North Sea Energy

offshore system integration

Strategic Assessment of Environmental Impacts of Offshore system Integration

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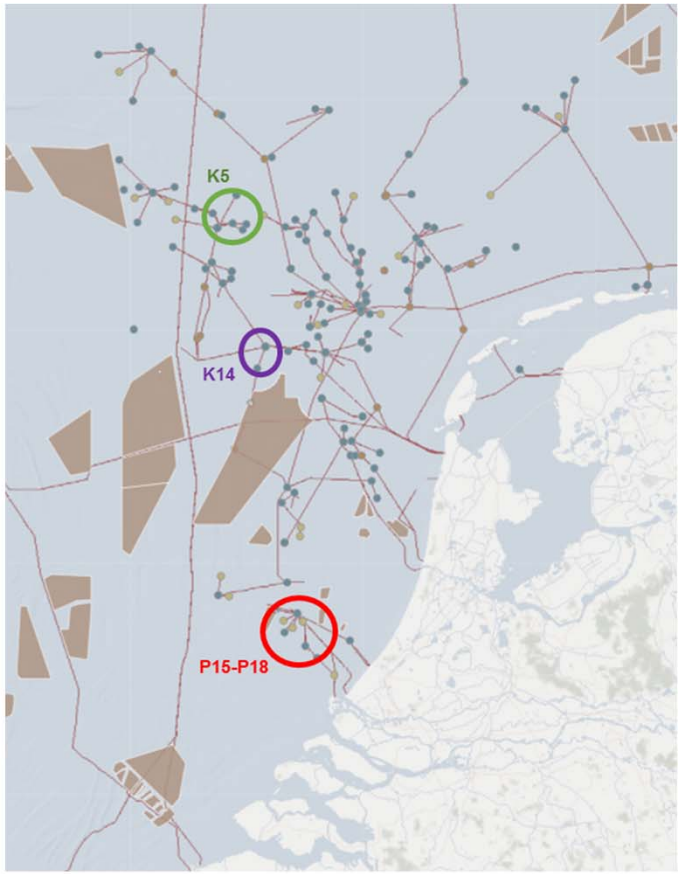
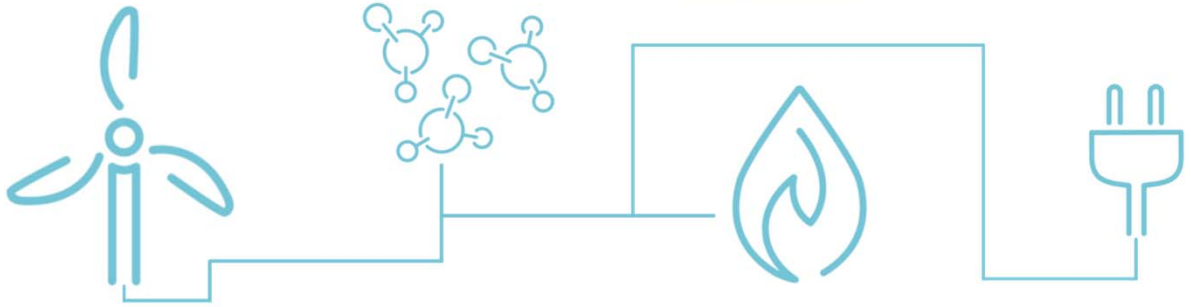
3 system integration options
3 locations

What are the related environmental impacts?





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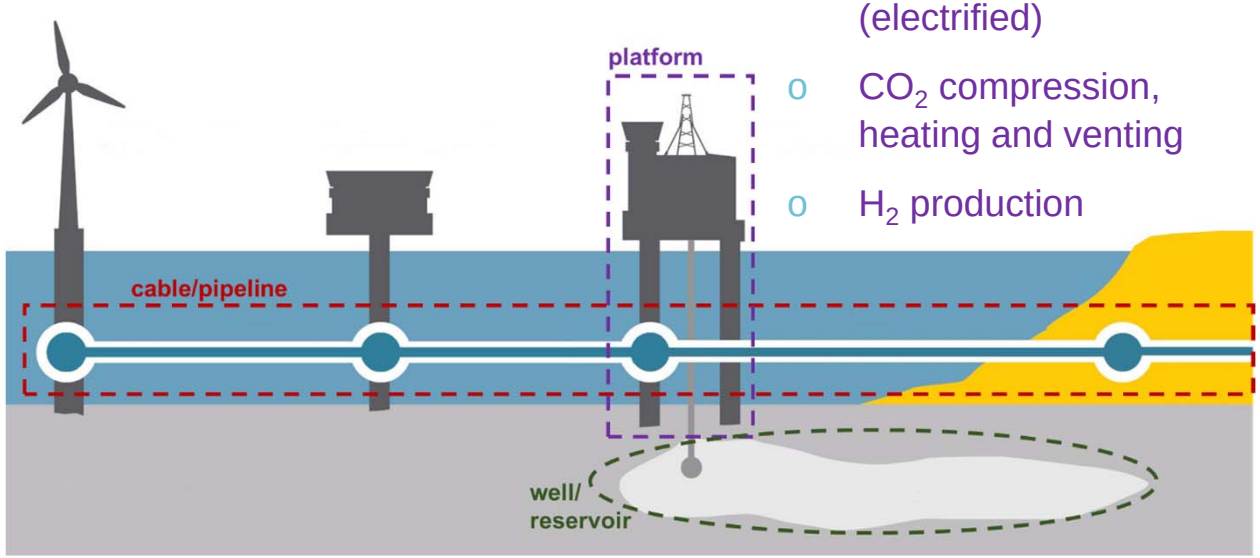
Activities that may cause environmental impacts

During construction and operation phase

- Shipping
- Cable and pipeline laying
- Transportation of electricity, natural gas, CO_2 and H_2



- Constructions works at/of platform
- Natural gas production (electrified)
- CO_2 compression, heating and venting
- H_2 production

- Well workover
- CO_2 storage

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Environmental aspects

	Theme	Cable / Pipeline	Platform
Planet	Nature	X	X
	Seabed	X	X
	Water quality	X	X
	Sound	X	X
	Air / Smell	X	X
	Electromagnetic fields	X	-
	Materials and waste	X	X
People	Landscape and light	X	X
	Archaeology	X	X
	Sustainable energy use	X	X
	Traffic	X	X
	Operations safety	X	X
Profitability	Other spatial uses	X	X

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Scoring system

+++	Strongly positive impact, the development has clear added value
++	Positive impact, clear improvement compared to the reference situation
+	Moderately positive impact, no significant improvement
0	No impact / Neutral
-	Moderately negative impact, no disrupting effect
- -	Negative impact, mitigation measures should be investigated
- - -	Strongly negative impact, effect is outside of the judicial framework
	No impact possible

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K5 area

Electrification & CCS hub

		Electrification & CCS			
		Construction		Operation	
	Theme	Cable/ pipeline	Existing platform	Cable/ pipeline	Platform
Planet	Nature	- -	-	-	0
	Seabed	-	0	0	0
	Water quality	-	-	0	0
	Underwater sound	- -	-	0	+
	Air emissions / Smell	-	-	0	+
	Electromagnetic fields			-	
	Materials and waste	-	- -	0	+
People	Landscape and light	0	0	0	0
	Cultural heritage and archaeology	- -	0	0	0
	Sustainable energy use	-	-		+
	Traffic (ship movements)	-	-	0	+
	Operational safety			0	+
Profit ability	Other spatial uses	-	0	-	0

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K14 area

Electrification & small scale H_2 production & large scale H_2 and/or CCS hub

		Electrification & small scale H_2 production & large scale H_2 and/or CCS hub			
		Construction		**Operation**	
	Theme	**Cable/ pipeline**	**Existing platform**	**Cable/ pipeline**	**Platform**
Planet	Nature	- -	-	-	0
	Seabed	-	0	0	0
	Water quality	-	-	0	0*
	Underwater sound	- -	-	0	+
	Air emissions / Smell	-	-	0	+/++**
	Electromagnetic fields			-	
	Materials and waste	-	- -	0	+
People	Landscape and light	0	0	0	0
	Cultural heritage and archaeology	- -	0	0	0
	Sustainable energy use	-	-		+ / ++**
	Traffic (ship movements)	-	-	0	+
	Operational safety			0	-
Profit ability	Other spatial uses	-	0	-	0

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P15-P18 area

Electrification & small scale H_2 production & large scale H_2 production combined with CCS

		Electrification & small scale H2 production & large scale H2 production combined with CCS			
		Construction		**Operation**	
	Theme	**Cable/ pipeline**	**Existing platform**	**Cable/ pipeline**	**Platform**
Planet	Nature	- -	-	-	0
	Seabed	-	0	0	0
	Water quality		-	0	0*
	Underwater sound	- -	-	0	+
	Air emissions / Smell	-	-	0	+/++**
	Electromagnetic fields			-	
	Materials and waste	-	- -	0	+
People	Landscape and light	0	0	0	0
	Cultural heritage and archaeology	- -	0	0	0
	Sustainable energy use	-	-		+ / ++**
	Traffic (ship movements)	-	-	0	+
	Operational safety			0	-
Profitability	Other spatial uses	-	0	-	0

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Closing remarks

1. During the construction phase the activities for the different options take place in different years and are temporary in nature. No increase is expected in the extent of the impacts for the scenarios as a whole.
2. The expected environmental impacts during the operational phase are largely comparable to the electrification option, with additional positive impacts for air emissions and sustainable energy use.
3. New activities will require necessary permits related to the Mining Act and or Water Act. A related EIA is expected to be prepared to detail possible impacts. This study is a first high-level inventory of these possible environmental impact.

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