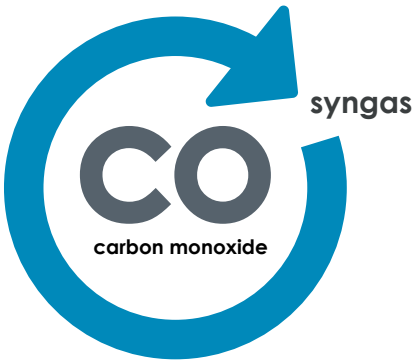
CASE WATCH 13 : CO VALORISATION FROM STEEL

Transform CO rich off-gases into raw materials for the chemical industry.

Reduce fossil dependency by valorising CO emissions in the chemical industry.



CLOSING CO LOOPS

KEY INSIGHTS

- value CO streams
- reduce primary resources
- reduce CO_2 emissions
- integrate sites & clusters

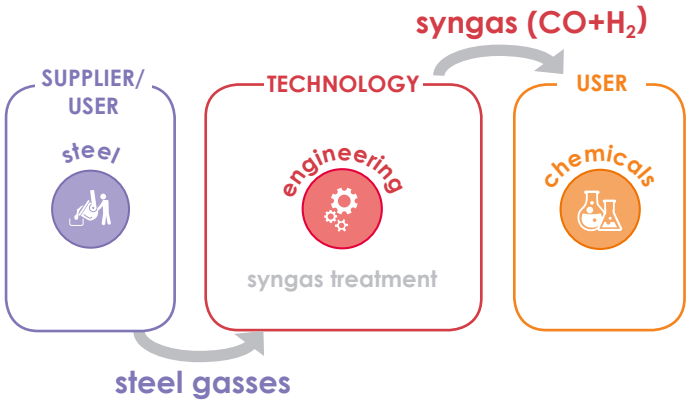


Figure 1: Synergy scheme [1]

CROSS-SECTOR COLLABORATION

Steel industry has a high potential to supply CO to the chemicals industry. Industries have a growing demand for valorising carbon emissions.

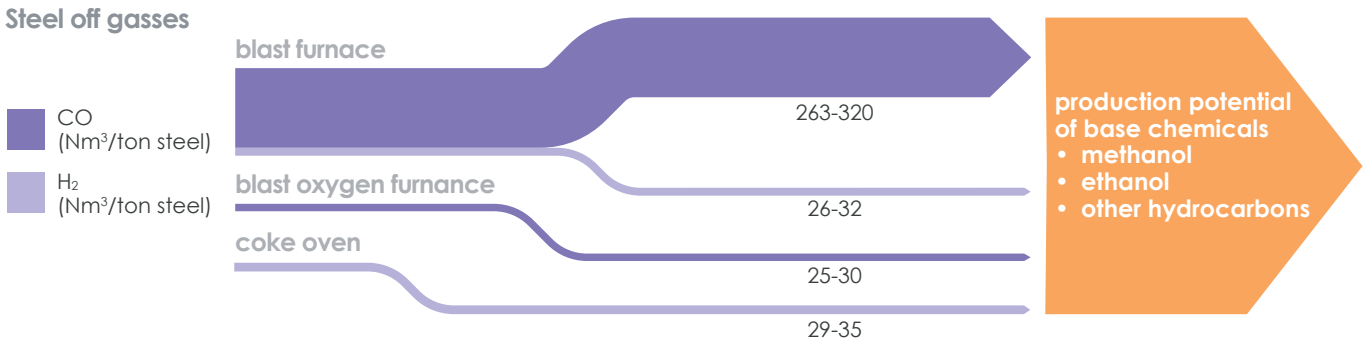


Figure 2: Cross-sector potential [1,2,3,4]

SUSTAINABILITY IMPACT

Wins for industry

› for suppliers: 50-150 €/1000 Nm³ CO[4]
› for industry: 150-300 €/ton product[3]

Environmental gains

› CO_2 emissions reduction:
20-40% CO_2 saved/ton crude steel produced[2,3]

Wins for society

› public health benefits due to emissions reduction
› job creation and new skills development[1]

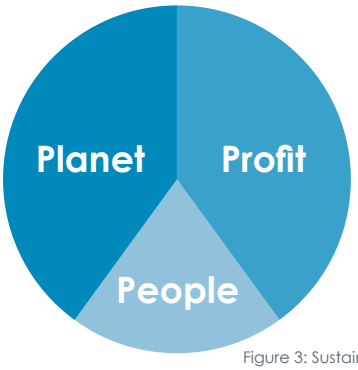


Figure 3: Sustainability [1]

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REFERENCES

1. H2020: EPOS project. 2015 – 19. https://www.spire2030.eu/epos

2. W. Uribe-Soto, P. Jean-François, J. Commenge, and F. Laurent, "A review of thermochemical processes and technologies to use steelworks off-gases," Renew. Sustain. Energy Rev., vol. 74, pp. 809–823, 2017.

3. Institute for Sustainable Process Technology, "CORESYM: Carbon monoxide re-use through industrial symbiosis - Metabolic," Dec. 2017.

4. J. Arvola, J. Harkonen, M. Mottonen, H. Haapasalo and P. Tervonen, "Combining Steel and Chemical Production to Reduce CO2 Emissions," Low Carbon Econ., vol. 2, no. 3, pp. 115–122, 2011.

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