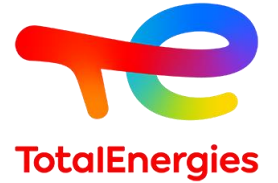


GIIGNL – Technical Study Group  
Task Force: Combining LNG receiving and CO2  
liquefaction terminals : challenges and synergies  
Scope of Work preparation

September 26 & 27, 2023 – Tokyo, Japan

# Task Force: Combining LNG receiving and CO2 liquefaction terminals : challenges and synergies



## Objectives:

- Evaluate the challenges and synergies brought by combining onshore LNG receiving and CO2 liquefaction terminals.
- Define design principles considering the overall CO2 chain from capture to re-injection
- Focus on Onshore LNG Terminals but FSRU specificities will only be studied in a second phase – if interest is confirmed

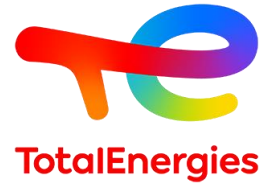
## Task force members:

- Dunkerque LNG: Sylvain Planteline
- Elengy: Philippe Bouchy, Benjamin Poirson
- Engie: Audrey Hubert Paul-Emmanuel Decroes Hugues Malvos
- Equinor: Ms Jingshi (Ruan) Yang
- Fluxys LNG: Kim Stevens, Siegfried Spanhove :
- Osaka Gas: Mr Masayuki (Masa) Hirabayashi
- Sempra Infrastructure: Yovannis Mierez
- Shell: Ms. Raha Alikhanbagi, Pablo Vega Perez
- Singapore LNG: Ms. Pei Pei ANG
- TotalEnergies: Olivier Pasteau / Stéphane Dubois du Bellay, Ginès Petit

## Purpose of September 26<sup>th</sup> TSG meeting:

- Gather from all taskforce members, the subjects of interest to be integrated into the scope
- Align on the objectives and content of the scope of work
- Define the governance and way of working of the task force

# Task Force: Combining LNG receiving and CO2 liquefaction terminals : challenges and synergies



*Items proposed to date by Engie, Elengy and TotalEnergies. To be completed by all members*

## **CO<sub>2</sub> supply conditions and impact on the facilities design**

- Dense, Gaseous, Liquid

## **CO<sub>2</sub> specifications and needs for purification**

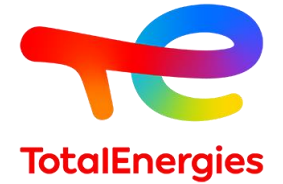
- At terminal inlet versus at terminal outlet (⇒ define needs for purification or not) and depending on downstream blocks in the CO2 chain:
  - Transportation by pipeline
  - Transportation by ship
  - Injection in wells

## **CO<sub>2</sub> Purification / Liquefaction / Storage / Transfer / Loading / Shipping**

- Type of technologies and recommendations of design per systems
- List possible suppliers of the different technologies
- List Engineering Contractors involved in this business
- Recommendation regarding storage design and sizing for onshore
- Recommendation for ship transfer
- Recommendation for BOG management, especially during transfer and considering “pollution” by impurities
- Process and technologies synergies possible with LNG terminals (cold recovery, equipment retrofit,...)
- Interfaces with import terminal – LCO2 reception for injection (gas CO2 or dense CO2)
- Which pressure for storage and shipping: state of the art within the Industry and future development

# Scope of Work - Subjects of interest

*Items proposed to date by Engie, Elengy and TotalEnergies. To be completed by all members*



## Operation

- Management of different pressure along the CO2 chain (CO2 export, shipping, CO2 receiving)
- Management of low and medium pressure in the same export terminal
- Management of variation in gas sendout from terminals versus stable CO2 liquefaction needs

## HSE

- Assess GHG savings thanks to the synergies
- Address key safety risks (e.g.: dispersion, depressurization, freezing, etc)
- Identify interfaces risks with existing LNG terminal