End Users' Day

5 October 2022

fluxys

Agenda

09:00	Welcome coffee & registration
09:30	Context & impact on the energy landscape worldwide, in Europe & in Belgium » Current context
10:30	Coffee Break
11:00	The Federal Emergency plan
12:30	Demand side management
13:00	Walking lunch
14:00	H2 & CO2 developments
14:45	Works & maintenance on industrial sites : good practices
15:30	Q&A
16:00	Conclusion

Context & impact on the energy landscape worldwide, in Europe & in Belgium

Current context

Arno Büx

Chief Commercial Officer

Fluxys

Leentje Vanhamme

Director Commercial Regulated

Fluxys Belgium

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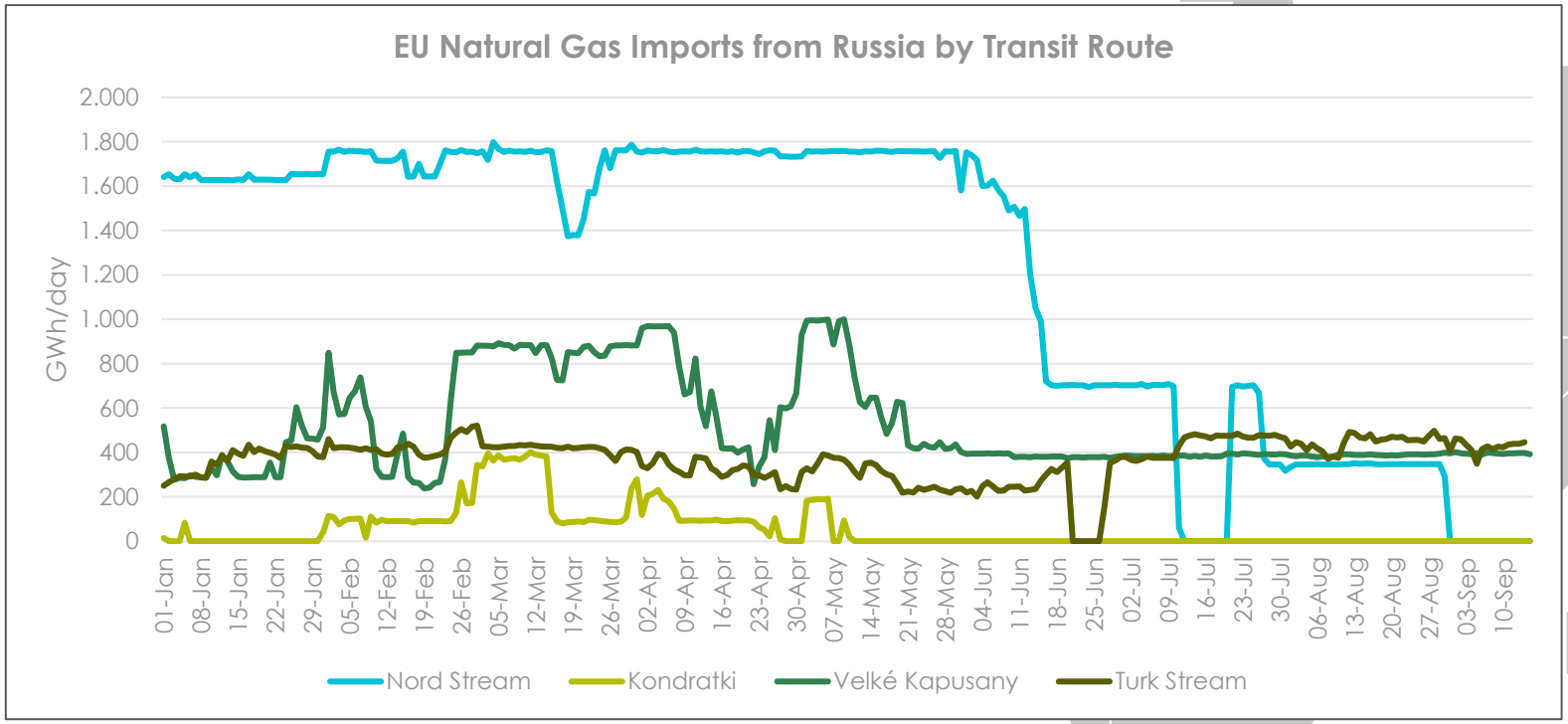
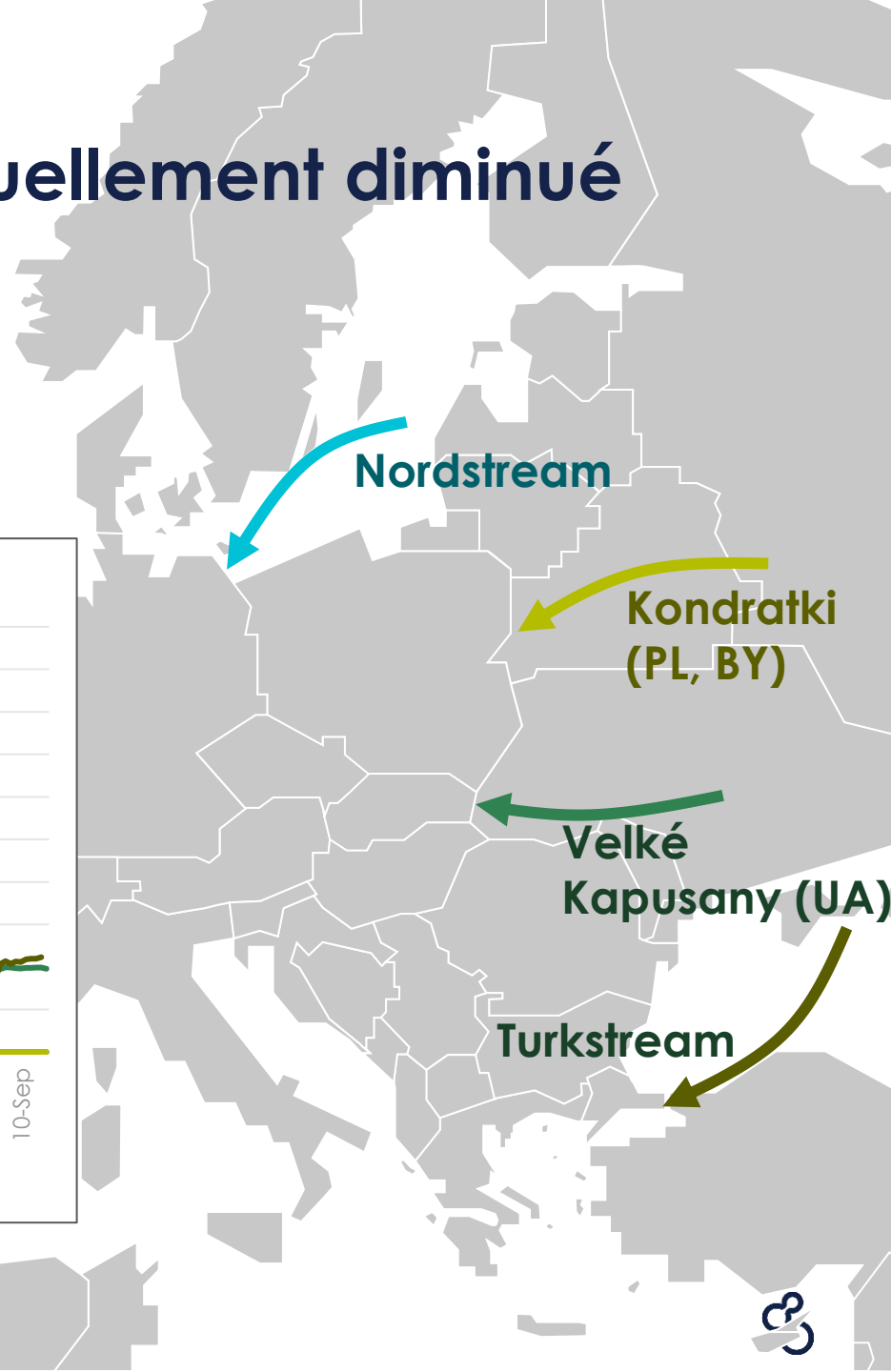
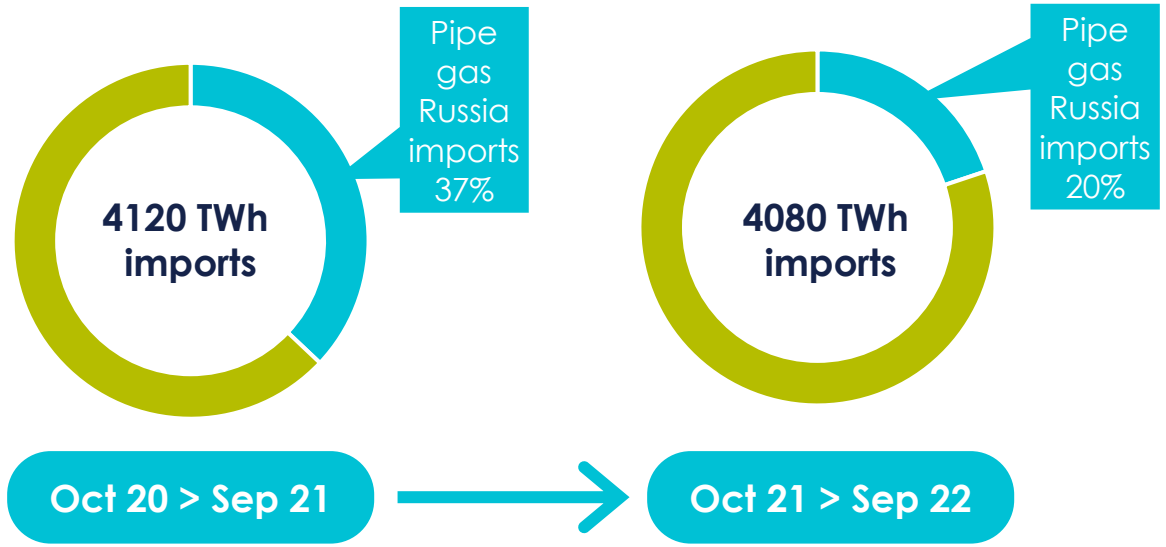
Les flux provenant de la Russie ont graduellement diminué

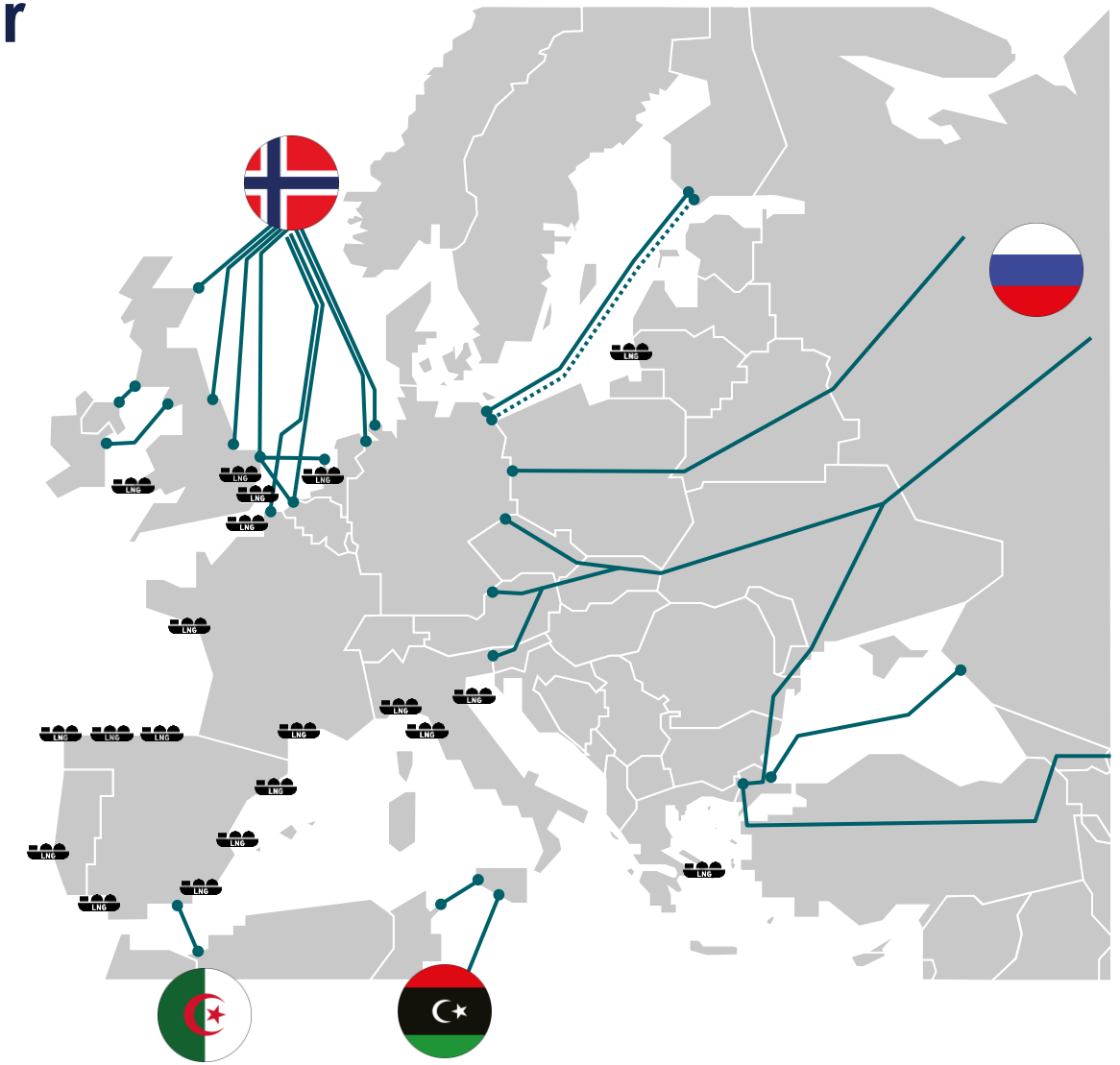
- Journalièrement, les flux direction EU sont suivis par Entso-G





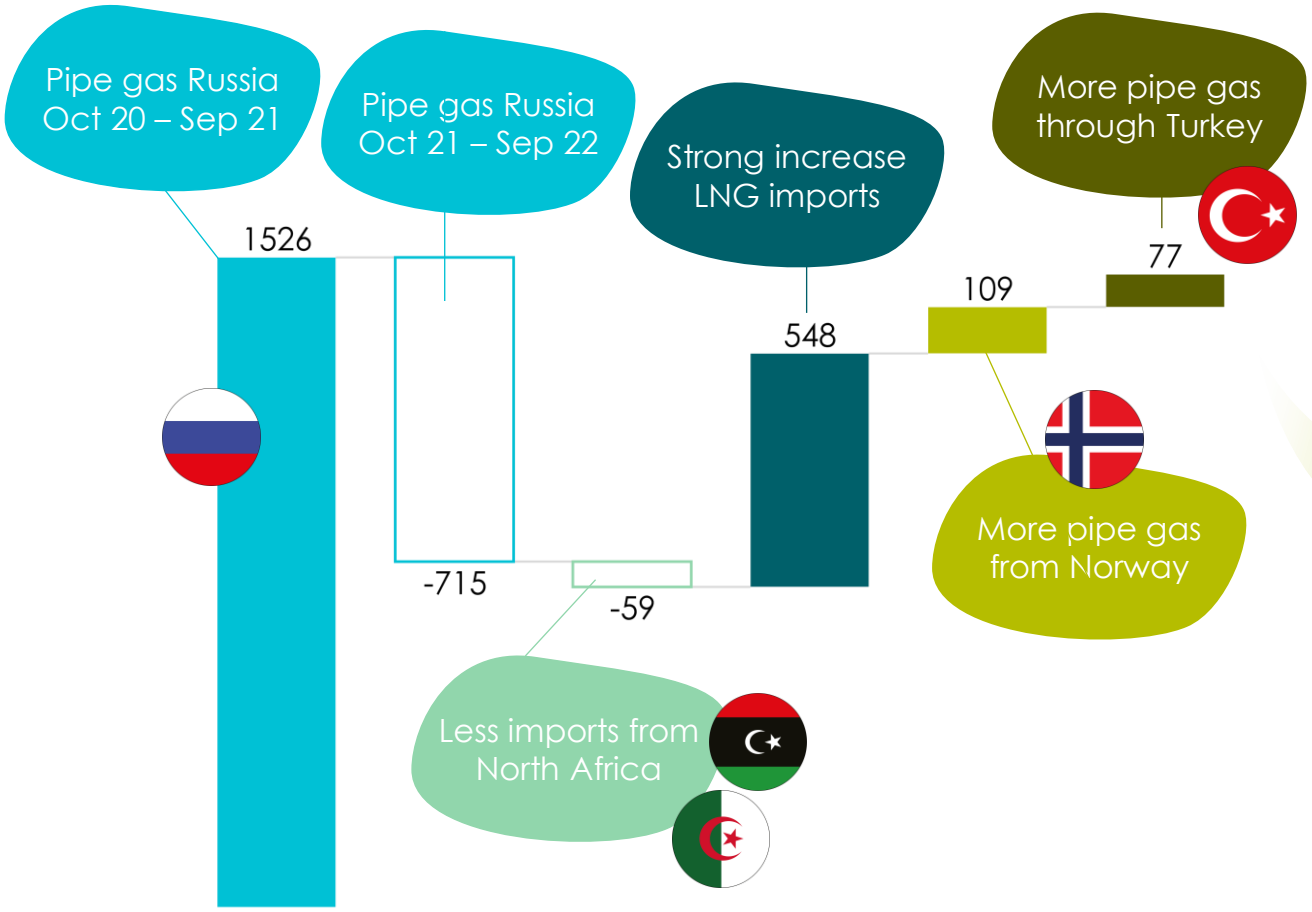
Pipe gas flows from Russia have nearly halved year-on-year

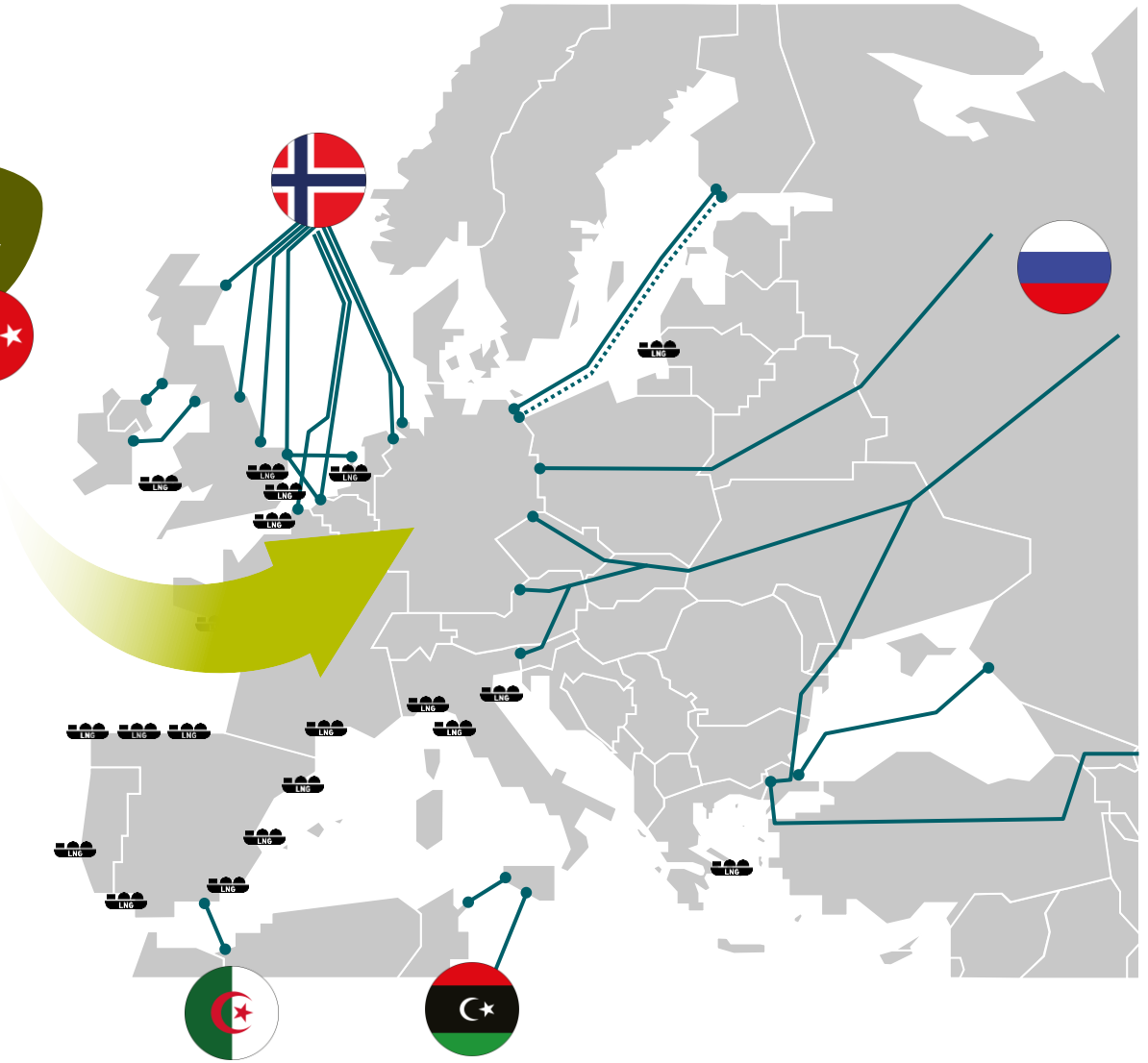




[Source: ENTSOG transparency platform – import quantities in TWh]

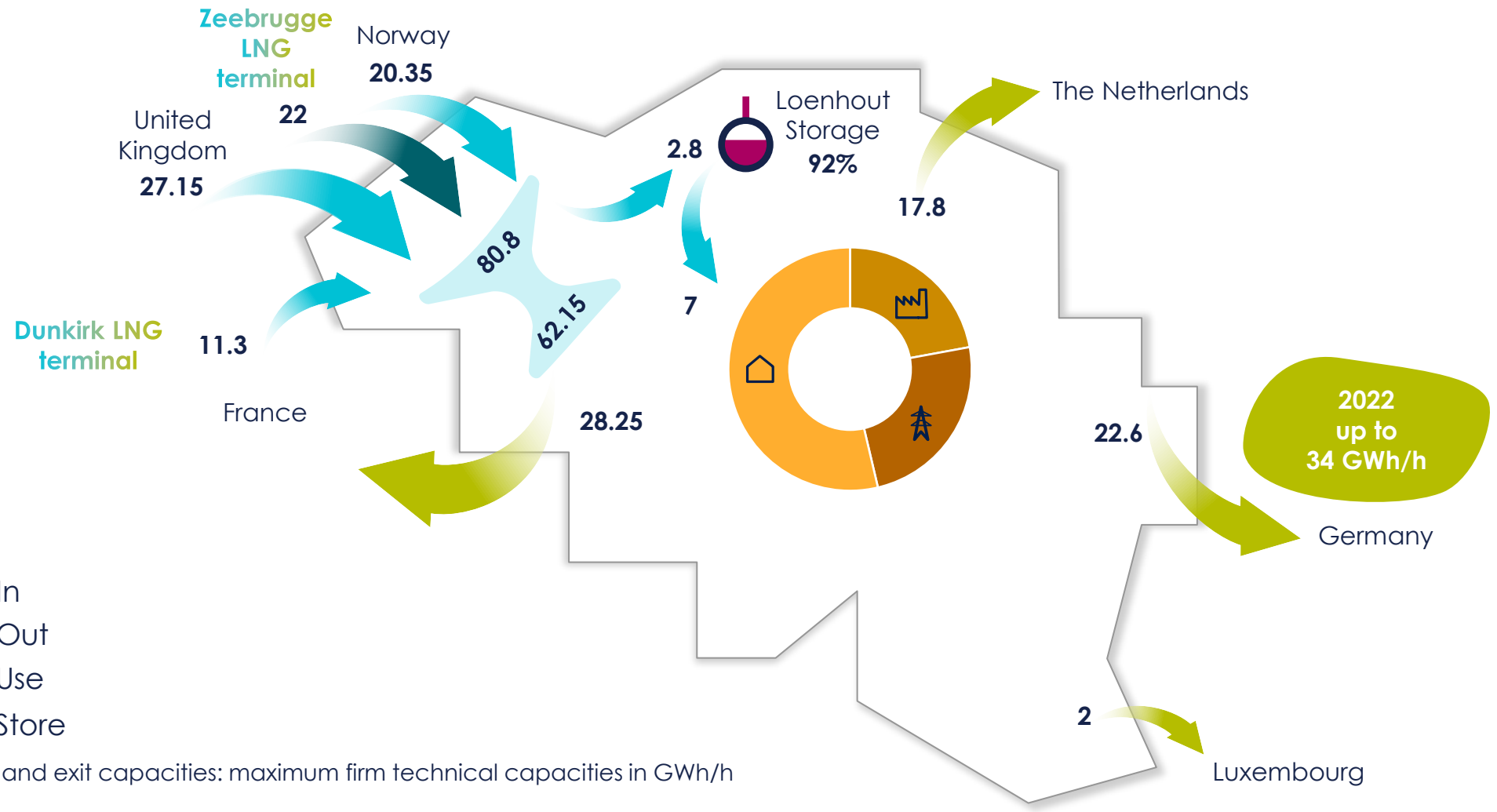
Filling the gap





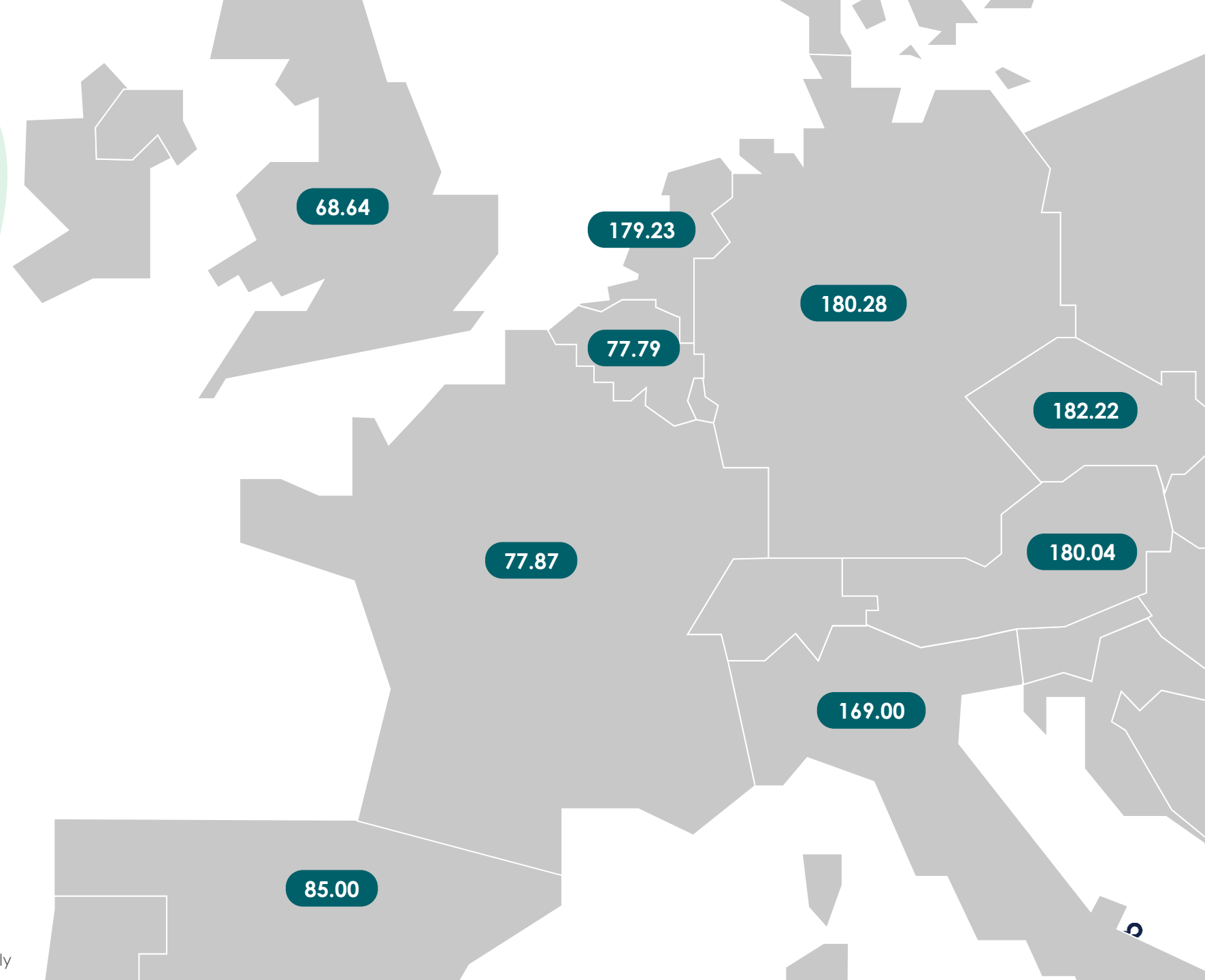
[Source: ENTSOG transparency platform – import quantities in TWh]

Fluxys infrastructure instrumental in transporting huge amounts of gas to Germany and the Netherlands



All entry and exit capacities: maximum firm technical capacities in GWh/h

New flow configurations: price differentials across markets indicate congestion

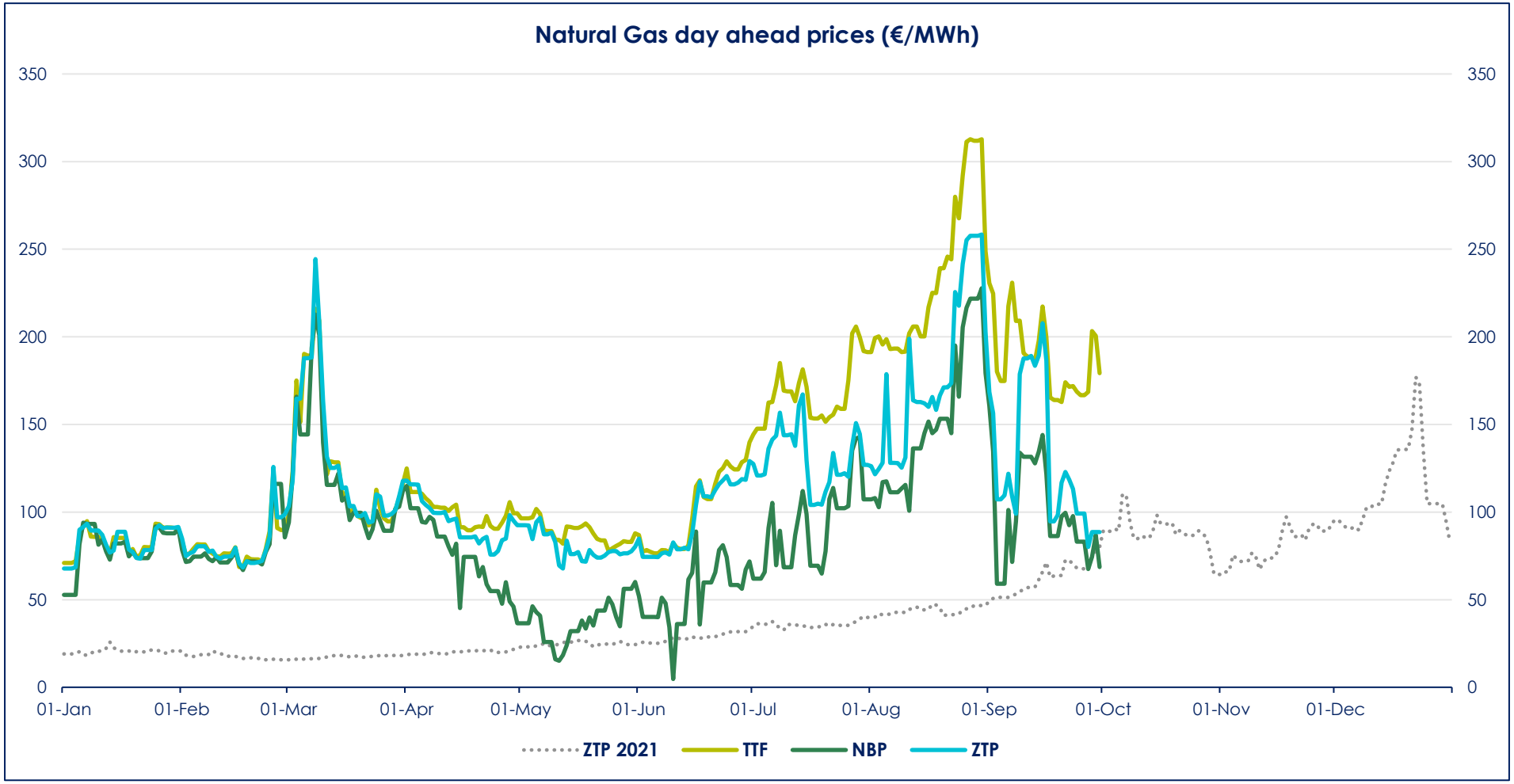


US
Henry Hub
24.02

Japan/Korea
LNG Marker
182.03

[Source: gCompass 2022 09 30 - €/MWh]

Natural gas price evolution



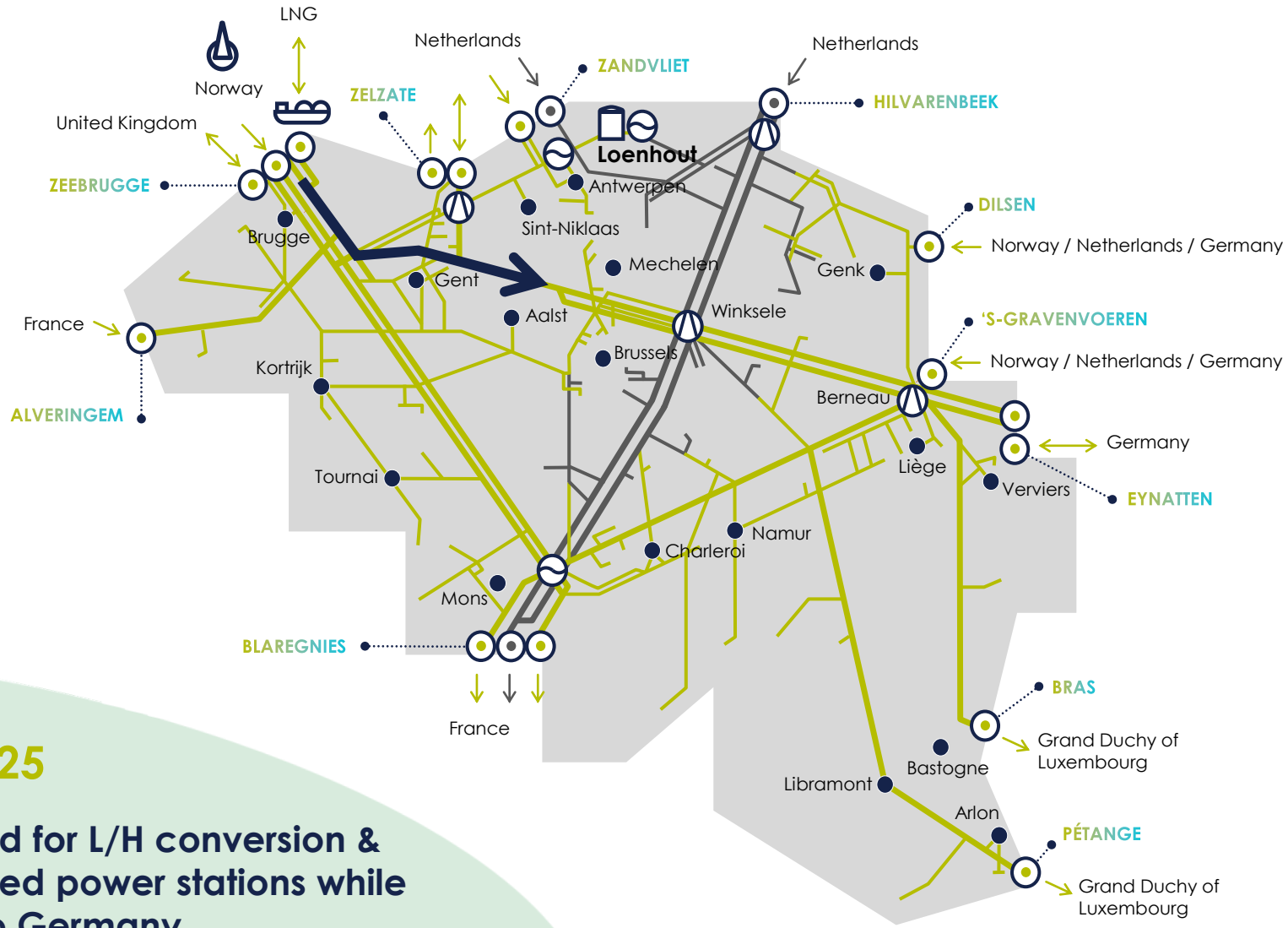
Zeebrugge – Opwijk project to increase capacity

End 2023: + > 10 GWh/h

One pipe,
Two purposes

CH_4 Today H_2 Tomorrow

2024: + 3 GWh/h at Loenhout storage facility



Horizon 2024-25

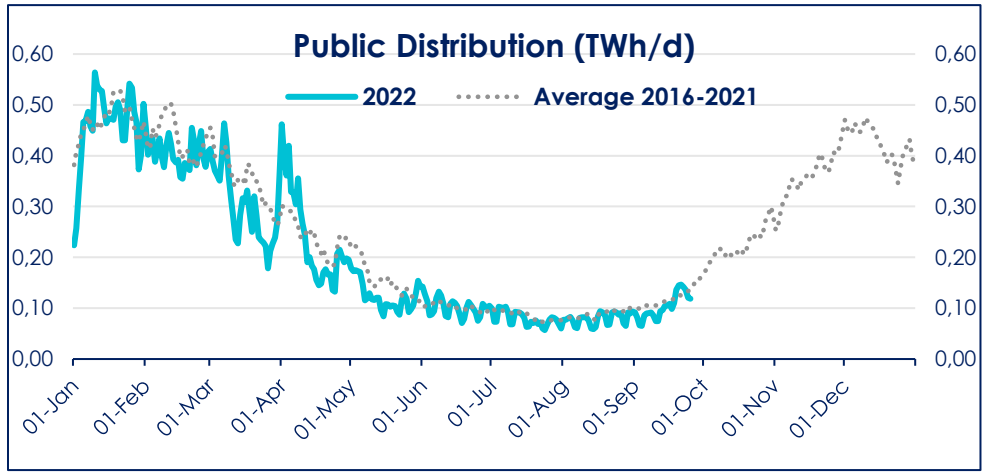
Capacity required for L/H conversion & additional gas-fired power stations while ensuring transit to Germany

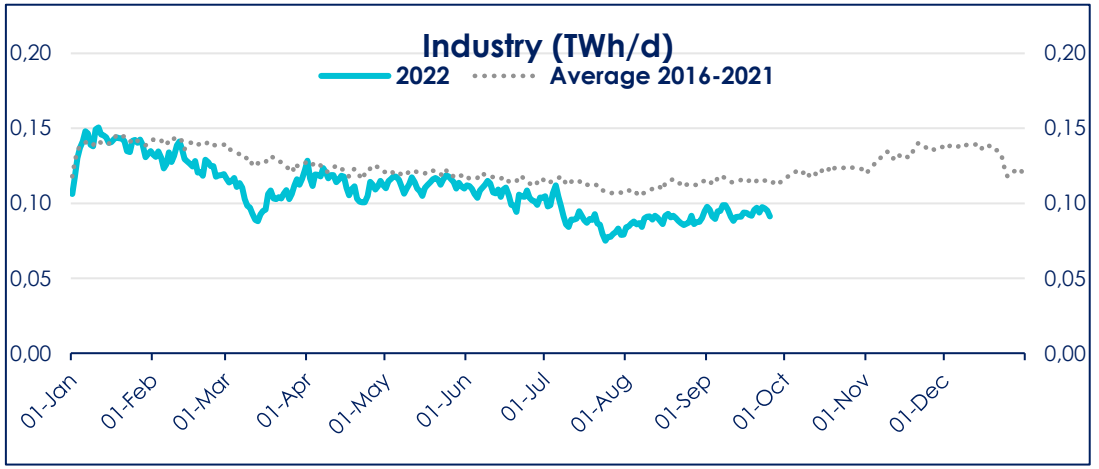
Zeebrugge LNG terminal: 3 additional open rack vaporisers under construction

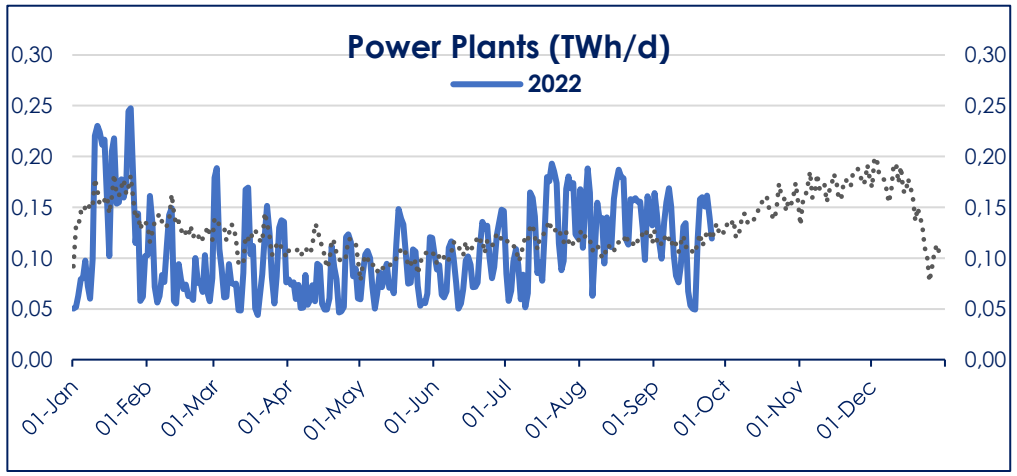
2024: + 10 GWh/h
send-out capacity

Using seawater as a heat source for regasifying LNG: substantial reduction of emissions

Demand evolution







Context & impact on the energy landscape worldwide, in Europe & in Belgium

The Federal Emergency plan

Benjamin Heylen

Frederik Vanhuysse

Federal Public Service Economy

Direction General Energy

fluxys

In short

Emergency plan by the Federal Public Service Economy – Direction General Energy

- Ir. Benjamin Heylen – Head of Department Molecules, Offshore & Permits
- Frederik Vanhuysse – Head of Cel Natural Gas

Emergency plan & voluntary EU reductions

Emergency plan	Voluntary EU reductions
In case of a (risk of) lack of molecules	Save gas to decrease prices & fill storage
Not applied today	Applied today
Measures taken on federal level	Measures mostly from regional levels

The legislative framework of the Security of Supply

- **<u>European level : Regulation (EC) N° 1938/2017</u>**

  - **Risk Assessment** : submitted by Belgium in February 2019 but to be adapted every 4 years → will be adapted for end 2022
  - **Preventive Action Plan:** submitted by Belgium in July 2019 but to be adapted every 4 years → will be adapted for end 2022/early 2023
  - **Emergency Plan: New version on 14/09/2022, with definition protected customers adaptation and inclusion of DSO customers for shedding plan (NB: solidarity agreements not concluded)**

- **<u>Belgian Level</u>**
  - **Gas Act**: PFS Economy as Competent Authority
  - **MD establishing the emergency plan for the security of natural gas supply (08/09/2022)**
  - **Code of Conduct** (Art. 88 to 94 for new version of 31/08/2022) : specify role of the TSO (no change in the new version)

- **<u>Fluxys Belgium level</u>**
  - **Plan for Incident Management (ACT - Attachment F)**: Need adaptation in line with new Emergency Plan (foreseen in future market consultation)
  - **Operational procedures** (internal emergency plan) : revision in progress

Emergency plan for Security of Supply

- Update of Emergency plan (MB 21 April 2022)
- Questionnaire for large consumers
- Questionnaire for critical entities
- Update of Emergency Plan (MB 14 September 2022)
  - Distribution
  - Definition of types of customers
  - Methodology for measure III-6

Questionnaire

Questionnaire

- Organized by the DG Energy, in collaboration with Fluxys & Synergrid (DSOs) & federations (FEB, Essencia)
- All end users on Transport & Distribution net with yearly consumption of over 10GWh (1200 companies)
- From 20th of June till 4th of July
- 500 responses
- Goal: getting feedback on methodology of flow(min) in emergency plan – not to provide individual answers for companies

Questionnaire

First conclusion:

Incertitude on flow(min) as defined in emergency plan of 21 April 2022

Flow min is	Number	Percentage
Too high	15	8%
Correct	35	20%
Too low	70	40%
Unknown answer	57	32%
Total	177	100%

* *Answers from transport grid only*

Questionnaire

Second conclusion:

High spread in time necessary to go to full curtailment

Period	Number	Percentage
1 hour or less	59	12%
4 hours or less	107	21%
8 hours or less	152	31%
24 hours or less	230	46%
48 hours or less	258	52%
More than 48 hours	86	17%
Unknown	154	31%
Total	498	100%

Questionnaire

Other conclusions

1. *Impact of curtailment on large variety of economical sectors*

2. *40% of companies can gradually diminish their gas consumption*

3. *95% of companies use gas for industrial processes – not for heating purposes*

4. *51% of companies indicate not to possess a business continuity plan or Internal Emergency Plan*

Emergency plan

Emergency Plan: Measure overview

Pre-Early Warning

1. Use operational means to increase linepack (TML-LHT)
2. Use of Swaps (L1/2) acc. To OBA with ATSO
3. Interrupting interruptible capacity on one or more borders for all shippers
4. Tighten Market Thresholds to limit the End of Day settlements
5. Reduce outgoing flows from individual shipper based on Balancing Agreement

Early-Warning

1. I-1: Daily monitoring
2. I-2: Maintenance work management
3. I-3: Ask Adjacent TSOs to temporarily exceed the OBA limits

Alert

1. II-1: Constraint on Entry or Exit Point
2. II-2: Use of operational stock dedicated to incident management
3. II-3: Proactive gas purchase on ZTP by Fluxys
4. II-4: Use of available capacities at the LNG terminal and storage installation above operational gas reserves dedicated to incident management

Emergency

- III-1: Call to reduce natural gas consumption
- III-2: Call on neighboring countries to voluntarily reduce natural gas imports
- III-3: Imbalance constraint on firm capacity on Exit interconnection points
- III-4: Constraint on firm capacity of quality conversion installation
- III-5: Ask European Commission to declare a regional emergency
- **III-6: Constraint on firm capacity to non-protected customers**
- III-7: Enforced withdrawal of gas in storage
- III-8 : Invoking mutual solidarity between EU Member States
- III-9: Administratively disconnect solidarity protected customers
- III-10: Technical disconnection of part of the main gas grid including export

Blue measures are to be undertaken by Competent Authority (= FPS)

Measure III-6 Constraint on firm capacity non-protected custormers

III-6 Main changes “Integration of distribution networks”

- Principle of equality, solidarity and efficiency
- The more "normal" customers apply the emergency measures, the less the effort will be for everyone
- Addition of distribution networks in the Gas Emergency Plan

Ultimate Goal: to protect households from a gas cut-off by maximising their energy supply

III-6 Mandatory demand reduction measure

Definition of category of customers

1. « Normal » customers (non protected at EU level)

2. Priority customers

3. Protected customers

* Critical gas-fired plants can be preserved (shed after protected customers)

Definition of different categories of customers
"Protected customers"

- **Objective: "To enable everyone to keep warm and eat".**
- Includes:
  - Residential customers
  - Health care services
  - Accommodation and/or meal preparation services, social assistance or an emergency service
  - Hotels, youth hostels, ... provided they are used for health care, social welfare/rescue services
  - District heating (if used for the above categories)
- Voluntary or mandatory reduction in extreme situations (III-9 & III-10)

Definition of different categories of customers

"Priority customers"

- **Objective: "To avoid aggravating the crisis"**
- Includes:
  - Gas-fired power plants necessary for balancing the electricity grid - defined by ELIA
    - » CCGT power plants
    - » CHP (list of system protection plan – only on transport grid)
  - Gas transport and distribution networks, including LNG terminal

Definition of different categories of customers

“Normal customers”

- **Objective: "Solidarity and responsibility, together in the crisis”**
- Includes:
  - Large, medium and small enterprises
  - Self-employed
  - Administrations (federal, regional, local, international)
  - Schools and universities
  - Cultural institutions
  - - ...
- Gradual reduction to "flow min" or total stop

Demand reduction at enterprise level
Updating the methodology (1/2)

- **Normal customers - 2 categories:**
  - Non protected Type 1: unprotected customers connected to the Fluxys grid or the DSO grid with a consumption > 10 GWh/year
  - Non protected Type 2: unprotected customers connected to the DSO grid with consumption < 10 GWh/year

- **Adaptation of the "Flow min" concept:**
  - Minimum hourly consumption necessary to avoid irreversible damage to the generating unit and equipment. Avoidance of irreversible economic losses not taken into account
  - Applicable to non protected Type 1
  - Value to be communicated by registered mail by the customer to Fluxys/DSO within 3 weeks with a copy to the FPS. If not communicated, default value = 0 kWh/h

Demand reduction at enterprise level
Updating the methodology (2/2)

- **Principles:**
  - Applicable to all non protected Type 1 and Type 2
  - Administrative curtailment
  - Order of priority of reduction request
    - » Level 1: Reduction of offtake of customers that have increased after the declaration of emergency to the offtake before emergency (30 days average)
    - » Level 2: reduction of offtake up to Flow min
    - » Level 3: Reduction of offtake to 0 kWh/h if necessary
  - For each level, the reduction request is distributed pro rata to all customers
- **Communication of the reduction request:**
  - Non protected Type 1: communication by grid operator
  - Non protected Type 2: collective communication

Measure III-8 Demand for solidarity

III-8 Invoking solidarity as Belgium

- Only possible when all non-protected customers have been curtailed
- Need for a solidarity agreement between Member States
- Two phases: market-based & non-market based
- Only possible to provide gas to (solidarity) protected customers

III-8 Invoking solidarity as Belgium

- Not yet operationalized
- Estimation of shortage for protected customers
- Call to the market by neighbouring MS (France, Luxembourg, Germany, Netherlands) – offers via European market platform
- Check for transport capacities on interconnection points

III-8 Invoking solidarity as Belgium

- Not yet operationalized
- Process market-based

1. Estimation of shortage for protected customers
2. Call to the market by neighbouring MS (France, Luxembourg, Germany, Netherlands) – offers via European market platform
3. Check for transport capacities on interconnection points
4. Gas trading between private partners

III-8 Invoking solidarity as Belgium

- Not yet operationalized
- Process market based

1. Estimation of shortage for protected customers
2. Call to the market by neighbouring MS (France, Luxembourg, Germany, Netherlands) – offers via European market platform
3. Check for transport capacities on interconnection points
4. Gas trading between private partners

III-8 Invoking solidarity as Belgium

- Process non-market based

1. Estimation of (remaining) shortage for protected customers
2. Neighbouring MS authorities make offer
   (gas price + compensation)
3. Check for transport capacities on interconnection points
4. If offer is accepted, trading between Member States

III-8 Providing solidarity as Belgium

- Not yet operationalized
- Obligation to make offer (gas price + compensation)
- If necessary, using III-6 measure to free up gas

EU Voluntary reduction

EU 2022/1369: coordinated measures to reduce gas demand

- Voluntary reduction of demand

- Union-alert
  - European Commission evaluates "substantial risk of serious lack of gas supply or extreme gas demand *or*
  - 5 MS declare alert of national emergency plan gas

- Union-alert makes voluntary reduction mandatory

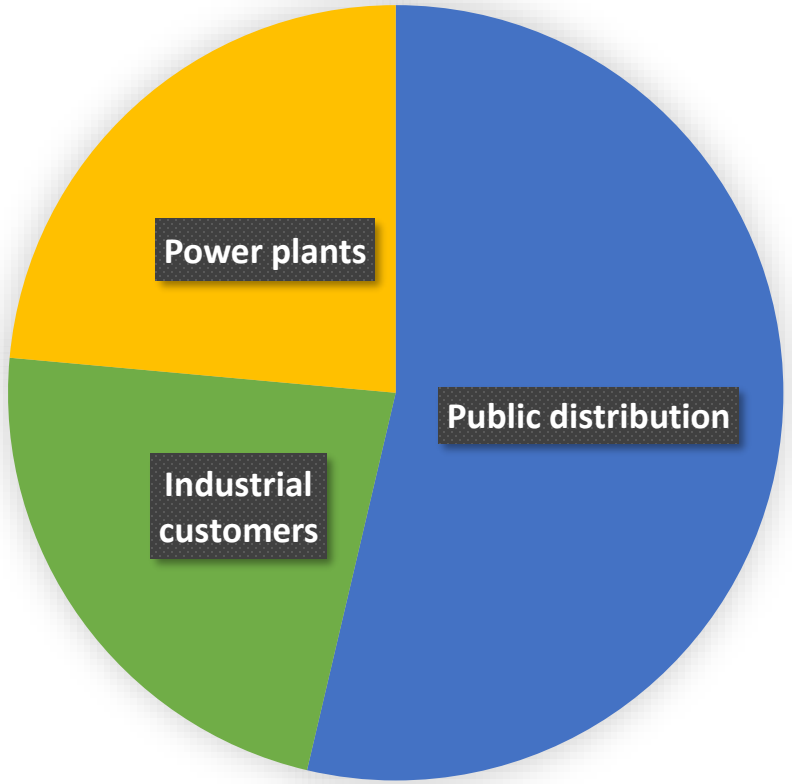
EU 2022/1369: coordinated measures to reduce gas demand

- Demand reduction
  - Period of reduction: 1/8/2022 – 31/3/2023
  - Target 15% less = fixed volume of gas for reference period (independent of temperature contions
  - Reference period: average of reduction period (2017-2022)
  - Exemptions: “excess” storage, gas as feedstock, possibly electricity crisis

Consumption reduction target for Belgium: basic data – validation pending

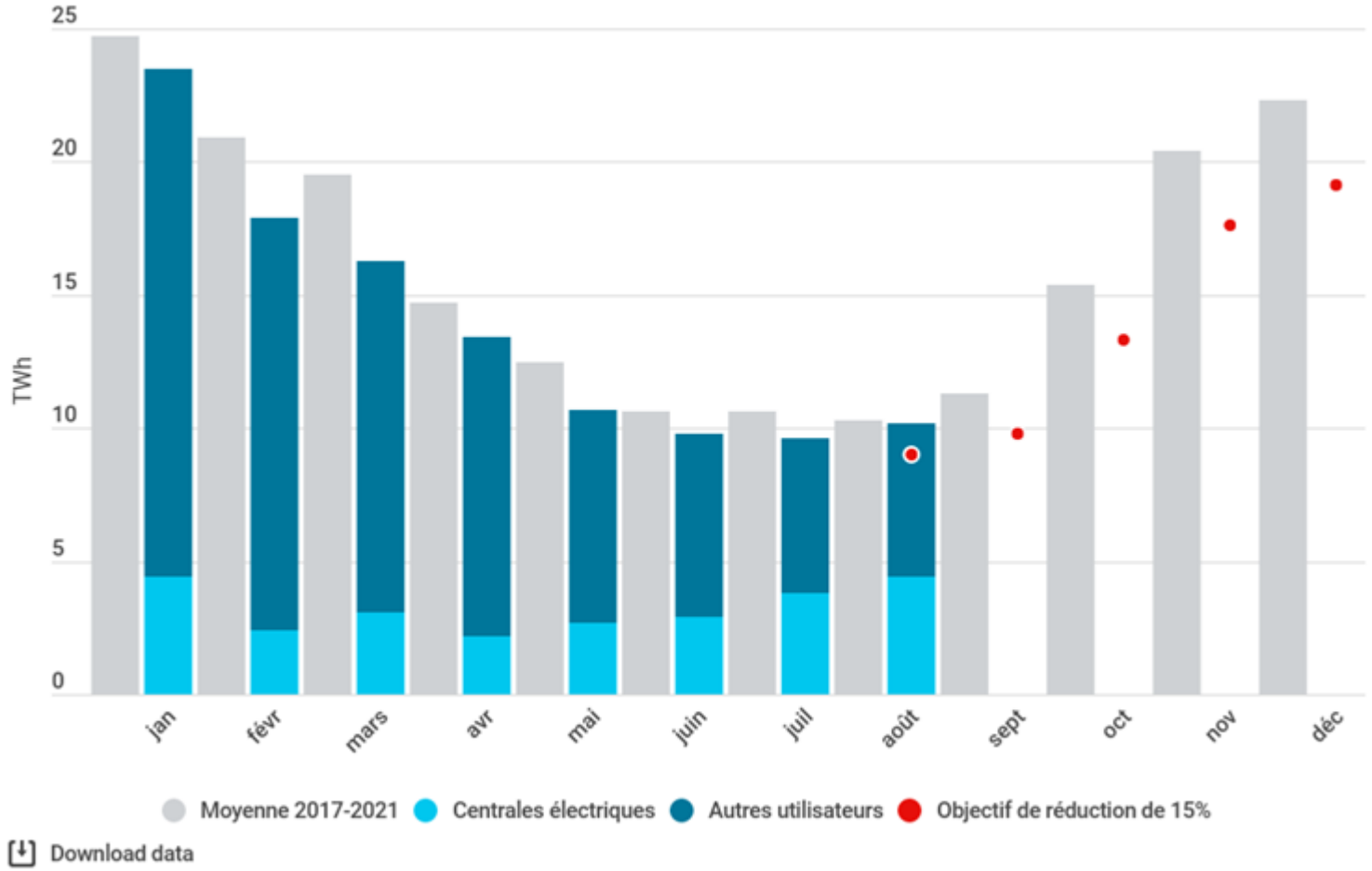
Avg. consumption for ref. period[1]:	~ 144 TWh
- Storage gain vs. target 1/8	~ 1 TWh
- Feedstock:	~ 9 TWh
Total (ref. gas consumption):	**~ 134 TWh**
Estimation of 15% :	**~ 20 TWh**
Target consumption for ref. period:	**~ 124 TWh**

Average consumption for reference period (Fluxys network)



[1] Ref period means the periods from 1 August to 31 March during the five consecutive years preceding the date of entry into force of the Regulation, starting with the period from 1 August 2017 to 31 March 2018

Consumption reduction target for Belgium: trajectory per month - validation pending



End-users' day: DSM & Solidarity Platform

Julien Cruz

Fluxys

Context

- During summer 2022, Fluxys and CREG received the official mandate from the government to develop a **DSM product/process** concept by September 15th
  - Priority to Belgian (and Lux) market

- 2 main axes **currently under investigation**:

  - **Facilitate market access** (ZTP/EEX) to industrial clients in a functioning market
  - **Development of a DSM & Solidarity platform** where industrial players can offer their gas to shippers delivering to protected customers or Balansys in the framework of the emergency plan (phase voluntary shedding)/ to a neighbouring county asking for solidarity

Key principles of DSM & Solidarity Platform Concepts

DG Energy/BE Government accountable

Industrial Clients in the driving seat, offering their gas on a voluntary basis to avoid / delay potential mandatory shedding

Fluxys will **facilitate** the operational aspects

No financial transactions/flows managed by Fluxys (molecules)

End-users could offer their gas on a voluntary basis in 3 cases

When	Any time	BE Competent Authorities decision	BE Competent Authorities decision
How	3 options	Via DSM & solidarity platform (OTC)	Via DSM & solidarity platform (OTC)
Product	EEX products	Day Ahead	Day Ahead
Price	ZTP market price	OTC price	OTC price
Buyer	Any market participants	Neighbouring countries	Shippers of BE protected clients
Fluxys	Facilitating (nominations, …)	Facilitating (nominations, …)	Facilitating (nominations, …)

Our purpose movie

fluxys

Energy transition

H2 &CO2 developments

Cedric Van Hoonacker

Key Account Manager

Fluxys

European Green Deal confirms necessity for gas infrastructure

Green Deal

European Commission makes switch to integrated energy system view: gas and gas infrastructure have a key role in the energy transition and the future energy system

Maximum energy efficiency →

Further upscaling green electricity generation →

Rapid expansion and upscaling of the hydrogen economy: production and transmission infrastructure →

Tapping into potential of biomethane and biofuels →

Carbon capture and utilisation/storage

Energy mix 2050

Energy system with:
- Hydrogen
- Biomethane
- Biofuels
- 50% electricity

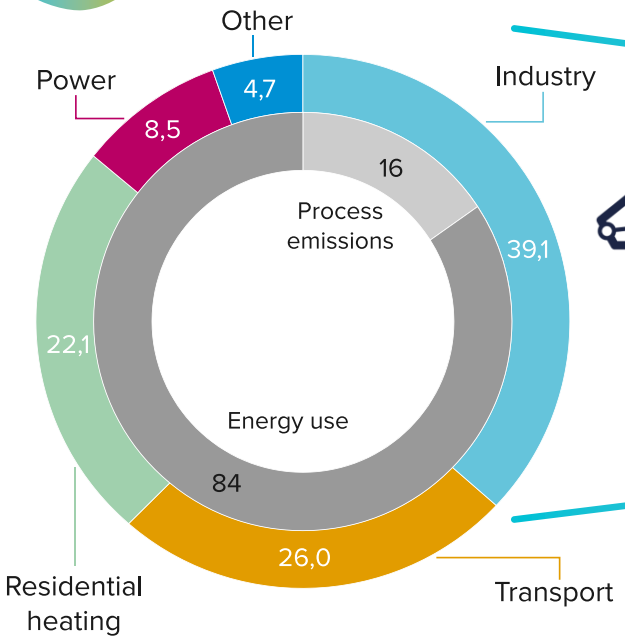
→ Carbon neutral
→ Security of supply
→ Affordable

→ Repurpose existing gas infrastructure and invest in new infrastructure to accommodate the new carriers

With our infrastructure we can contribute to the decarbonisation

Today

CO_2 emissions: 100 million tonnes/year (2018)



Carbon-neutral energy carriers progressively replace natural gas in our infrastructure

CO_2 transport and storage for hard-to-abate industries

2050

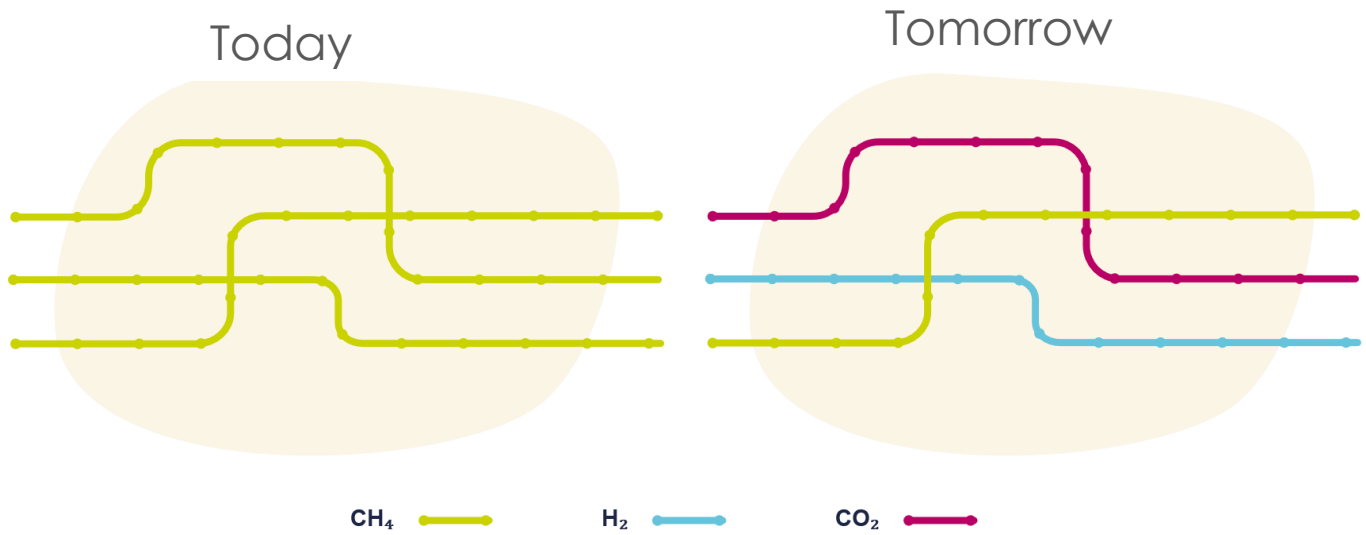
0 net CO_2

Our growth strategy

Be the transporter of the future energy carriers

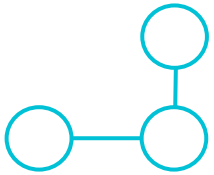
We support biomethane initiatives, we explore new technologies and we invest in infrastructure to transport hydrogen, CO_2 and other molecules for a carbon neutral future

Developing the future network

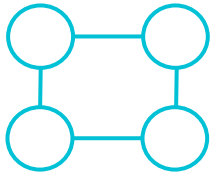


Natural gas – Biogas – e-methane

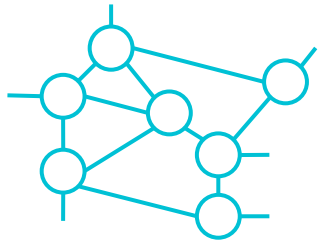
Develop local clusters



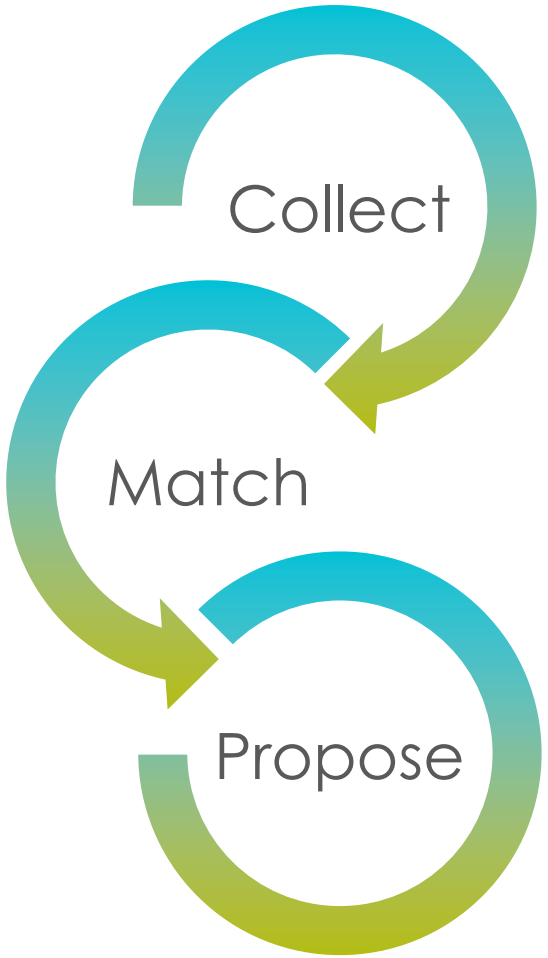
Connect the clusters



Mature backbone



Evolving from idea to offering specific infrastructure in less than 1 year



Info session 01/2021

Request for information (RFI)

Collect & aggregate

Feedback to Market

Unify Supply & Demand

Info Memo & Proposal

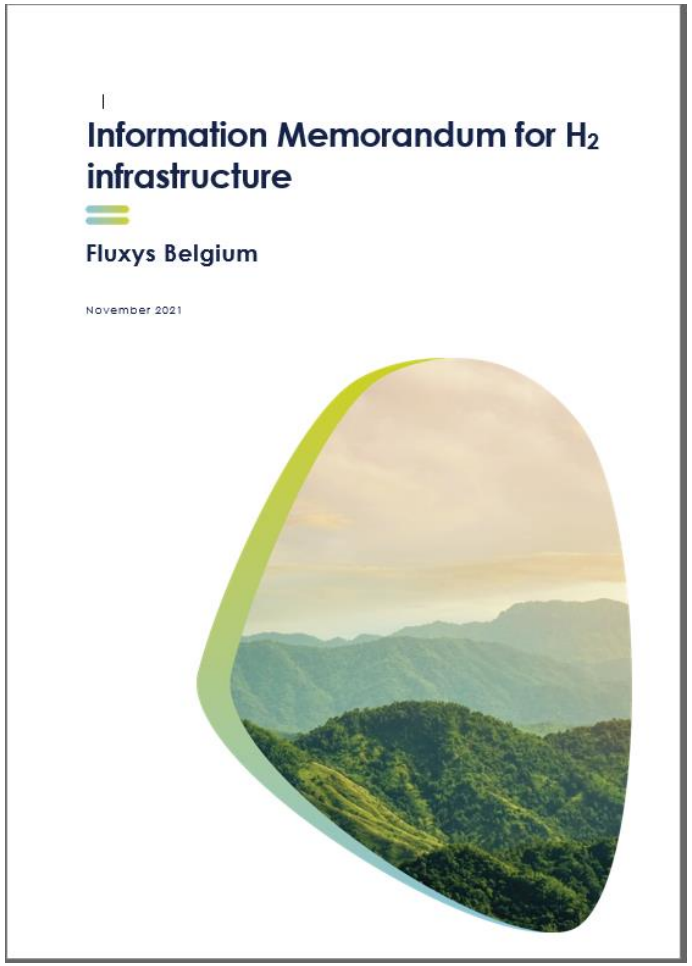
Expression of Interest

Bilateral & Group Iterations

Binding Commitment

We are here

Information Memorandum H_2: outline key principles for building together a hydrogen network



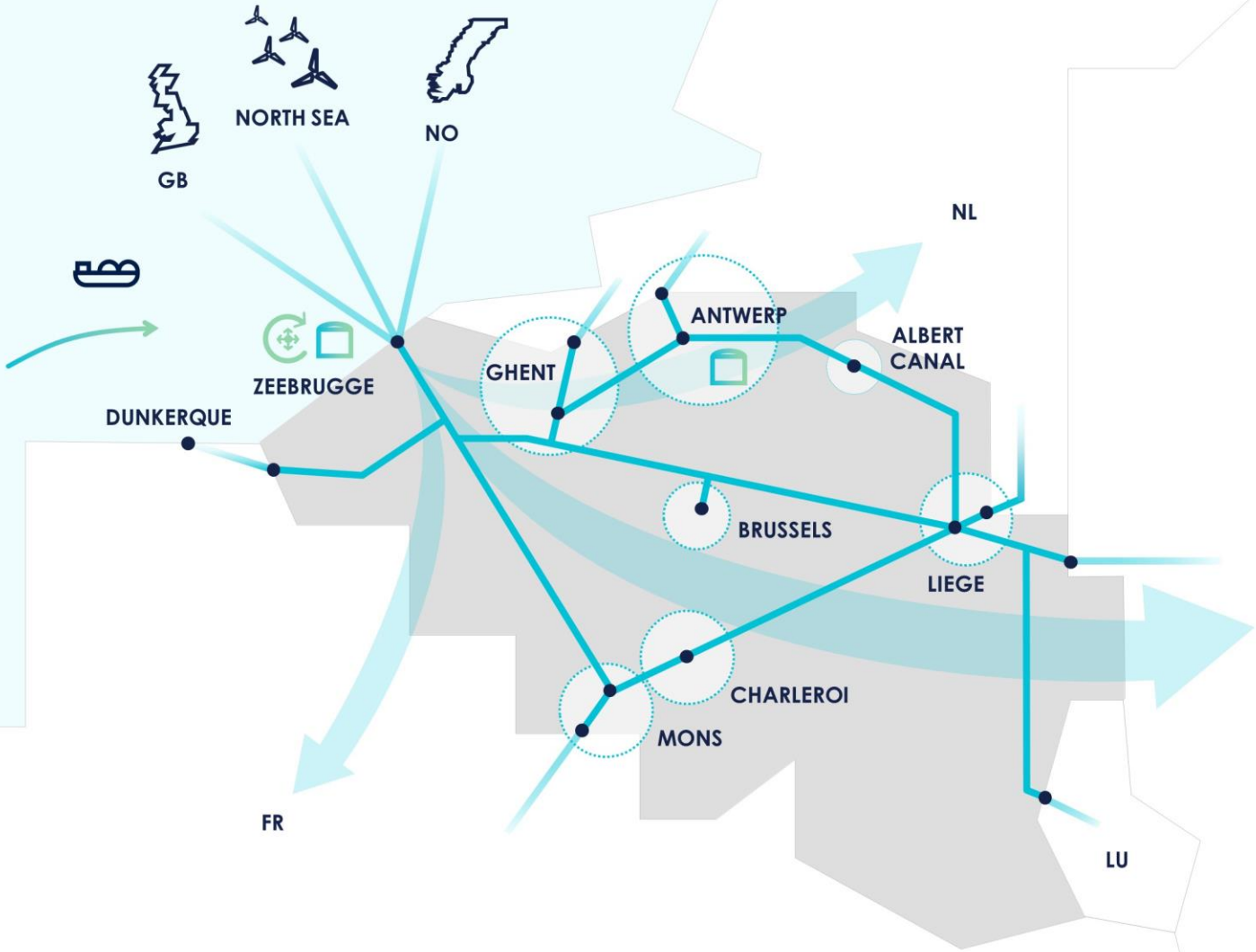
Commercial principles:

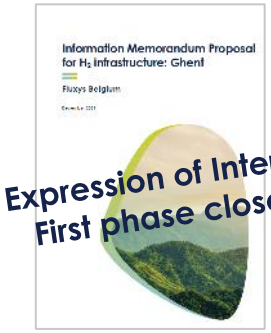
- **Unbundling**
  Between transmission services and marketing of the commodity
- **Non-discriminatory open access**
  To ensure a level playing field for participation in the emerging H_2 market
- **Cost-effectiveness**
  Pursued to maximum extent based on Fluxys' expertise and with optimal reuse of existing natural gas network

Open Season process:

- Have infrastructure **operational by 2026**
- Launch the **feasibility study**

Fluxys Hydrogen network





Expression of Interest
First phase closed

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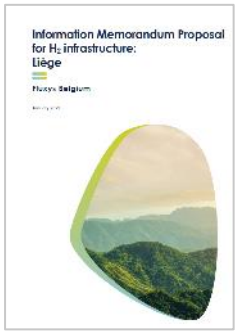

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Expression of Interest
First phase closed

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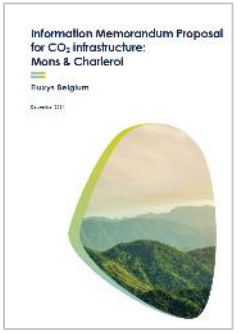
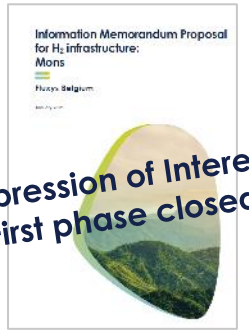


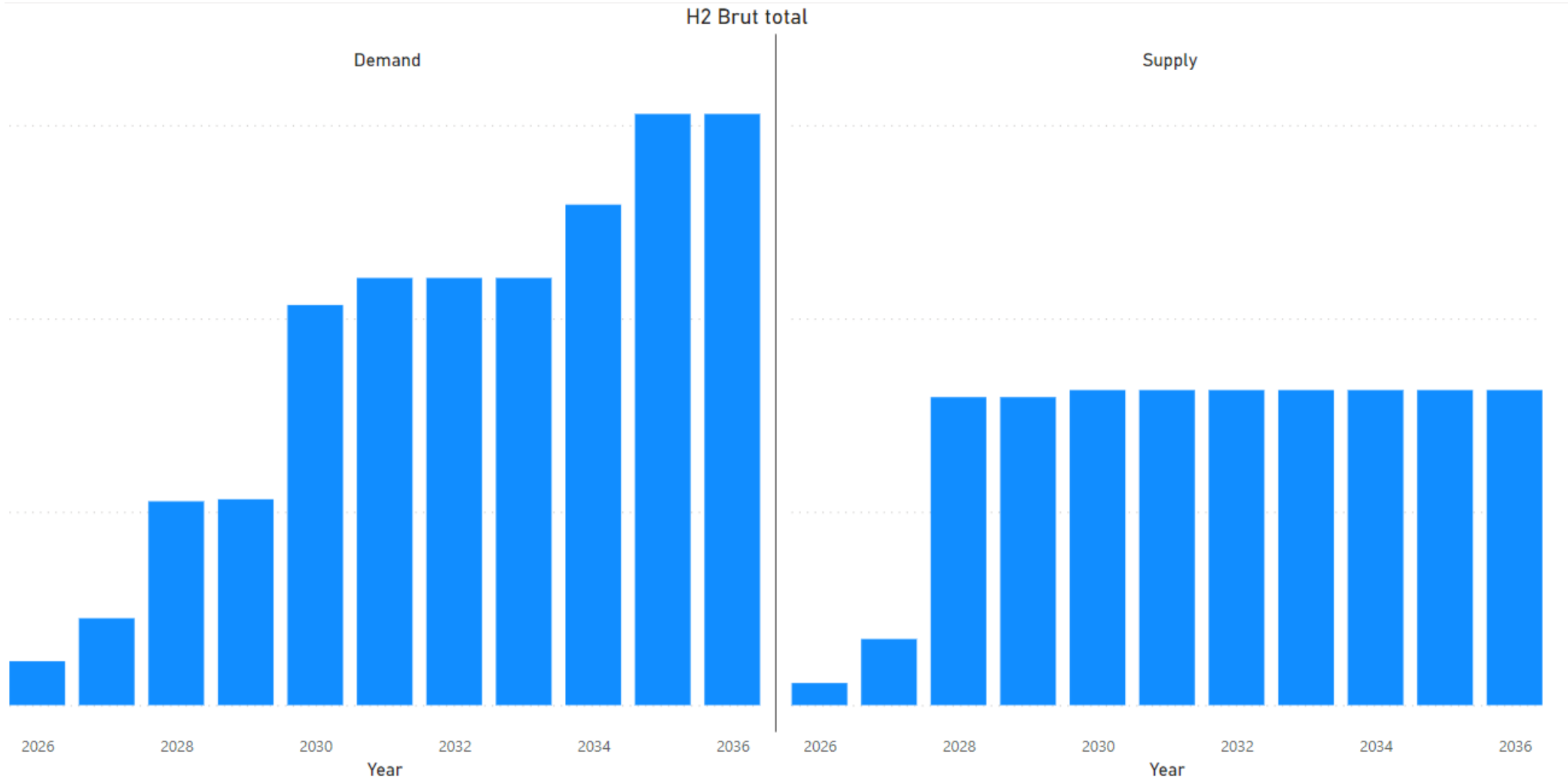
CHARLEROI



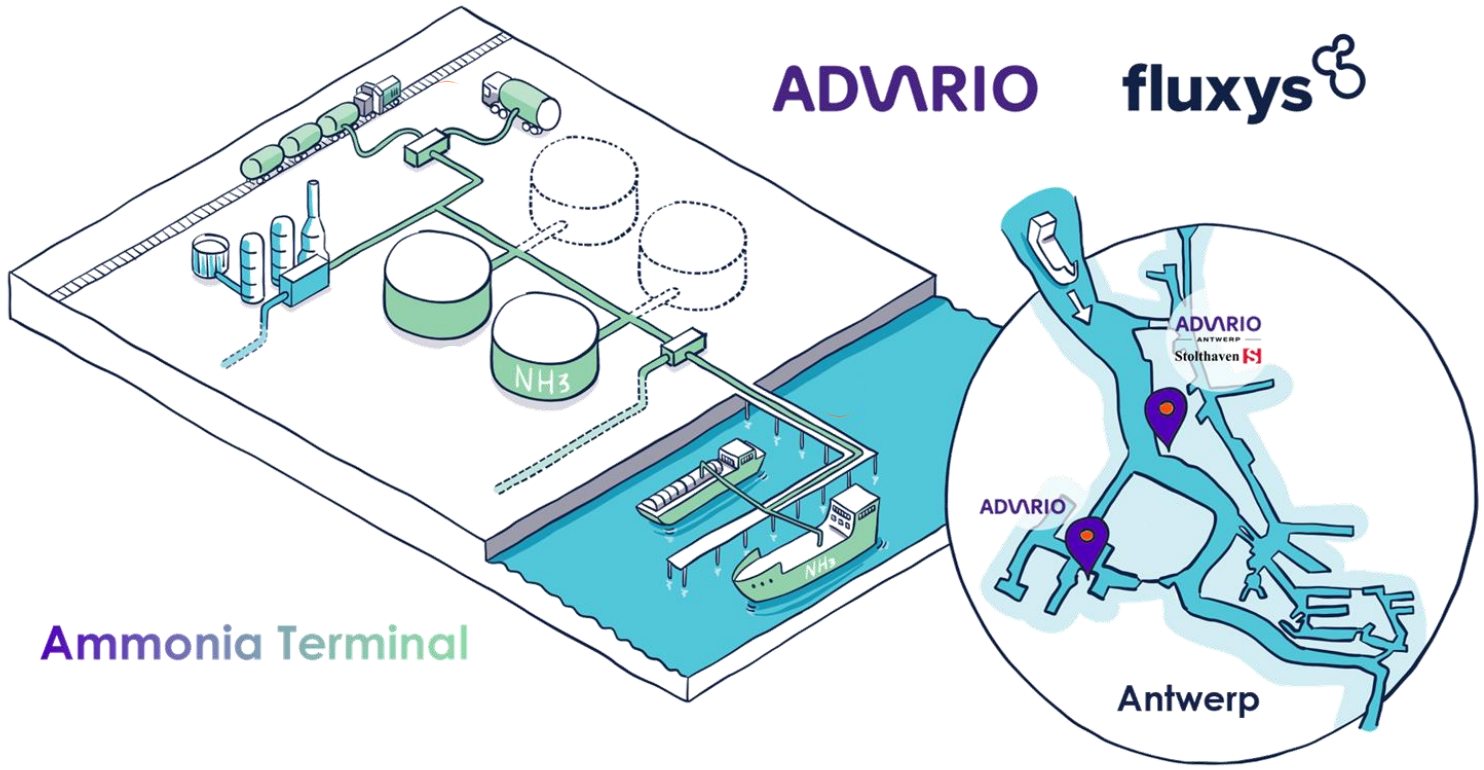
Expression of Interest
First phase closed

MONS

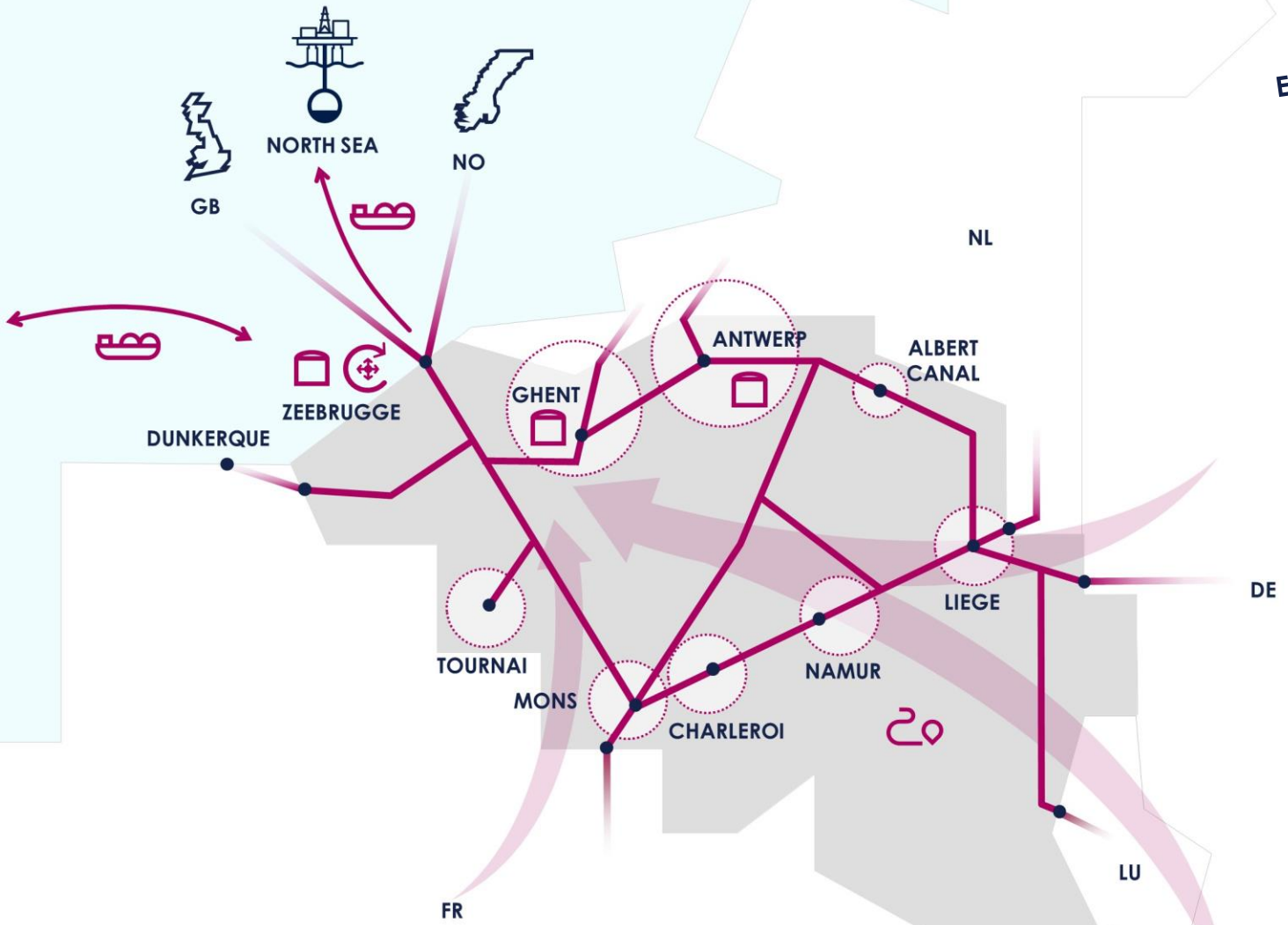
Signed Expression of Interests – H2



Storage and multimodal send-out solutions for ammonia & hydrogen



Fluxys CO_2 network



Expression of Interest
First phase closed

ANTWERP

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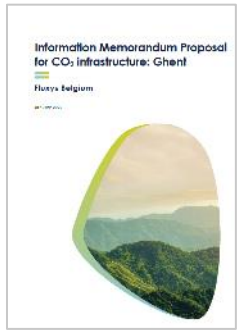
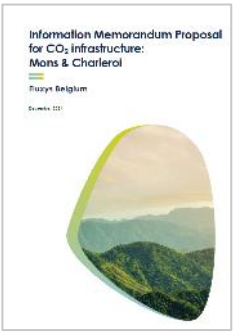
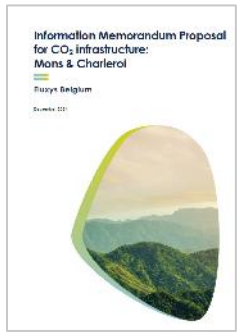


GHENT



CHARLEROI



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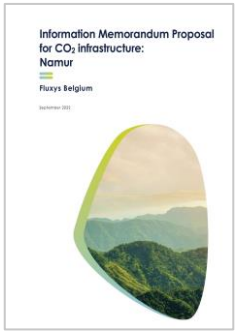
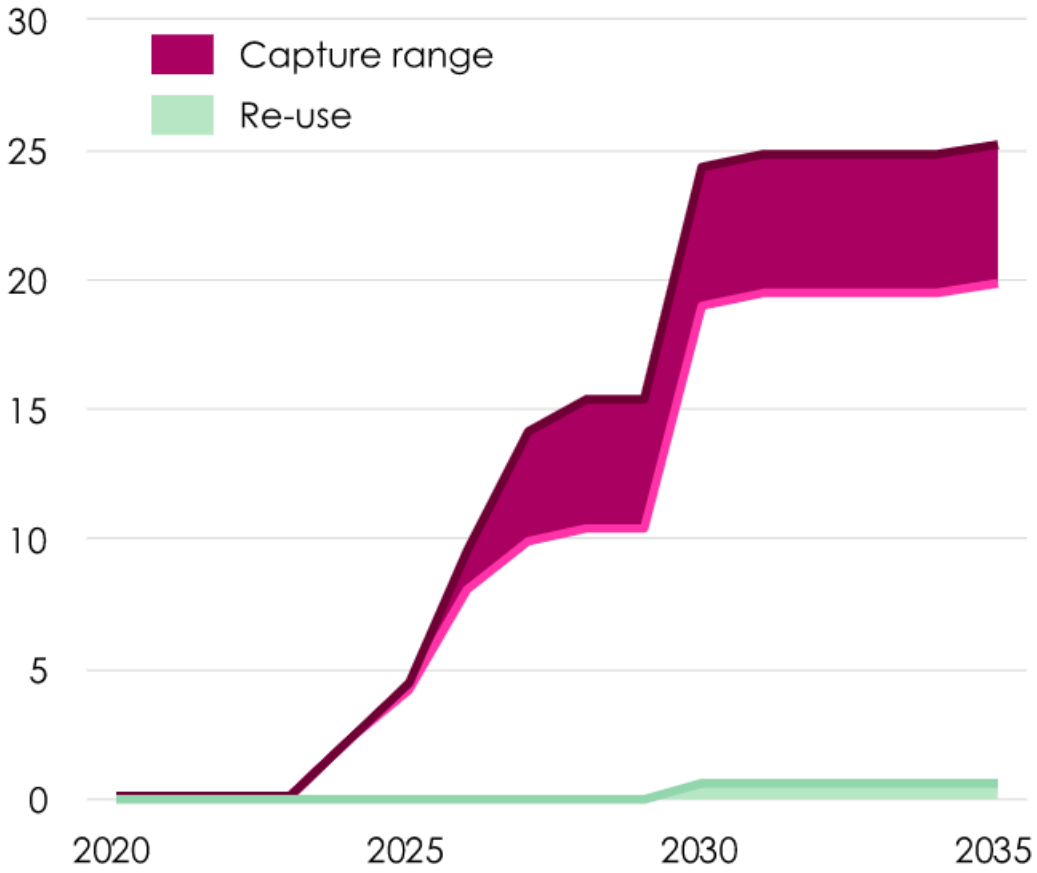


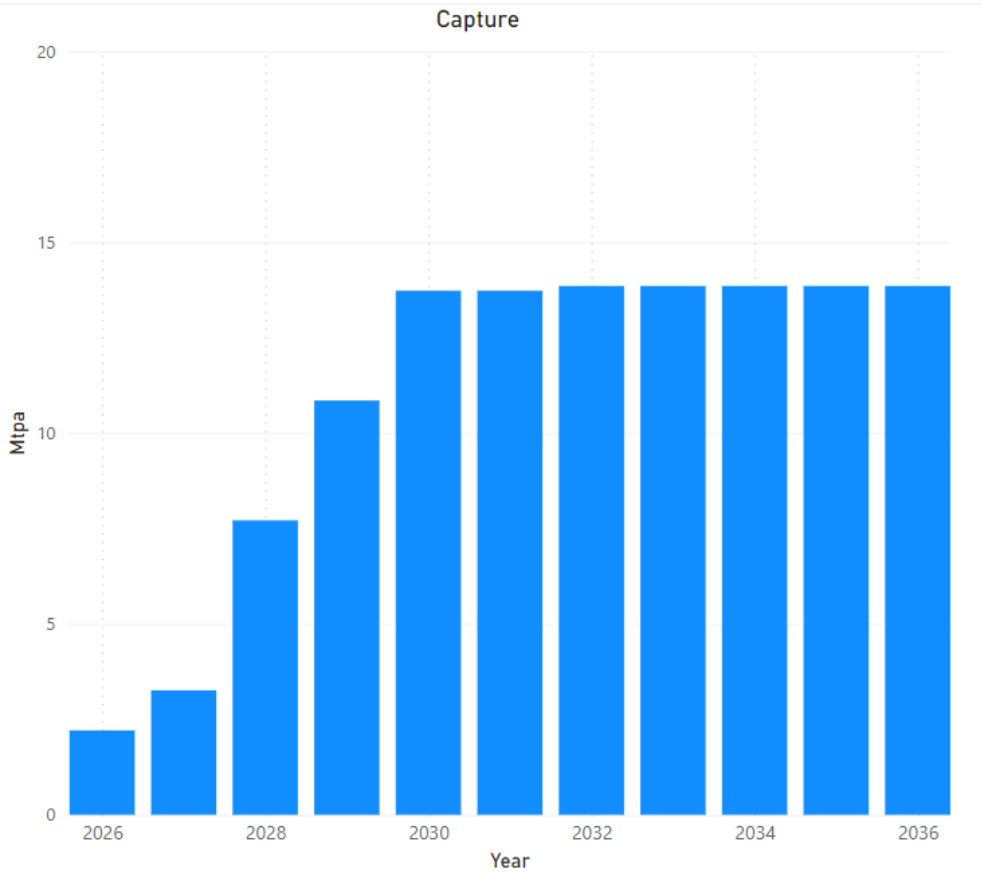
NAMUR

New

Signed Expression of Interests – CO2



Results of the Request for Information



Signed Expression of Interests

Multiple CO2 exit options for ArcelorMittal Ghent & Dunkirk

CO_2 pipe transport

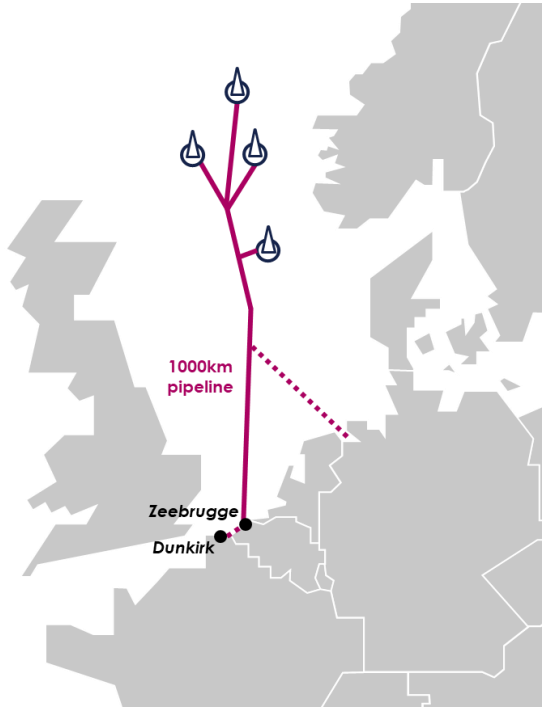
Zeebrugge Hub
CO2 offshore pipeline
20-40 Mtpa
FID: 2025 / COD: 2028

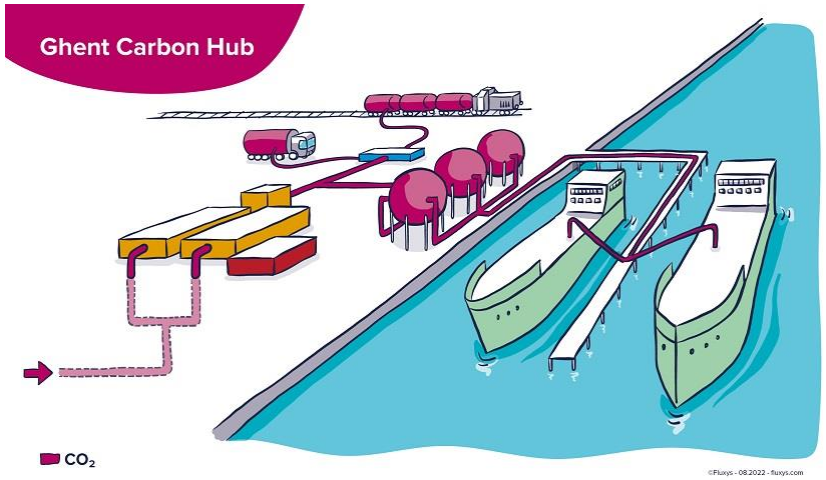
CO_2 export terminal

Ghent Carbon Hub
Marine Terminal
2-6 Mtpa
FID: 2025 / COD: 2027

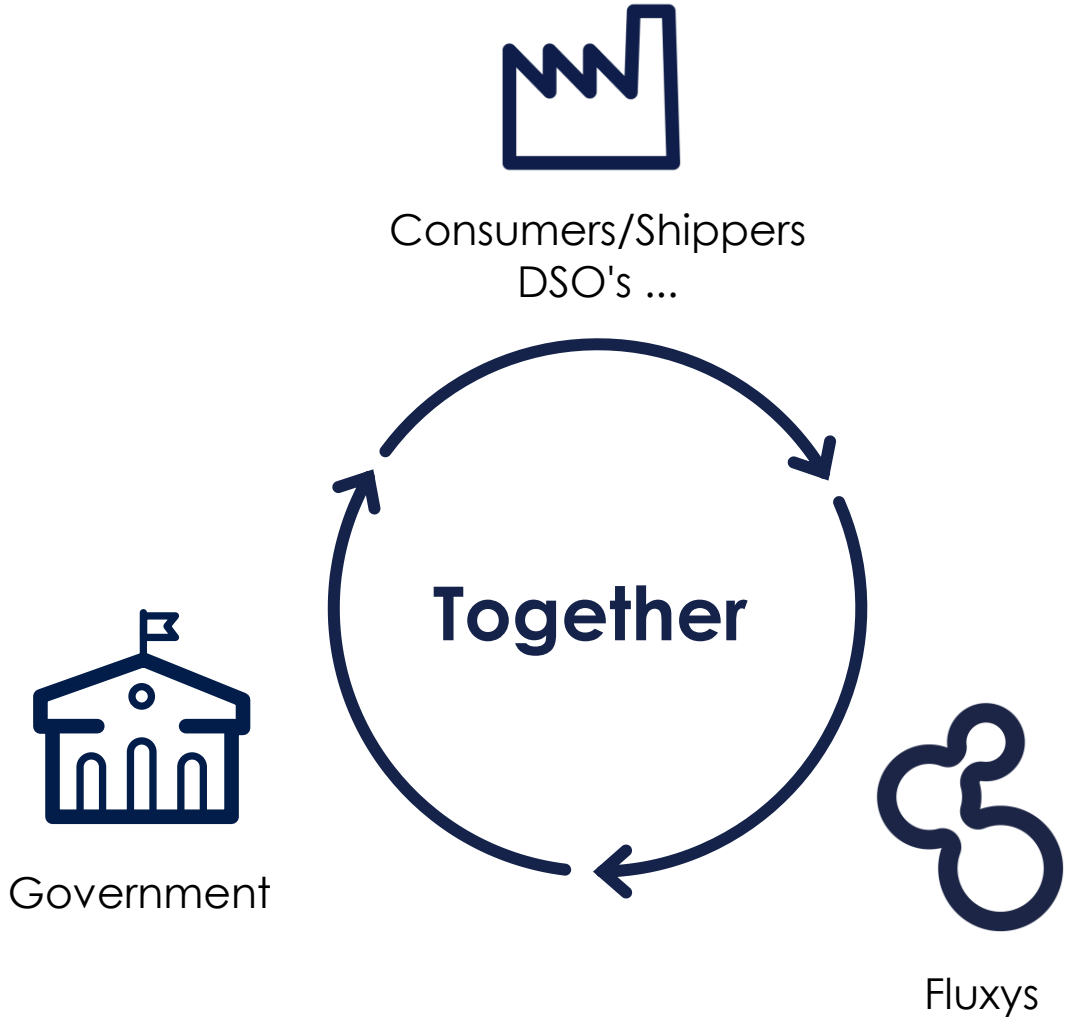
CO_2 export terminal

Antwerp@C
Marine Terminal
2,5 – 10 Mtpa
FID: 2023 / COD: 2025



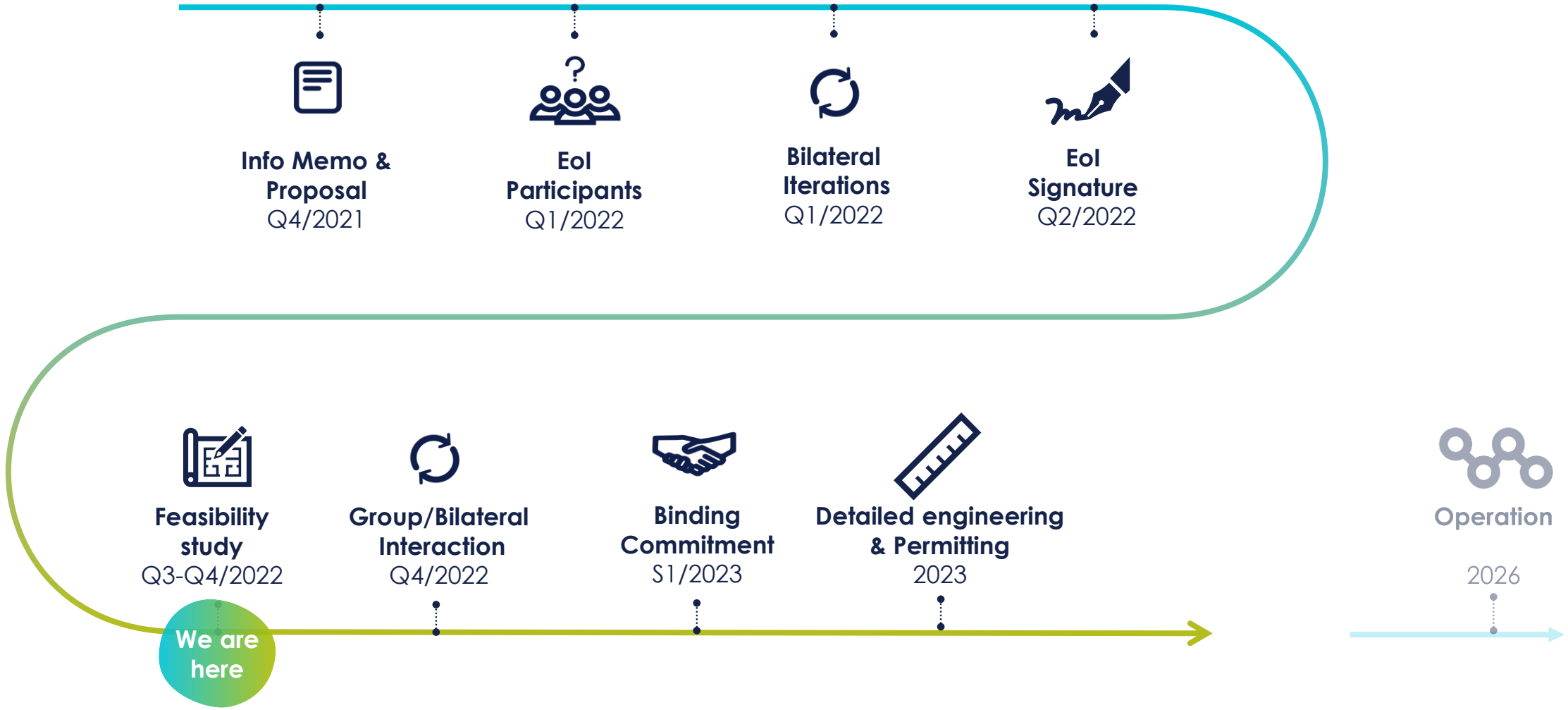


shaping together a bright energy future



Annexes

Indicative timeline of the first infrastructure Proposals



Expression of Interest - Purpose

Agreement between customer and Fluxys for a feasibility study of the future open-access grid

Study with following deliverables

- Confirmation of technical feasibility
- Confirmation of timing for completion
- Applicable tariff for transmission services
- Technical specifications for the connections

Limited commitment

- Engagement to develop together
- Non-binding for capacity transmission
- No commitment for detailed engineering phase

Cost coverage

Customer participation in study costs

Cost distribution

- Fluxys shall own the rights to the study but applies a fair cost sharing for the participants

Carry-over of costs

- Customer participation is not due if customer proceeds to next project phase (detailed engineering, FID, …). Study cost will then be integrated within future tariffs for transmission
- *"No payment with project realization"*

Good Practices

Natural gas pipelines on your premises: good practices to help prevent damage during excavation works

Koen De Vil

Third Party Works Manager

Fluxys

5 good practices to help prevent damage during excavation works

→ Outline the framework for the rules to be applied

→ No concrete guidelines: as an end user, you are familiar with your own organisation and procedures

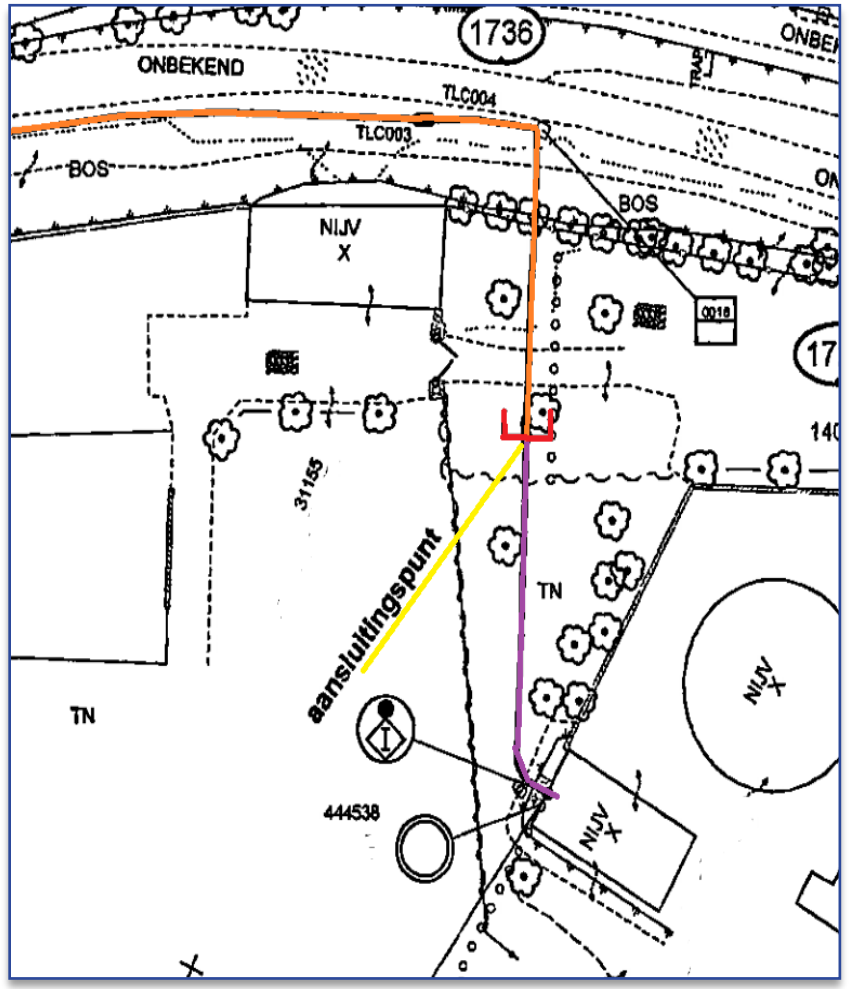
→ Reference framework for risk management

1. Knowledge and depiction of the **limit of responsibility**
2. Content of the **plan information** and importance of **signage**
3. **Obligation to report** works to be carried out & **compulsory registration** as a cable and pipeline operator
4. Preparing the work (**detecting** cables and pipelines)
5. Carrying out earthworks (**protecting** cables and pipelines)

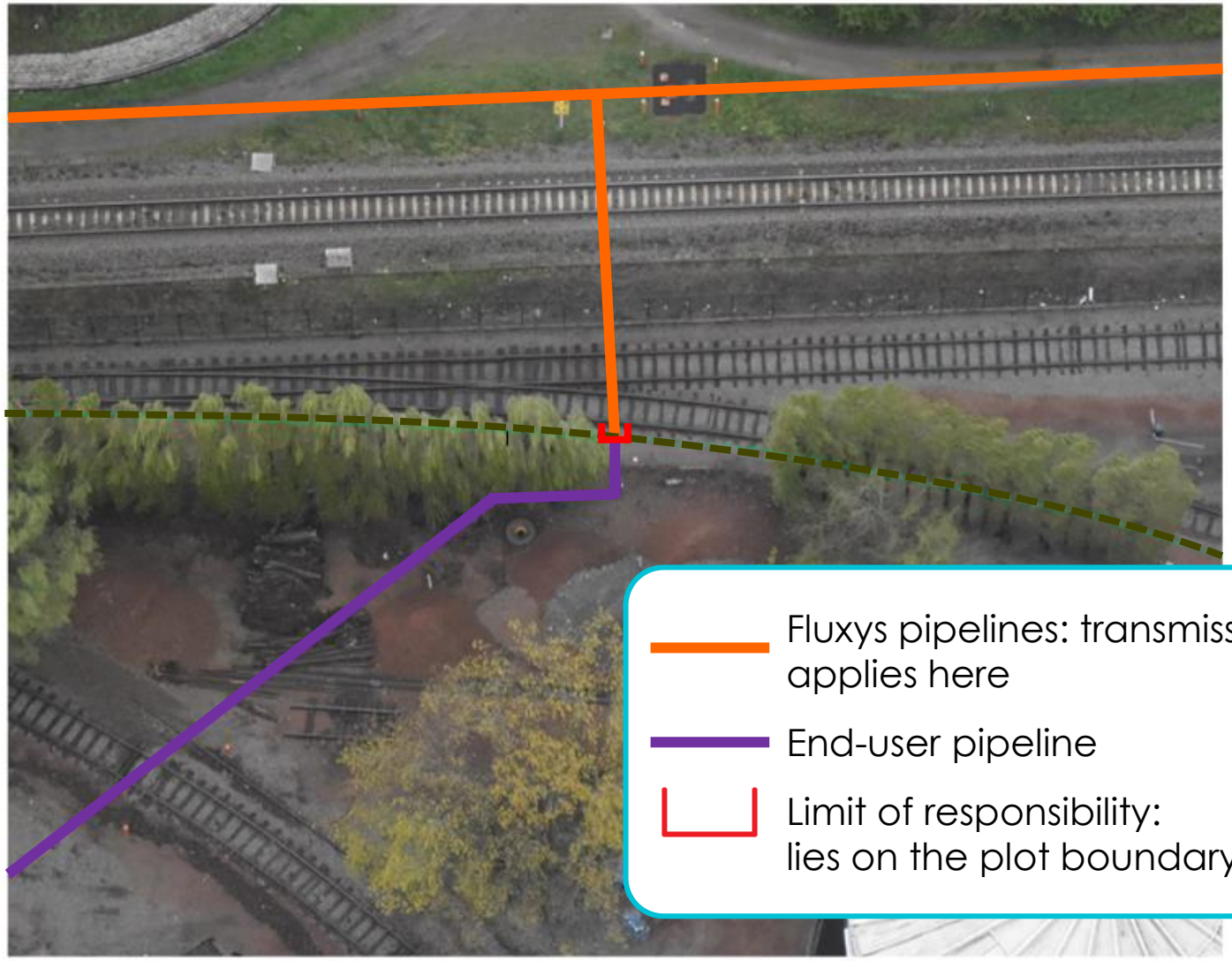
1 – Limit of responsibility: what is it and where is it located?

Limit of responsibility: the **exact point at which responsibility is transferred from Fluxys to the end user and vice versa** (also called the 'connection point')

- **Unambiguous reference**
  - Indicated on the plan in the Connection Agreement:
  - There should ideally be a physical indication on-site of (1) the limit of responsibility and (2) the first valve past this point
- **Shut off the gas supply** in the event of works, problems or incidents
  - Be aware of the arrangements with Fluxys set out in the Connection Agreement and remind staff of these if necessary
  - The gas supply is always reopened by Fluxys
- As a general rule, the limit of responsibility corresponds to the scope of Fluxys' transmission authorisation (Royal Decree of 21 September 2017)



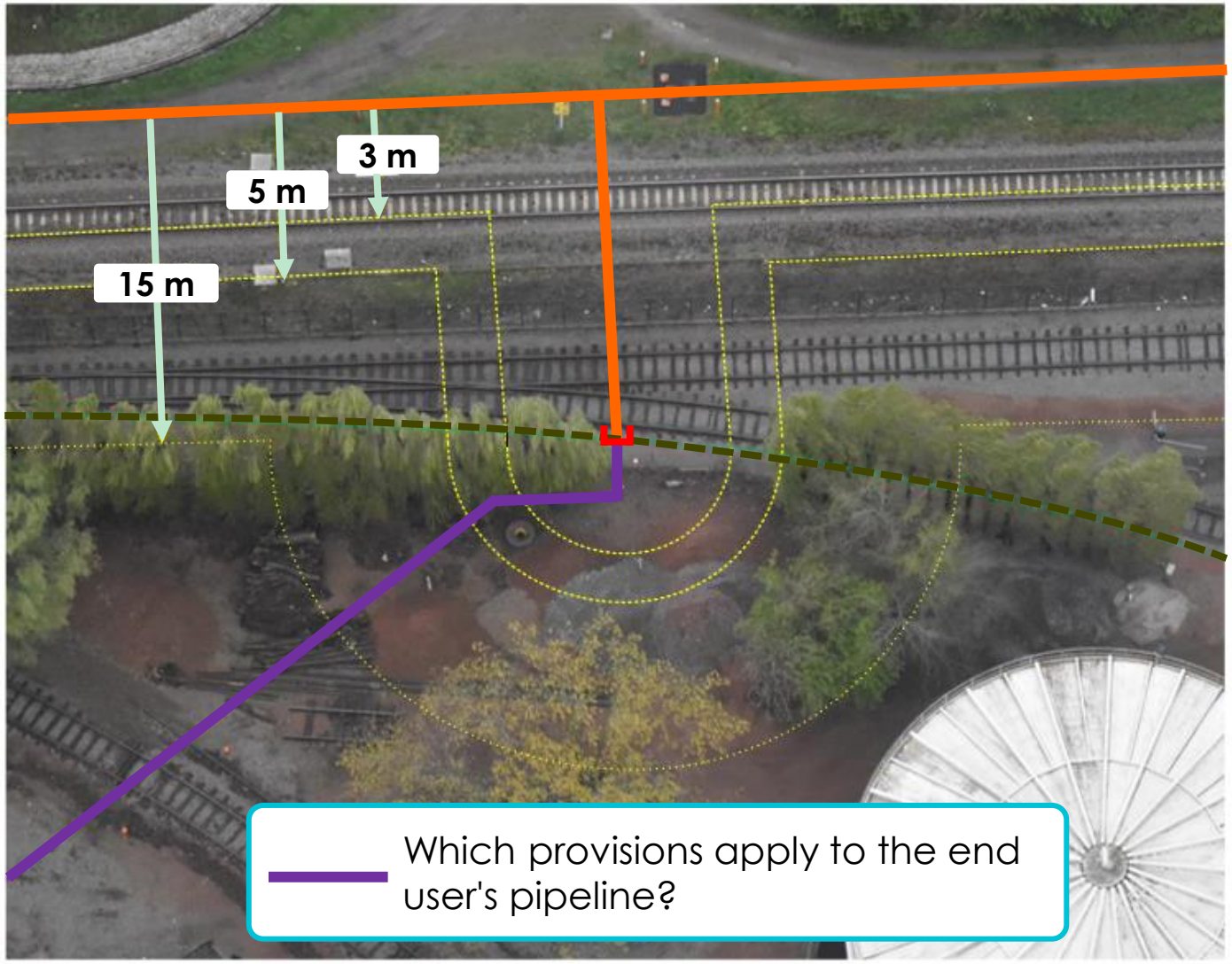
1 – Limit of responsibility: area for attention



Situation to be verified on a case-by-case basis

- In the past, Fluxys markers were not removed when the pipeline was transferred.
- It is **not possible** to simply use Fluxys markers to indicate the limit of responsibility.

1 – Limit of responsibility and provisions to be taken into account



Legal provisions linked to Fluxys' transmission authorisation

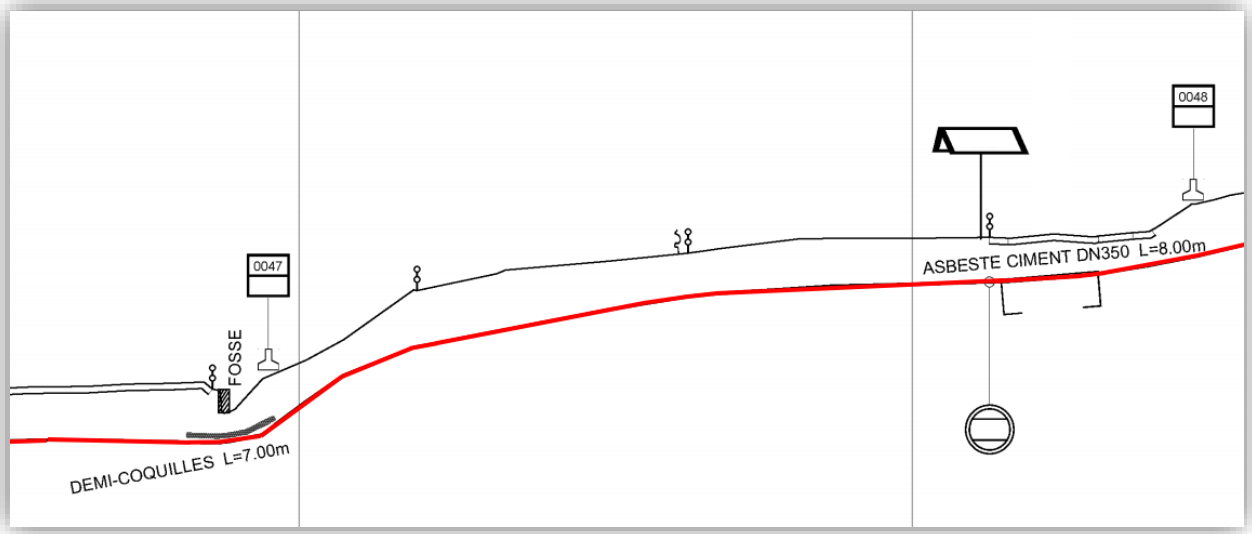
→ Do not take into account the property line (plot boundary)

→ Are drawn as semi-circles around the limit of responsibility

- Within a **3-metre** radius: no deep-rooted trees or bushes
- Within a **5-metre** radius: no structures (e.g. buildings), storage, change of surface, etc.
- Within a **15-metre** radius: notification obligation applies (Royal Decree, 1988)

2 - Content of the plan information

- **Site plan**
  - Pipeline route (X-Y)
  - Depth (top of the pipe)
  - Including accessories (Royal Decree measuring points, purges, stopples, etc.)
  - Intersecting infrastructure
- **Technical properties** (e.g. diameter, pipe spec., steel properties, design code)
- **Inspections and repairs carried out** (e.g. leak tests, welding procedure)



2 - Importance of signage

- On-site warnings indicating the presence of underground infrastructure
  - Markings (e.g. markers with reference colour)
  - Identification
    - Product, pressure, pipe number, etc.
    - Tagging & labelling (reference to the site plan and/or P&ID)
- Preventive work order for periodic inspections (presence, position and condition)

Fluxys does not carry out any maintenance or repairs beyond the connection point

3 - Obligation to report works continues to apply

- Both federal and regional legislation are in force
    - Federal obligations may invalidate exemptions under regional legislation
- Legislation does not distinguish between public and private property.
- The **KLIP** must be consulted
  Result = list of cable and pipeline operators (KLBs) having infrastructure on or near the work site
- The **KLIP planning application** must be submitted if Fetrapi members are included in this list (Fetrapi: federation of Belgian pipeline companies)
    - The exemption for 'manual work' does not apply if a Fetrapi member is present on or near the site
    - The exemption for land owners or users does not apply if a Fetrapi member is present on or near the site

3 – Compulsory registration in the Flemish Region as a cable and pipeline operator (KLB)

- Any natural or legal person acting as a professional cable and pipeline operator on the territory of the Flemish Region is considered a KLB and is subject to the requirements of the KLIP Decree.

- This encompasses cables and pipelines for public utility networks as well as for solely private use, regardless of whether these are located on public property.

- Every KLB is required to register in the KLIP. They are expected to accurately demarcate their KLB zones and confirm and respond to planning applications addressed to them.

“

When carrying out excavation works in the vicinity of underground cables and pipelines, it is advisable to undertake the **detection of pipelines** separately from the **performance of earthworks.**

4 – Preparing the work (detecting cables and pipelines)

- **Plot the cable** and pipeline route on site
- **Dig test trenches** (visual confirmation before and during the work)
  - **Gradually remove** paving and soil layers (in layers of 20 to 30 cm)
  - **Uncover** the cables and pipelines so that they are clearly visible
    - To confirm the information on the plans
    - Inspect complex junctions
- Take **extra safety** and **protective** measures
- Erect subsequent site **signage**
- **Check** the planned **design**
- **Feasibility** of the planned working method

5 – Carrying out earthworks (protecting cables and pipelines)

Procedure

- Use an excavator with **a smooth excavator bucket** (no teeth)
- Ensure that a **groundworker** is on hand to provide **support** at all times (to give instructions to the excavator operator and pre-emptively make holes in the ground using a shovel in case of any doubts)
- Carry out **earthworks perpendicular to** the pipeline (lower risk of damage, causes less serious damage)

Areas for attention

- Judicious location of **dewatering system at sufficient distance** from existing pipelines (subsidence)
- **Avoid** additional **loads** on the pipes
  - Heavy site traffic above the pipes (protective plates, etc.)
  - Storage above the pipelines (soil, building materials, containers, etc.)
  - Stabilisation of cranes, mechanical compaction, etc.

The perfect time for an inspection!

- Check for possible damage or advanced corrosion during excavation
- Check the condition of the coating installed
- Perform maintenance on the underground valves (e.g. check operability, flow, grease nipples)

Underground infrastructure must be protected at all times during earthworks

Good Practices

Good practices when carrying out maintenance on a pressure-reducing station

Tim De Vil

Zone Manager

Fluxys

Agenda

Topics

- Guidelines for end users performing maintenance on a pressure-reducing station
- Guidelines for painting works and ground ducts

Case study

- Natural gas leak caused by a corroded ground duct

Guidelines for end users performing maintenance on a pressure-reducing station based on a Fluxys maintenance programme

Monthly visual inspection of the facility

- ✓ Visual inspection to check that the facility is working properly (pressure reduction + heating)

Monthly maintenance

- ✓ Inspection to check the correct operation and internal tightness of the safety valve + slam-shut test
- ✓ Inspection to check the correct operation and internal tightness of the pressure regulators
- ✓ Inspection to check the setting values of the safety valve and pressure regulators
- ✓ Visual inspection of the general condition of the facility

Guidelines for end users performing maintenance on a pressure-reducing station based on a Fluxys maintenance programme

Annual maintenance

- ✓ Inspection of the filter element
- ✓ General inspection of the pressure-reducing station:
  - Corrosion and/or damage to the:
    - surface facility (pressure reduction);
    - underground facility (purge) in manhole covers.
  - Damage caused by vermin (electrical wiring)
  - Water seepage affecting valves, actuators, gearboxes, etc.
  - Ex signage, pressure gauges, pressure sensors, etc.
- ✓ Maintenance of the heating system
- ✓ Calibration of the gas-detection system
- ✓ Statutory inspection of fire extinguishers
- ✓ Testing of signals

Guidelines for end users performing maintenance on a pressure-reducing station based on a Fluxys maintenance programme

Maintenance every 5 years

- ✓ Statutory inspection, low voltage

Maintenance every 10 years

- ✓Overhaul of the pressure regulators
  - Dismantling
  - Replacement of soft parts and membranes
- ✓Inspection of the heat exchanger
  - Endoscopy, hydraulic pressure test, iridology, etc.

Painting works every 15 years

- ✓Painting of the surface facility
- ✓Renewal of ground ducts

Guidelines for painting works and ground ducts

- Screening of the coating and painting system by Fluxys together with an authorised inspection body, performed every 15 years
  - Decisions after screening:
    - » Painting needed:
      - > start work within 3 years
    - » Painting not yet needed:
      - > review facility in 3 years' time
- Replacement of ground ducts by certified coaters
  - Ground ducts are excavated to a depth of 50 cm
  - The old coating is removed
  - The pipe section is sandblasted
  - The pipe section is repainted
  - The ground duct is recoated + FibaRoll is installed

Case study: importance of painting and managing ground ducts, incident involving an end user in 2017

- Context: audible (whistling sound) and visible leak around the ground duct
- Conclusion: leak due to a corroded ground duct

Q&A

Conclusion

Let’s shape our bright energy future

TOGETHER