# Request For Information - H2-CO2 infrastructure

For your convenience, this document reflects the questions of our online RFI. You can use it as a framework to structure the discussions inside your organisation while preparing the answers you like to communicate back to us. For convenience reason, please make use of the online form available on our **website** .

## Introduction

As a preamble please be assured that any information you share with Fluxys Belgium through this questionnaire - or through any other means - will be treated as confidential in accordance with the non-disclosure agreement (NDA) and, if such information includes personal data, in accordance with the applicable data protection legislation (including the General Data Protection Regulation 2016/679). If you wish to formalise this commitment, please fill in, sign and send back the ***NDA*** to our mailbox **info.hydrogen-carbon-transport@fluxys.com**.

H2 & CO2 are two complementary gases to consider in the energy system of tomorrow. In order to be in a position to provide your company with a service offering which optimally fits with your requirements, it is crucial to better understand the different market needs and drivers for both H2 and CO2.

Our questionnaire has ***4 sections***:

- Hydrogen - Producer
- Hydrogen - Off-taker (consumers, retailers)
- Carbon dioxide - Emitter
- Carbon dioxide - Off-taker (CCUS)

For each section, we invite you to specify the sites (location) and key figures (volumes, timing) for which you have or foresee any H2/CO2 related activities.

Additionally you can easily skip any section you may consider as not relevant for your activities and projects.

For the sake of clarity, any information you provide is deemed ***non-binding*** and ***for information purpose only***.

Please feel free to skip any questions you cannot or do not want to answer. Nevertheless bear in mind that any information you give us will allow us to efficiently and optimally develop the transmission infrastructure that would benefit your activities

Thank you for taking the time to fill out this questionnaire. Your answers and comments will be of great importance to enable Fluxys Belgium to develop a future-proof infrastructure in line with the market needs.

If you have any question, please do not hesitate to contact us at **info.hydrogen-carbon-transport@fluxys.com**.

# Company information

1. We like to keep in touch. Therefore, and if you agree, please provide your ***contact details*** .

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| Company name: | |
| Contact person: | |
| Job title: | |
| Email address: | |
| Phone number: | |

2. What is your ***main industrial sector*** (energy, minerals, chemicals, mobility, etc.)?

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# Hydrogen - Producer

3. Do you or intend to ***produce and/or market hydrogen***?
    - Yes – please go to the section related to H2 production
    - No - skip the H2 Producer section

# Hydrogen - Producer

4. What are your ***production modes*** or the modes that you consider?
   - Electrolysis
   - Thermochemical water splitting
   - Pyrolysis
   - Thermal cracking (SMR and ATR)
   - By-product from industrial process
   - Other (please specify)

5. For each of your industrial sites where you consider the production of H2 for marketing/sales purposes, please provide the *yearly H2 volumes* and/or *design capacity* of the installation?

   The purpose is to map out ***geographically*** and over ***time*** the ***volumes*** of production which would benefit from a connection to a transmission network while taking project ***maturity*** into account.

   *Example 1:*

   *PDH plant XX, 2000 t/y - 5 t/h - as from 2025-2035. Upscale to 4000 t/y - 15 t/h - after 2035. Phase 1 in feasibility study, phase 2 idea.*

   *Example 2:*

   *Electrolyser plant YY, 45 MW - as from 2026. Upscale to 150 MW - after 2040. Phase 1 in FEED, phase 2 idea.*

6. Do you consider ***carbon capture*** related to your hydrogen production?
   - Yes
   - No

7. In order to catalyse the H2 developments and ensure interoperability and compatibility, we have worked out ***two quality specifications proposals related to the transport of H2***. You can find these on our **website**.

   Is ***specification 1 compatible with your process capabilities***?

   - Yes
   - No

8. If the answer to the above question is negative: what are, in order of importance, the critical parameters (listed or missing) for which compatibility with your processes is not ensured? Please provide a short ***explanation and the value range*** compatible with your processes for each critical parameter.

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9. Is ***specification 2 compatible with your process capabilities***?
   - Yes
   - No

10. If the answer to the above question is negative: what are, in order of importance, the critical parameters (listed or missing) for which compatibility with your processes is not ensured? Please provide a short ***explanation and the value range*** compatible with your processes for each critical parameter.

    *If those parameters are the same as for specification 1, you can simply refer to the previous question.*

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11. What would be the ***H2 pressure range*** that you could deliver ?

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12. If additional compression is needed to inject hydrogen into the network, who should be ***responsible for the compression***?
    - Your company
    - Fluxys Belgium
    - Third party

13. What should the ***CO2 price*** be to ***make hydrogen competitive option***?
    - It does not matter
    - < 50 €/ton CO2
    - 50-100 €/ton CO2
    - 100-150 €/ton CO2
    - > 150 €/ton CO2
    - I do not know

14. What would be the ***longest contract period for transmission capacity*** you could commit to?
    - 5 years
    - 10 years
    - 15 years
    - > 15 years

15. Is the maximum contract duration mentioned above ***linked to an asset or industrial activity life expectancy***?
    - Yes
    - No

16. Which key elements are ***important for the commercial model*** (third party access, tariff transparency, entry exit, etc.)?

17. How do you consider ***flexibility***? Would you be willing / able to adapt your production for balancing purposes?

# Hydrogen - Offtaker

18. Do you purchase or intend to ***purchase hydrogen***?
    - Yes – please go to the section related to H2 offtake
    - No - skip the H2 offtaker section

# Hydrogen - Offtaker

19. What is the current and or ***future role(s) of hydrogen*** in your processes?
    - Feedstock
    - Heat
    - Fuel for mobility
    - Power generation
    - Other (please specify)

20. For each industrial site where you consider the purchase of H2, please provide the yearly H2 volumes and/or design capacity of the installation?

    The purpose is to map out ***geographically*** and over ***time*** the ***volumes*** of consumption which would benefit from a connection to a transmission network while taking project ***maturity*** into account.

    *Example 1:*

    *Steel factory XX, 2000 t/y - 5 t/h - as from 2025-2035. Upscale to 4000 t/y - 15 t/h - after 2035. Phase 1 in feasibility study, phase 2 idea.*

    *Example 2:*

    *Paper factory YY, 45 MWh/h - as from 2026. Upscale to 150 MWh/h - after 2040. Phase 1 in FEED, phase 2 idea.*

    *Example 3:*

    *Glass factory ZZ, 45% of actual natural gas consumption - as from 2030. Idea.*

21. In order to catalyse the H2 developments and ensure interoperability and compatibility, we have worked out ***two quality specifications proposals related to the transport of H2***. You can find these on our **website**.

    Is ***specification 1 compatible with your intended use***?

    - Yes
    - No

22. If the answer to the above question is negative, what are, in order of importance, the critical parameters (listed or missing) for which compatibility with your processes is not ensured? Please provide a short ***explanation and the value range*** compatible with your processes for each critical parameter.

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23. Is ***specification 2 compatible with your intended use***?
    - Yes
    - No

24. If the answer to the above question is negative, what are, in order of importance, the critical parameters (listed or missing) for which compatibility with your processes is not ensured? Please provide ***a short explanation and the value range*** compatible with your processes for each critical parameter.

    *If those parameters are the same as for specification 1, you can simply refer to the previous question.*

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25. What would be the ***optimal pressure range*** you would like to receive hydrogen at your site?

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26. What should the ***CO2 price be to make hydrogen competitive option***?
    - It does not matter
    - < 50 €/ton CO2
    - 50-100 €/ton CO2
    - 100-150 €/ton CO2
    - > 150 €/ton CO2
    - I do not know

27. What would be the ***longest contract period for transmission capacity*** you could commit to?
    - 5 years
    - 10 years
    - 15 years
    - > 15 years

28. Is the maximum contract duration mentioned above ***linked to an asset or industrial activity life expectancy***?
    - Yes
    - No

29. Which key elements are ***important for the commercial model*** (third party access, tariff transparency, entry exit, etc.)?

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30. How do you conceive ***flexibility***? Would you be willing / able to adapt your consumption for balancing purposes?

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# Carbon dioxide – Emitter

31. If you intend to capture CO2, do you need ***access to transmission infrastructure*** to move it to sequestration or usage sites?
    - Yes – please go to the section related to CO2 capture
    - No - skip the CO2 Emitter section

# Carbon dioxide – Emitter

32. What are your ***CO2 emission sources***?
    - Fuel combustion (flue gases)
    - Unavoidable emissions (processes, raw materials)
    - Other (please specify)

33. For each of your industrial sites where you consider the capture of CO2, please provide the yearly CO2 volumes and/or design capacity of the installation?

    The purpose is to map out ***geographically*** and over ***time*** the ***volumes*** of capture which would benefit from a connection to a transmission network while taking project ***maturity*** into account.

    *Example 1:*

    *Cement plant XX, 2000 kt/y - 300 t/h - as from 2025-2035. Upscale to 4000 kt/y - 600 t/h - after 2035. Phase 1 in feasibility study, phase 2 idea.*

    *Example 2:*

    *Gas fired power plant YY, 2 mtpa - as from 2026. Upscale to 3 mtpa- after 2040. Phase 1 in FEED, phase 2 idea.*

34. In order to catalyse the CO2 developments and ensure interoperability and compatibility, we have worked out ***two quality specifications proposals related to the transport of CO2***. You can find these on our **website**.

    Is ***specification 99 compatible with your process capabilities***?

    - Yes

- No

35. If the answer to the above question is negative, what are, in order of importance, the critical parameters (listed or missing) for which compatibility with your processes is not ensured? Please provide a ***short explanation and the value range*** compatible with your processes for each critical parameter.

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36. Is ***specification 95 compatible with your process capabilities***?
    - Yes
    - No

37. If the answer to the above question is negative, what are, in order of importance, the critical parameters (listed or missing) for which compatibility with your processes is not ensured? Please provide a ***short explanation and the value range*** compatible with your processes for each critical parameter.

    *If those parameters are the same as for specification 99, you can simply refer to the previous question.*

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38. Which ***carbon capture technology are you considering*** (amine wash, cryogenic, etc.)?

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39. Which ***minimal injection pressure*** would be acceptable for CO2 injection into the network?
    - < 25 bar
    - 25-30 bar
    - > 30 bar

40. If additional compression is needed to inject CO2 on the network, who should be ***responsible for the compression***?
    - Your company
    - Fluxys Belgium
    - Third party

41. Is ***liquefaction terminalling*** a must for your CO2 sequestration/valorisation options?
    - Yes
    - No

42. Should ***storage/sequestration options*** be integrated within the services offered by Fluxys?
    - Yes
    - No

43. What should the CO2 ***price be to enable capture of CO2 emissions***?
    - It does not matter
    - < 50 €/ton CO2
    - 50-100 €/ton CO2
    - 100-150 €/ton CO2
    - 150 €/ton CO2
    - I do not know

44. What would be the ***longest contract period*** for transmission capacity you could commit to?
    - 5 years
    - 10 years
    - 15 years
    - > 15 years

45. Is the ***maximum contract duration*** mentioned above linked to an asset or industrial activity life expectancy?
    - Yes
    - No

46. Which key elements are ***important for the commercial model*** (third party access, tariff transparency, etc.)?

47. How do you consider ***flexibility***? Would you be willing / able to adapt your injection rate for balancing purposes?

# Carbon dioxide - Offtaker

48. Do you intend to use or to process ***CO2 from third party*** sources (requiring transmission infrastructure) ?
    - Yes – please go to the section related to CO2 offtake
    - No - skip the CO2 offtaker section

# Carbon dioxide - Offtaker

49. For which purpose do you intend to ***offtake CO2 from the network***?

50. For each of your industrial sites where you consider the use of CO2, please provide the yearly CO2 volumes and/or design capacity of the installation?

    The purpose is to map out ***geographically*** and over ***time*** the ***volumes*** of consumption which would benefit from a connection to a transmission network while taking project ***maturity*** into account.

    *Example 1:*

    *Methanol production plant XX, 200 kt/y - 30 t/h - as from 2025-2035. Upscale to 400 kt/y - 60 t/h - after 2035. Phase 1 in feasibility study, phase 2 idea.*

    *Example 2:*

    *CO2 terminal YY, 2 mtpa - as from 2026. Upscale to 5 mtpa- after 2040. Phase 1 in FEED, phase 2 idea.*

51. In order to catalyse the CO2 developments and ensure interoperability and compatibility, we have worked out ***two quality specifications proposals related to the transport of CO2***. You can find these on our **website**.

    Is ***specification 99 compatible*** with your intended use?

    - Yes
    - No

52. If the answer to the above question is negative, what are, in order of importance, the critical parameters (listed or missing) for which compatibility with your processes is not ensured? Please provide a ***short explanation*** and the ***value range compatible*** with your processes for each critical parameter.

53. Is ***specification 95 compatible*** with your intended use?
    - Yes
    - No

54. If the answer to the above question is negative, what are, in order of importance, the critical parameters (listed or missing) for which compatibility with your processes is not ensured? Please provide a ***short explanation*** and the ***value range compatible*** with your processes for each critical parameter.

    *If those parameters are the same as for specification 99, you can simply refer to the previous question.*

55. What should the ***CO2 price be to enable your CO2 projects***?
    - It does not matter
    - < 50 €/ton CO2
    - 50-100 €/ton CO2
    - 100-150 €/ton CO2
    - > 150 €/ton CO2
    - I do not know

56. What would be the ***longest contract period*** for transmission capacity you could commit to?
    - 5 years
    - 10 years
    - 15 years
    - > 15 years

57. Is the ***maximum contract duration*** mentioned above linked to an asset or industrial activity life expectancy?
    - Yes
    - No

58. Which key elements are ***important for the commercial model*** (third party access, tariff transparency, etc.)?

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59. How do you consider ***flexibility***? Would you be willing / able to adapt your offtake for balancing purposes?

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## Anything else?

60. Do you have additional comments or information that may be of interest for the development of the transmission infrastructure? Please feel free to let us know.

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You can also contact us at **info.hydrogen-carbon-transport@fluxys.com** if you have any additional comment, suggestion or question later on.