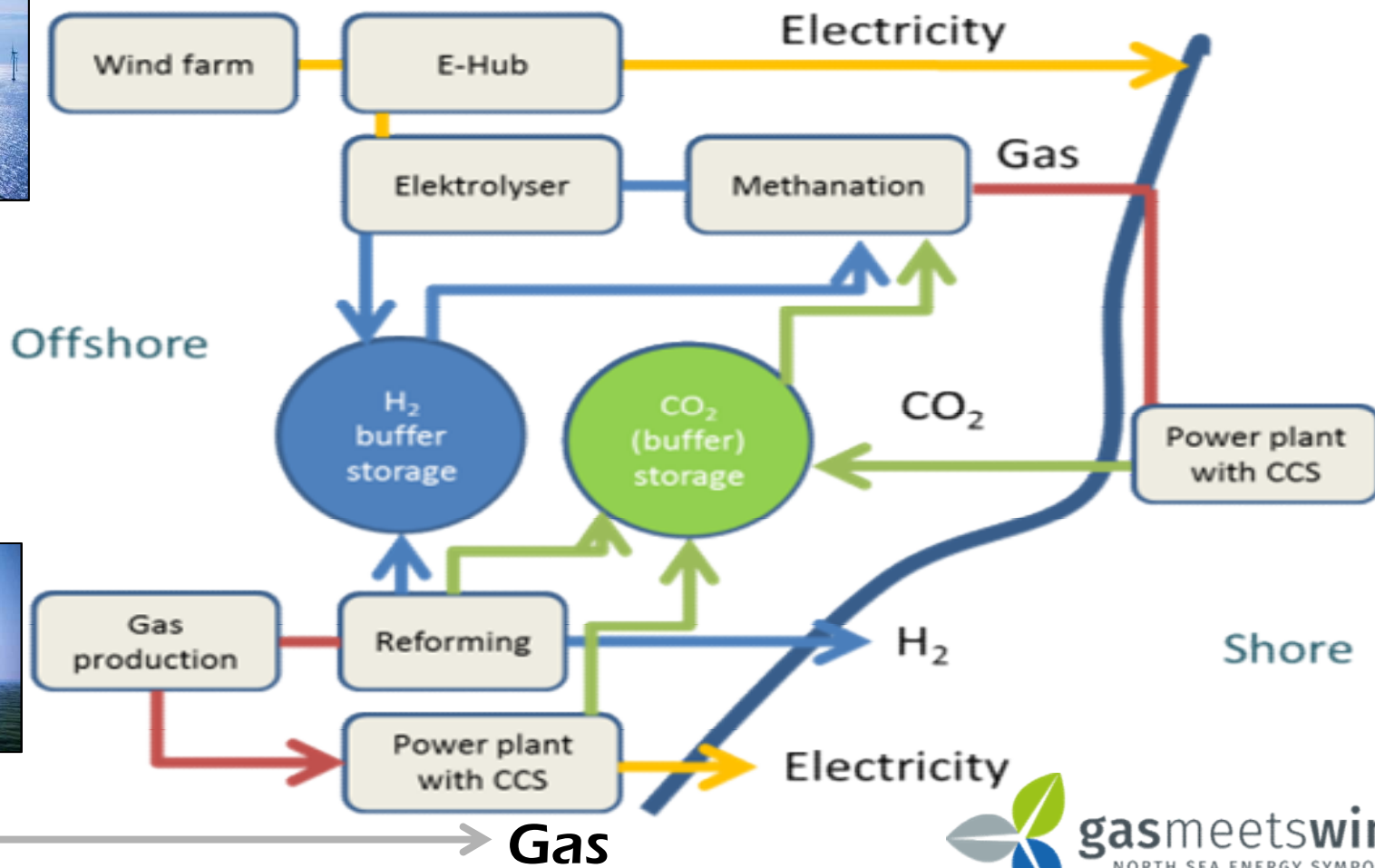


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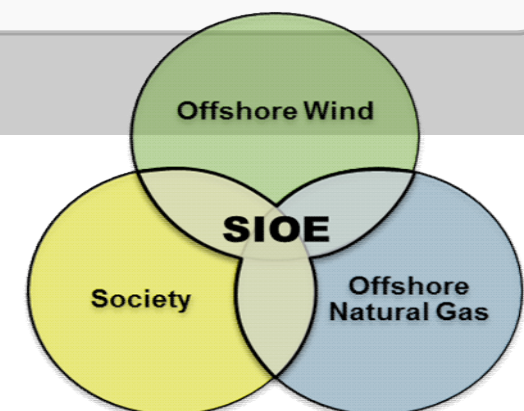
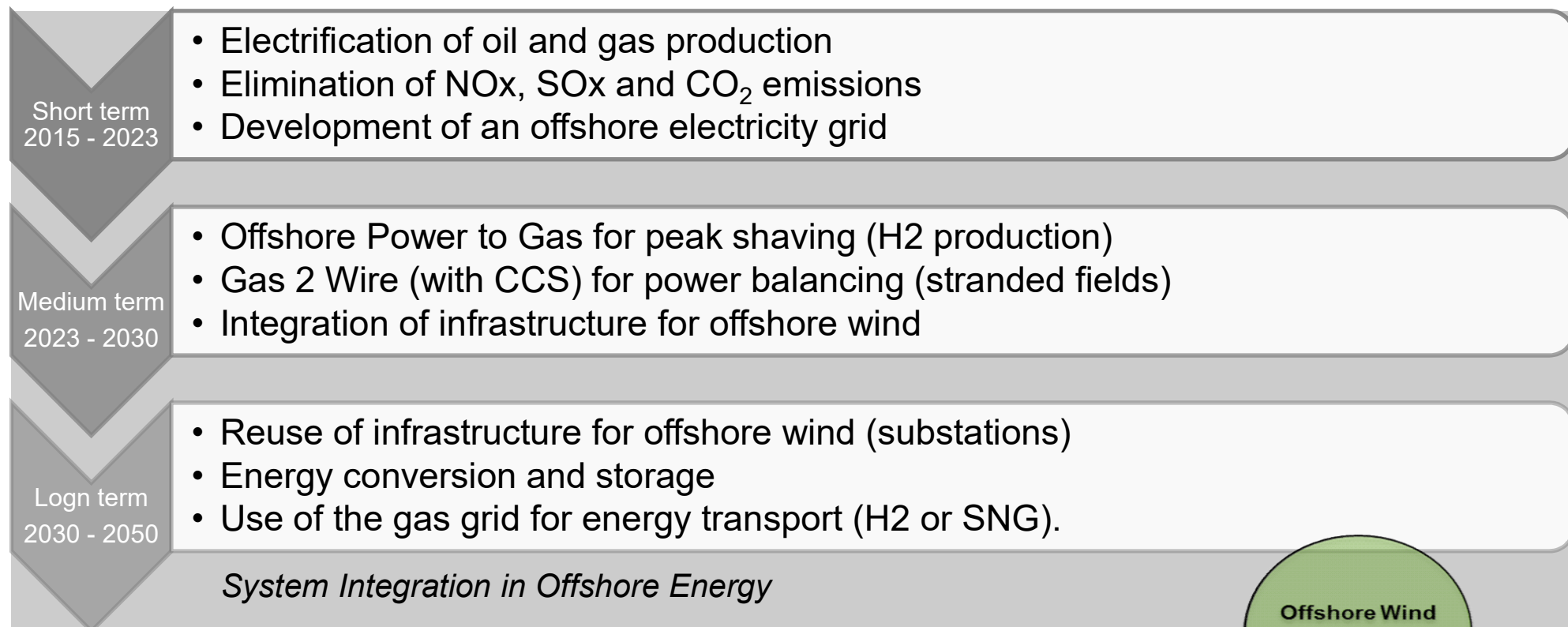


Future offshore clean energy system

Power to Gas and Gas to Wire, CO₂ and energy storage



Timeframe for opportunities to prolonge and reuse or repurpose offshore oil and gas assets



System Integration requires collaboration

June 15, 2016 “Gas meets Wind”:
‘Declaration of Coordination and
Cooperation North Sea Region’,
by NOGEP, NWEA, Natuur en
Milieu, TenneT, TNO



June 6, 2016, EU Energy Council:
North Sea Declaration: Regional
coordination on offshore energy



How do you assess the value pool Prolonging life and Re-purpose of Oil and Gas Assets?

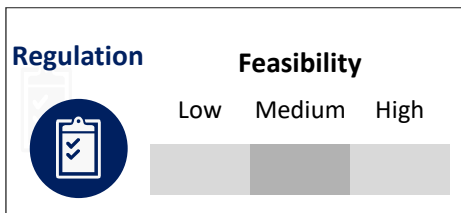
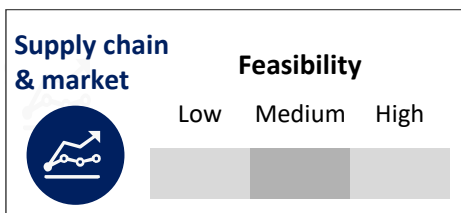
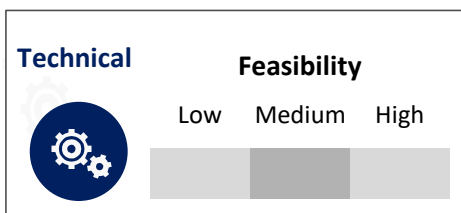
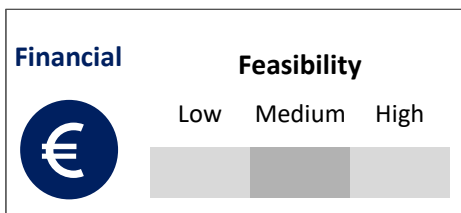
What are the options?

Identified sub-value pools

- Electrification
- Enhanced recovery of reserves
- Carbon storage
- Geothermal energy
- Power-to-gas
- Gas-to-wire
- Compressed air energy storage
- Artificial reefing
- Recreation

Additional sub-value pools

What is the biggest hurdle?



Who needs to do what tomorrow?

Who:	
What:	
Explanation:	

Who:	
What:	
Explanation:	

Who:	
What:	
Explanation:	

Voting 1:

what do you consider as the most valuable and realistic option for reuse of assets

1. Electrification
2. Enhanced recovery of reserves
3. Carbon storage
4. Geothermal energy
5. Power-to-gas
6. Gas-to-wire
7. Compressed air energy storage
8. Artificial reefing
9. Recreation

Voting 2:

**what do you consider as the most exciting
and inspiring option for reuse of assets**

1. Electrification
2. Enhanced recovery of reserves
3. Carbon storage
4. Geothermal energy
5. Power-to-gas
6. Gas-to-wire
7. Compressed air energy storage
8. Artificial reefing
9. Recreation

Voting 3:

what do you consider as the biggest hurdle for realisation of the selection options?

1. Financial
2. Technical
3. Supply Chain / Market
4. Regulation

Select one of the proposed hurdles

Discussion:

- Specify the hurdle that you have identified for the various options
- What is the next step that is needed to realise the options for reuse
 - What, who, when