HI WEST 19 (Less-Advanced)

Interconnection Germany-Belgium

Reasons for grouping [ENTSOG]

The project group aims at interconnecting future hydrogen infrastructure between Germany and Belgium.

The group includes investments in Germany (HYD-N-1038) and Belgium (HYD-N-1311).

Objective of the group [Promoter]

The TSOs Fluxys and OGE are members of the European Hydrogen Backbone (EHB) initiative which provides a future vision of a fully connected European pipeline infrastructure to transport hydrogen from supply to demand centers. Fluxys and OGE are aiming to realize several GW cross border hydrogen transport capacity between both countries... The Belgian Hydrogen Backbone - H2ercules Network (OGE) can establish a connection to five European countries (Norway, Netherlands, Belgium, France and Czech Republic) via pipeline. This project group is focusing on hydrogen transport for the cross-border point Eynatten/Lichtenbusch. Via this interconnection hydrogen imported or produced in the Belgian ports will be able to connect with Germany

HYD-N-1038 **H2ercules Network West**

Comm. Year **2029**

HYD-N-1311 **Belgian Hydrogen Backbone (Part)**

Comm. Year **2029**

A. Project group technical information [Promoter/ ENTSOG]

Project technical information [Promoter]

Hydrogen Transmission

TYNDP Project code	Section name	New / Repurposing	Nominal Diameter [mm]	Section Length [km]
HYD-N-1038	H2ercules Network West	New	800	110
HYD-N-1038	H2ercules Network West	Repurposing	800-900	320
HYD-N-1038	H2ercules Network West	New	800	70
HYD-N-1311	Interconnection BE-GER	New	400-900	250-300

Capacity increment [ENTSOG]

TYNDP Project code	Point name	Operator	From system	To system	Capacity increment [GWh/d]	Comm. year
HYD-N-1038	H2_IP_BE-DE	Open Grid Europe GmbH	Transmission Belgium (BE Hydrogen)	Transmission Germany (DE Hydrogen)	91	2029
HYD-N-1038	H2_IP_BE-DE	Open Grid Europe GmbH	Transmission Germany (DE Hydrogen)	Transmission Belgium (BE Hydrogen)	91	2029
HYD-N-1311	H2_IP_BE-DE	Fluxys	Transmission Germany (DE Hydrogen)	Transmission Belgium (BE Hydrogen)	91	2029
HYD-N-1311	H2_IP_BE-DE	Fluxys	Transmission Belgium (BE Hydrogen)	Transmission Germany (DE Hydrogen)	91	2029

B. Project Cost Information

During the TYNDP 2022 Project Data Collection, promoters were asked to indicate whether their costs were confidential or not. The following tables display the non-confidential costs provided by the promoters (as of December 2022, end of PCI project collection). The amounts provided can differ from the figures used by the project promoters in other contexts, where costs can be updated and/or evaluated using different methodologies or assumptions.

[ENTSOG]

TYNDP Project code	CAPEX [M€]	CAPEX range [%]	OPEX [M€]	OPEX range [%]
HYD-N-1038	1020	30	23	30
HYD-N-1311	400-500	40	20	40

Description of the cost and range [Promoter]

DE: CAPEX and OPEX are based on best estimates at the time of project submission in December 2022 and might be subject to changes, e.g. due to supplier price adjustments or concretization of project scope. Cost deviations are already considered in both CAPEX and OPEX cost ranges.

BE: The financial assumptions and business plan build-up is driven by standard pipeline projects and specific in-house knowledge. The financial numbers are subject to market conditions and commercial commitments.

C. Project Benefits [ENTSOG]

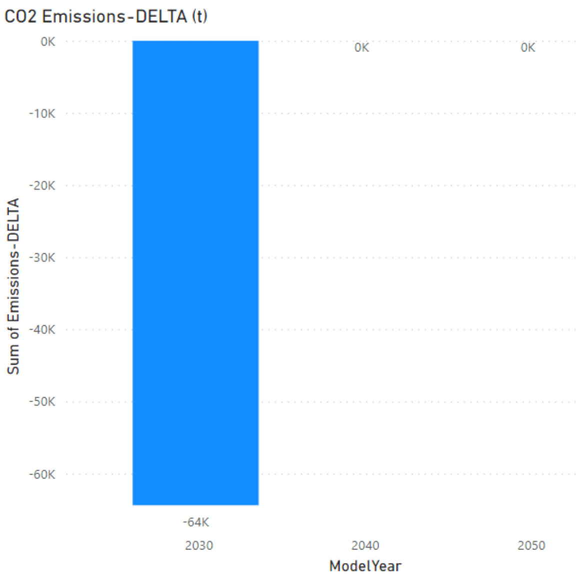
C.1 Summary of benefits

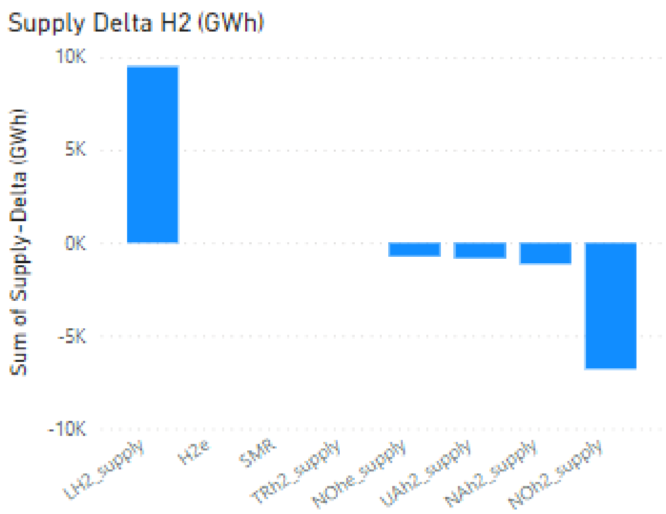
This section provides a summarised analysis by ENTSOG of the main benefits stemming from the realisation of the overall group. More details on the indicators are available in Annex D of TYNDP 2022[1].

Distributed Energy

Sustainability benefits

In the reference case, which analyses yearly demand in two periods (average winter and average summer), the project group will contribute to sustainability by reducing overall CO2 emissions by 64 kt in 2030. The project group enables imports of green hydrogen from terminals in Belgium and France and so then replacing use of Norwegian supply which is considered as blue hydrogen in 2030.

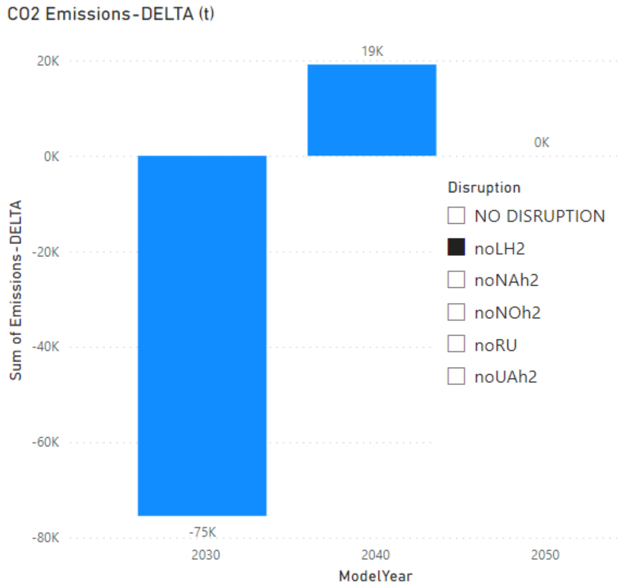


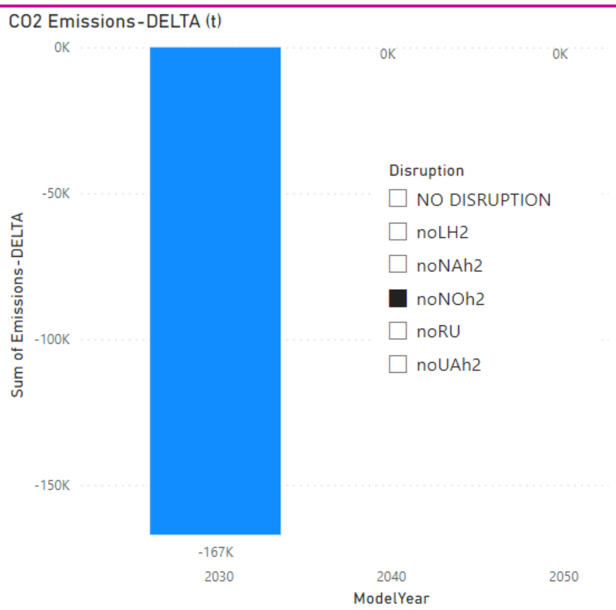


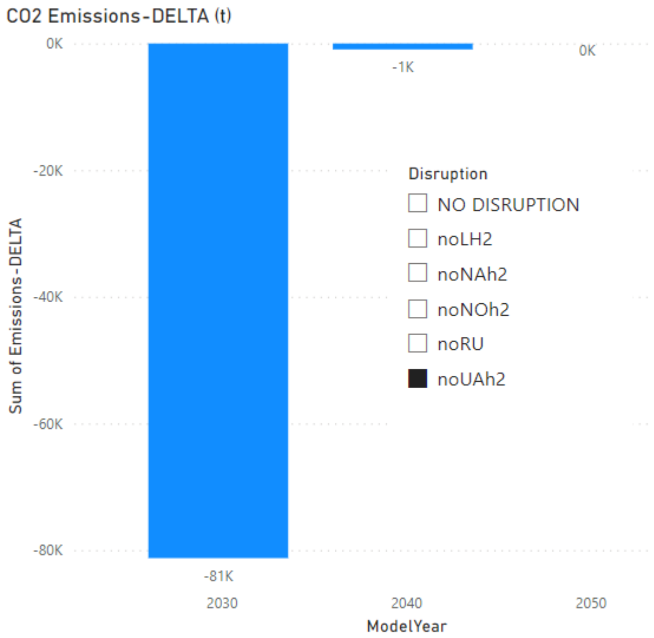
Similar trend is expected under any supply disruption in 2030 with even more benefits, up to 167 kt in case Norwegian supply disruption.

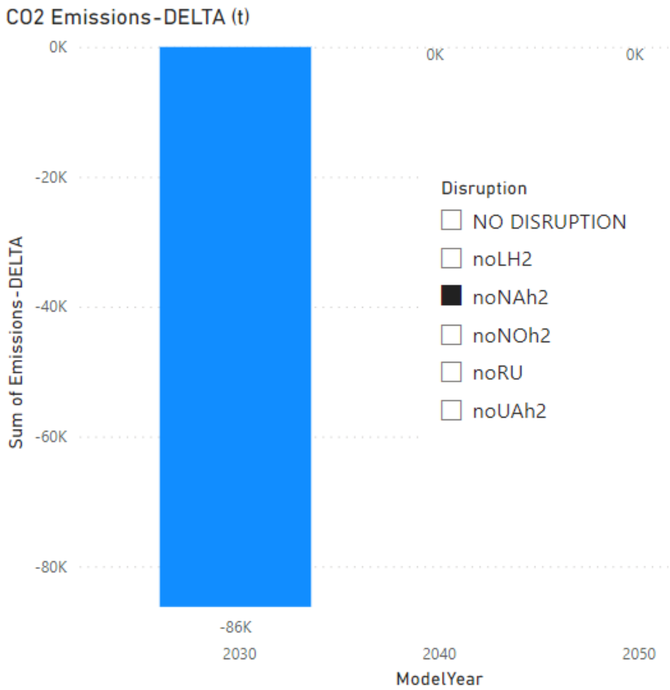
1 noLH2 : LH2 disruption / 2 no Noh2 : Norwegian disruption / 3 noUAh2 : Ukraine disruption/ 4 noNAh2 : North Africa disruption

[1] https://www.entsog.eu/sites/default/files/2023-04/ENTSOG_TYNDP_2022_Annex_D_Methodology_230411.pdf









Security of Supply:[2]

> Reference case

In the reference case, the project is contributing to further mitigation of hydrogen demand curtailment risk in average summer and average winter a little from 2030, that cannot be displayed on the map.

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[2] *As for the hydrogen system there is no existing infrastructure level available yet, ENTSOG has identified a possible hydrogen network according to the information provided by promoters in their project submission for the TYNDP/PCI process (i.e., H2 Infrastructure level). Therefore, the System Assessment shows the results that could be reached (for different timestamps) under the hypothesis of a full commissioning of the H2 infrastructure projects that were submitted by project promoters but that are not yet in place. Therefore, even in configurations where no demand curtailment is identified (e.g., average winter in 2030) these results should not be read as an absence of H2 infrastructure needs for the given scenario. On the contrary, the full availability of the planned infrastructures composing the H2 infrastructure level is assumed to avoid the potential demand curtailment.*

2030 DE- Benefits

2040 DE- Benefits

2050 DE- Benefits

> Climatic stress cases

Under 2 -week and 2-week dunkelflaute climatic stress case, as well as under peak day climatic case the project group mitigates demand curtailment by 1-2% in western, central and northern countries in 2030.

2030 DE- Benefits

2040 DE- Benefits

2050 DE- Benefits

> Disruption cases (S-1):

Similarly, under LH2 disruption cases, the project group mitigates demand curtailment in Belgium by 5% in 2030, by 11% in Belgium and 2% in the Netherlands in 2040, by 10% in Belgium and 9% in the Netherlands in 2050.

noLH2 : LH2 disruption

2030 DE- Benefits

2040 DE- Benefits

2050 DE- Benefits

> Single largest capacity disruption (SLCD):

Benefits 100% - 20% 20% - 5% 5% - 0%

SLCD Benefits - 2030 - Distributed Energy

SLCD Benefits - 2040 - Distributed Energy

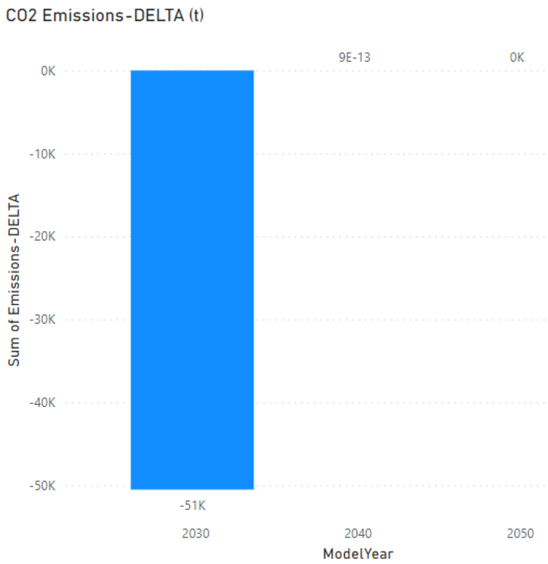
SLCD Benefits - 2050 - Distributed Energy

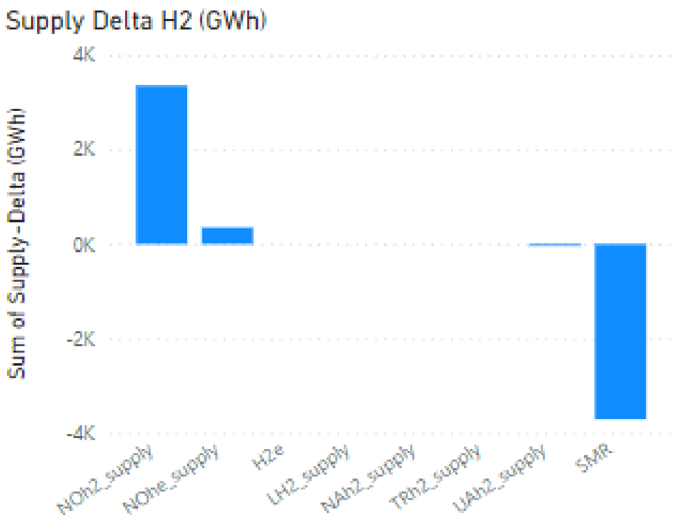
In case of single largest capacity disruption (SLCD), the project group reduces the risk of demand curtailment in all Europe in 2030, by 1-2%. Indeed, imports in Belgium can flow to Germany first and then to reach all Europe. However, most benefits are expected in Belgium by reducing demand curtailment up to 17% in 2030 and 10% in 2040.

Global Ambition

Sustainability benefits

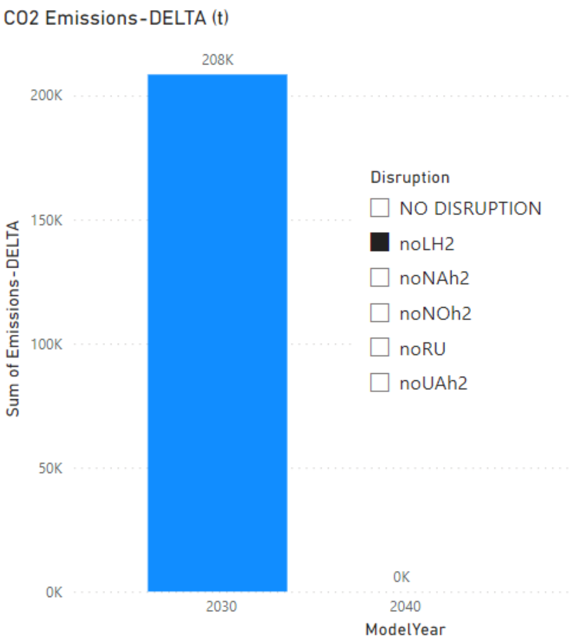
In the reference case, which analyses yearly demand in two periods (average winter and average summer), the project group will contribute to sustainability by reducing overall CO_2 emissions by 51 kt in 2030. The project group enables the transport of green hydrogen and so then replacing use of SMRs' supplies.

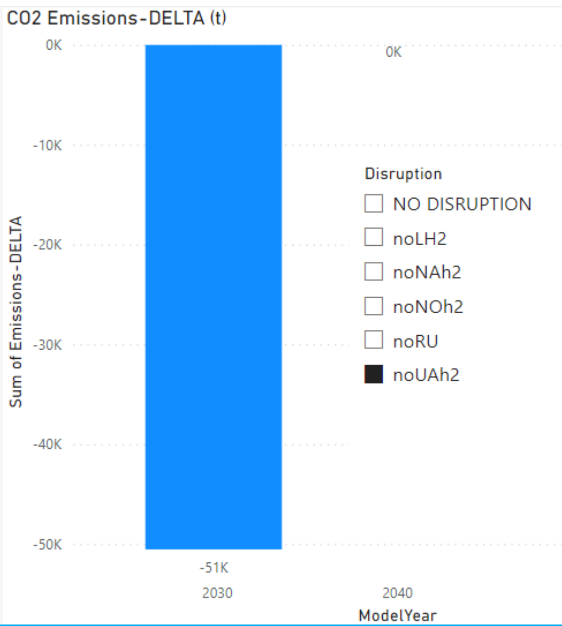


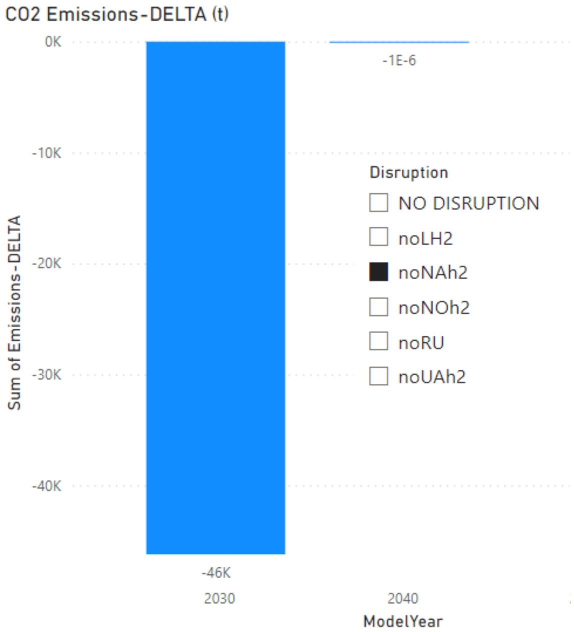


Similar trend is expected under North African and Ukrainian supplies disruptions. However, in case of LH2 disruption, to reduce demand curtailment more SMRs are used and so increase CO_2 emissions.

1 noLH2 : LH2 disruption / 2 noUAh2 : Ukraine disruption/ 3 noNAh2 : North Africa disruption







Security of supply benefits

> Reference case

In the reference case, the project is contributing to further mitigation of hydrogen demand curtailment risk in average summer and average winter a little from 2030, that cannot be displayed on the map.

> Climatic stress cases

Under 2 -week and 2-week dunkelflaute climatic stress case, as well as under peak day climatic case the project group mitigates demand curtailment up to 50% in Belgium and 6% in the Netherlands in 2030.

> Disruption cases (S-1):

Similarly, under LH2 disruption cases, the project group mitigates demand curtailment in Belgium by 20% and 19% in the Netherlands in 2030, by 4% in Belgium and 1% in the Netherlands in 2040 and by 4% in Belgium and 3% in the Netherlands in 2050.

noLH2 : LH2 disruption

> *Single* largest capacity disruption *(SLCD):*

Benefits 100% - 20% 20% - 5% 5% - 0%

SLCD Benefits - 2030 - Global Ambition

SLCD Benefits - 2040 - Global Ambition

SLCD Benefits - 2050 - Global Ambition

In case of single largest capacity disruption (SLCD), the project group reduces the risk of demand curtailment in Belgium in 2030 by 22% and 10% in the Netherlands.

C.2 Quantitative benefits [ENTSOG]

The following tables display all the benefits quantified by ENTSOG through specific indicators and stemming from the realisation of the considered project group.

CO2 Emissions:

ModelYear	Disruption	Scenario	Unit	Emissions-DELTA	Emissions-PLUS	Emissions-MINUS
2030	NO DISRUPTION	DE	tonne	-64389,12	538659102,8	538723491,9
2030	noLH2	DE	tonne	-75447,85	540175890,2	540251338,1
2030	noNAh2	DE	tonne	-86233,86	539761567,6	539847801,4
2030	noNOh2	DE	tonne	-167029,21	538829979,7	538997008,9
2030	noUAh2	DE	tonne	-81251,94	539356902,9	539438154,8
2030	NO DISRUPTION	GA	tonne	-50523,72	592890377,7	592940901,4
2030	noLH2	GA	tonne	208454,28	594877227,2	594668772,9
2030	noNAh2	GA	tonne	-46207,86	594114024,6	594160232,5
2030	noNOh2	GA	tonne	0,00	593258927,3	593258927,3
2030	noUAh2	GA	tonne	-50538,31	593605748,9	593656287,2
2040	NO DISRUPTION	DE	tonne	0,00	392077044	392077044
2040	noLH2	DE	tonne	19127,70	392213958,8	392194831,1
2040	noNAh2	DE	tonne	0,00	392183279,6	392183279,6
2040	noNOh2	DE	tonne	0,00	392129723,6	392129723,6
2040	noUAh2	DE	tonne	-940,36	392383943,5	392384883,9
2040	NO DISRUPTION	GA	tonne	0,00	396485328,2	396485328,2
2040	noLH2	GA	tonne	0,00	397455196,7	397455196,7
2040	noNAh2	GA	tonne	0,00	397287525,3	397287525,3
2040	noNOh2	GA	tonne	0,00	397446159	397446159
2040	noUAh2	GA	tonne	0,00	397478498,3	397478498,3
2050	NO DISRUPTION	DE	tonne	0,00	232557734,8	232557734,8
2050	noLH2	DE	tonne	0,00	232557734,8	232557734,8
2050	noNAh2	DE	tonne	0,00	232557734,8	232557734,8
2050	noNOh2	DE	tonne	0,00	232557734,8	232557734,8
2050	noRU	DE	tonne	0,00	232557734,8	232557734,8
2050	noUAh2	DE	tonne	0,00	232557734,8	232557734,8
2050	NO DISRUPTION	GA	tonne	0,00	228306706,5	228306706,5
2050	noLH2	GA	tonne	0,00	228306706,5	228306706,5
2050	noNAh2	GA	tonne	0,00	228306706,5	228306706,5
2050	noNOh2	GA	tonne	0,00	228306706,5	228306706,5
2050	noRU	GA	tonne	0,00	228306706,5	228306706,5
2050	noUAh2	GA	tonne	0,00	228306706,5	228306706,5

Curtailment Rate (SLCD):

Country	2030-DE-DELTA	2030-GA-DELTA	2040-DE-DELTA	2040-GA-DELTA	2050-DE-DELTA	2050-GA-DELTA
Belgium	-17%	-22%	-10%	0%	-14%	-15%
Switzerland	0%	0%	-1%	0%	-1%	-1%
Czechia	-2%	0%	-1%	0%	0%	0%
Austria	-1%	0%	0%	0%	0%	0%
Finland	-2%	1%	0%	-1%	0%	-1%
Greece	-1%	0%	0%	0%	0%	0%
Bulgaria	-1%	0%	0%	0%	0%	0%
Denmark	-1%	0%	0%	-1%	0%	0%
Estonia	-2%	0%	0%	0%	0%	0%
France	-1%	1%	0%	0%	0%	0%
Germany	-1%	1%	0%	0%	0%	0%
Hungary	-1%	0%	0%	0%	0%	0%
Italy	-1%	0%	0%	0%	0%	0%
Latvia	-2%	0%	0%	-1%	0%	0%
Lithuania	-1%	0%	0%	0%	0%	0%
Poland	-2%	0%	0%	0%	0%	0%
Portugal	-2%	0%	0%	0%	0%	0%
Romania	-1%	0%	0%	0%	0%	0%
Slovakia	-2%	0%	0%	0%	0%	-1%
Spain	-2%	0%	0%	0%	0%	0%
Sweden	-2%	1%	0%	0%	0%	0%
The Netherlands	0%	-10%	0%	0%	-1%	0%

Curtailment Rate (Climatic Stress):

Country	2030-DE-DELTA	2030-GA-DELTA	2040-DE-DELTA	2040-GA-DELTA	2050-DE-DELTA	2050-GA-DELTA
Austria	-1%	0%	0%	0%	0%	0%
Belgium	0%	-25%	0%	0%	0%	0%
Bulgaria	0%	0%	0%	0%	0%	0%
Croatia	0%	0%	0%	0%	0%	0%
Cyprus	0%	0%	0%	0%	0%	0%
Czechia	-1%	0%	0%	0%	0%	0%
Denmark	-1%	0%	0%	0%	0%	0%
Estonia	0%	0%	-1%	0%	0%	0%
Finland	0%	0%	0%	0%	0%	0%
France	-1%	0%	0%	0%	0%	0%
Germany	-1%	0%	0%	0%	0%	0%
Greece	0%	0%	0%	0%	0%	0%
Hungary	0%	0%	0%	0%	0%	0%
Ireland	0%	0%	0%	0%	0%	0%
Italy	-1%	0%	0%	0%	0%	0%
Latvia	0%	0%	0%	0%	0%	0%
Lithuania	0%	0%	0%	0%	0%	0%
Luxembourg	0%	0%	0%	0%	0%	0%

Malta	0%	0%	0%	0%	0%	0%
Poland	-1%	0%	0%	0%	0%	0%
Portugal	-1%	0%	0%	0%	0%	0%
Romania	0%	0%	0%	0%	0%	0%
Serbia	0%	0%	0%	0%	0%	0%
Slovakia	-1%	0%	0%	0%	0%	0%
Slovenia	0%	0%	0%	0%	0%	0%
Spain	-1%	0%	0%	0%	0%	0%
Sweden	-1%	0%	0%	0%	0%	0%
Switzerland	0%	0%	0%	0%	0%	0%
The Netherlands	0%	-3%	0%	0%	-1%	0%
United Kingdom	0%	0%	0%	0%	0%	0%
Austria	-1%	0%	0%	0%	0%	0%
Belgium	0%	-25%	0%	0%	0%	0%
Bulgaria	0%	0%	0%	0%	0%	0%
Croatia	0%	0%	0%	0%	0%	0%
Cyprus	0%	0%	0%	0%	0%	0%
Czechia	-1%	0%	0%	0%	0%	0%
Denmark	-1%	0%	0%	0%	0%	0%
Estonia	0%	0%	0%	0%	0%	0%
Finland	0%	0%	0%	0%	0%	-1%
France	-1%	0%	0%	0%	0%	0%
Germany	-1%	0%	0%	0%	0%	0%
Greece	0%	0%	0%	0%	0%	0%
Hungary	0%	0%	0%	0%	0%	0%
Ireland	0%	0%	0%	0%	0%	0%
Italy	-1%	0%	0%	0%	0%	0%
Latvia	0%	0%	0%	0%	0%	0%
Lithuania	0%	0%	0%	0%	0%	0%
Luxembourg	0%	0%	0%	0%	0%	0%
Malta	0%	0%	0%	0%	0%	0%
Poland	-1%	0%	0%	0%	0%	0%
Portugal	-1%	0%	0%	0%	0%	0%
Romania	0%	0%	0%	0%	0%	0%
Serbia	0%	0%	0%	0%	0%	0%
Slovakia	-1%	0%	0%	0%	0%	0%
Slovenia	0%	0%	0%	0%	0%	0%
Spain	-1%	0%	0%	0%	0%	0%
Sweden	-1%	0%	0%	0%	0%	-1%
Switzerland	0%	0%	0%	0%	-1%	0%
The Netherlands	0%	-3%	0%	0%	-1%	0%
United Kingdom	0%	0%	0%	0%	0%	0%
Austria	-1%	0%	0%	0%	0%	0%
Belgium	0%	-19%	0%	0%	0%	0%
Bulgaria	0%	0%	0%	0%	0%	0%
Croatia	0%	0%	0%	0%	0%	0%
Cyprus	0%	0%	0%	0%	0%	0%
Czechia	-1%	0%	0%	0%	0%	0%
Denmark	-1%	0%	0%	0%	0%	0%

Estonia	-1%	0%	0%	0%	0%	0%
Finland	-1%	0%	0%	0%	0%	0%
France	-1%	0%	0%	0%	0%	0%
Germany	-1%	0%	0%	0%	0%	0%
Greece	0%	0%	0%	0%	0%	0%
Hungary	0%	0%	0%	0%	0%	0%
Ireland	0%	0%	0%	0%	0%	0%
Italy	0%	0%	0%	0%	0%	0%
Latvia	-1%	0%	0%	0%	0%	0%
Lithuania	-1%	0%	0%	0%	0%	0%
Luxembourg	0%	0%	0%	0%	0%	0%
Malta	0%	0%	0%	0%	0%	0%
Poland	-1%	0%	0%	0%	0%	0%
Portugal	-1%	0%	0%	0%	0%	0%
Romania	0%	0%	0%	0%	0%	0%
Serbia	0%	0%	0%	0%	0%	0%
Slovakia	-1%	0%	0%	0%	0%	0%
Slovenia	0%	0%	0%	0%	0%	0%
Spain	-1%	0%	0%	0%	0%	0%
Sweden	-1%	0%	0%	0%	0%	0%
Switzerland	0%	0%	0%	0%	0%	0%
The Netherlands	0%	0%	0%	0%	0%	0%
United Kingdom	0%	0%	0%	0%	0%	0%

D. Environmental Impact [Promoter]

Any gas infrastructure has an impact on its surroundings. This impact is of particular relevance when crossing some environmentally sensitive areas. Mitigation measures are taken by the promoters to reduce this impact and comply with the EU and National regulations.

TYNDP Code	Type of infrastructure	Surface of impact	Environmentally sensitive area
HYD-N-1038	Hydrogen pipelines (Repurposed part)	Reconstruction of existing above-ground objects or locally limited interferences	Minimal environmental impacts expected due to repurposing of pipeline or locally limited interferences.
HYD-N-1038	Hydrogen pipelines (New built part)	New construction of underground pipelines and associated above-ground facilities	The official procedures (regional planning and planning approval) are used to weigh up the environmental aspects very carefully. For this purpose, the developer prepares a spatial resistance analysis so that the potential sensitive areas (natural areas, forest, water, people, etc.) are ideally not affected at all or, if so, only minimally. In an iterative process, the environmental expert ensures that environmental concerns are always heard and taken into account during the technical planning phase.

Potential impact	Mitigation measures	Related costs included in project CAPEX and OPEX	Additional expected costs
HYD-N-1038	Minimal environmental impacts expected due to repurposing of pipeline and or locally limited interferences and as much reduced environmental impact as possible for new built parts in accordance with applicable regulations.	detailed calculation not available yet	Not expected

Environmental Impact explained [Promoter]

DE, OGE: Pipeline conversion minimizes the environmental impact of the establishment of a hydrogen grid by requiring only highly localized earth and construction works. Evidently, converting natural gas pipelines for the transport of hydrogen also significantly reduces the consumption of natural resources, providing a sustainable option for grid development making optimal use of existing infrastructure.
The necessary technical conversion of the existing natural gas infrastructure to hydrogen reduces the impact on the environment to a minimum. There will only be targeted intervention in the ground where it is absolutely necessary. In particular, sensitive areas such as Natura2000 areas, bird sanctuaries, water protection areas, landscape and nature conservation areas, nature parks and also forest areas will be protected. Sensitive soils, such as moors, are also spared as far as possible. The necessary working area is adapted according to the local environmental situation found and, for example, the construction area is placed outside sensitive areas. In addition, it can be emphasized that the small local measures can also be better timed to take into account breeding times of birds.

Pipeline projects requiring the construction of new pipelines will follow the best practices established for the construction of new gas pipelines, e.g. utilizing optimized widths of working strips in order to minimize the impact of the construction process on soil properties, flora and fauna. After completion of construction the pipeline route will be recultivated, e.g. restoring agricultural properties. Where required non-local compensation will be realized, e.g. by planting new trees if local compensation is unfeasible.

BE: As highlighted in the analysis of Entsog, the realization of the project could help to reduce the CO2 emissions in the two main scenarios. In the Distributed Energy scenario, the connection enables the transport of green hydrogen (from the terminals) ; in the Global Ambition scenario, it allows to replace some SMR supplies by greener hydrogen.

BE: Further complementing the information provided by OGE, the infrastructure project is not expected to lead to a significant increase in the emissions of pollutants into air, water or land. During transport of hydrogen, any leakage from the infrastructure will be prevented. In case of interventions, maintenance... best available techniques will be selected to prevent/reduce losses. Transport by (underground) pipeline is the most sustainable way of transporting molecules and will not have a detrimental impact on biodiversity and ecosystems. Fluxys and OGE have also a long outstanding experience with the construction and exploitation of pipelines in good relationship with concerned neighbours/farmers/….

BE: in line with the EIA Directive an environmental impact assessment or environmental screening will be executed and mitigating measures will be foreseen when needed.

E. Other benefits [Promoter]

Missing benefits are all benefits of a project which may be not captured by ENTSOG analysis.

As a necessary condition a missing benefit cannot have discrepancies with the benefits already covered by the assessment run by ENTSOG and this condition needs to be proved and justified.

Description of Other benefits [Promoter]

H2ercules Network West

Sustainability benefits:

A faster ramp-up of the hydrogen economy in Germany is more important than ever in order to drive forward the decarbonization program, put the German energy system on a more robust footing, and thus contribute towards a decarbonized security of supply. This is where the H2ercules can make a significant contribution, as it overcomes many challenges on a large scale. The ramp-up of the hydrogen market can thus reduce the use of conventional energy sources. This helps to reduce GHG emissions and to use more and more decarbonized energy. This grouping enables the transmission of hydrogen across the borders of Germany and the Netherlands. Since no hydrogen is transported on this route via pipeline today, this will be a significant increase compared to the situation prior to the commissioning of the project.

Competition, market integration, security of supply and flexibility benefits:

The project's main impact is to create new hydrogen capacities at cross-border points. OGE's project "H2ercules Network West" connects the import route via Belgium with large industrial consumers in the Ruhr region and further south until Karlsruhe. Additionally, it connects to H2ercules North-West and H2ercules South for onward transport to other consumption clusters in the north and south of Germany. By exchanging with the adjacent TSOs and projects, interoperability is ensured. This linkage has a positive impact on system flexibility and security of supply as well. A non-discriminatory network is established which impacts competition between market participants.

The overall H2ercules establishes direct cross-border connections to five European countries (Norway, the Netherlands, Belgium, France and the Czech Republic). In addition, the import corridors also indirectly impact the countries not directly bordering with Germany but being part of the same supply corridors.

The H2ercules Network contributes to the connection of different value chains (production, storage, demand centres). The H2ercules pipeline network will enable the connection of domestic green hydrogen production and thus connects new sources to the existing pipeline network. The H2ercules network reaches demand centres in Germany with a total demand of about 90 TWh in 2030 - that is nearly 2/3 of Germany's hydrogen demand. Furthermore, several storage facilities in the north of Germany can be connected. The H2ercules network thus makes a significant contribution to European supply security and facilitates the development of a European Hydrogen Backbone.

The H2ercules project received several Letters of Support from political stakeholders, among others:

- Federal Ministry for Economic Affairs and Climate Action
- The Ministry for the Environment, Energy and Climate Protection of the State of Lower Saxony
- Ministry of Economic Affairs, Industry, Climate Action and Energy of the State of North Rhine-Westphalia

Fluxys Belgian Hydrogen Backbone

- Market Integration, inter alia through connecting existing or emerging hydrogen networks of Member States, or otherwise contributing to the emergence of an Union-wide network for the transport and storage of hydrogen, and ensuring interoperability of connected systems.

- Security of Supply and flexibility, inter alia through appropriate connections and facilitating secure and reliable system operation.

- Sustainability, including by reducing greenhouse gas emissions, by enhancing the deployment of renewable or low carbon hydrogen. The analysis of Entsog shows that the realization of the project, in addition to the reduction of the CO2 emissions, will help to mitigate the hydrogen demand curtailment. The eventual curtailment is decreased in some climatic stress cases, some disruption cases but even in the reference case (in 2030).

- Competition, inter alia by allowing access to multiple supply sources and network users on a transparent and non- discriminatory basis.

F. Useful links [Promoter]

Useful links:

H$_2$ercules (h2ercules.com)

Fluxys - Preparing to build the network: https://www.fluxys.com/en/about-us/energy-transition/hydrogen-carbon-infrastructure/hydrogen_preparing-to-build-the-network