EUROFER
THE EUROPEAN STEEL ASSOCIATION

Position Paper

Implementation of RFNBOs targets in industry pursuant Art.22a RED 2023/2413

EUROFER policy recommendations to national governments

Executive Summary

- The use of hydrogen in the steel industry yields the highest CO2 abatement potential per tonne consumed with lower and upper ranges comprised between 16kgCO2/kgH_2 and 23kgCO2/KgH_2
- The European steel sector is expected to be the largest hydrogen industrial user making up 26% of total demand (industry, power, transport) and making it a key driver of the market ramp-up – if the right conditions are in place
- The current levels of hydrogen production in Europe, alongside the corresponding infrastructure must speed up considerably for the steel sector to succeed in its uptake efforts
- National hydrogen policies should be centred upon promoting and enabling the efficient use of clean hydrogen in sectors yielding the highest CO2 emissions abatement potential and with no cost-efficient alternatives to decarbonise
- The RFNBOs industrial target shall be based on a realistic and holistic assessment of supply and demand, taking international competitiveness into account
- The responsibility to achieve the RFNBOs consumption targets shall be placed at the Member State level with no binding obligation on individual companies
- Provide enabling framework conditions supporting the final uptake of renewable hydrogen in industrial uses as a key precondition for the imposition of consumption targets – which includes:
    - Endorsing the prioritisation principle in all national initiatives and policies;
    - Closing the price gap for renewable hydrogen via targeted funding schemes such as the European Hydrogen Bank;
    - Adopting short-term solutions to alleviate wholesale electricity prices for energy-intensive industries;
    - Maintaining a flexible approach in the rules on the production of renewable hydrogen established in the delegated act on additionality and correlation criteria;
    - Improving the availability of and accessibility to renewable power and hydrogen purchase agreements (i.e., respectively PPAs and HPAs) for energy-intensive industries;
    - Fostering the expansion of renewable energy capacity by concretely accelerating and streamlining administrative permit-granting processes as provided for in RED III in Art. 15+.

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Introduction & Background

In October 2023, the revised version of Renewable Energy Directive II (2018/2001)[1] (hereinafter REDIII) entered into force. The new legal framework provides for an increased target of 42.5% of renewables in final energy consumption (compared to 32% as in the previous Directive) and includes national industrial sectors (i.e., NACE C, B, F, and J63) in its scope via new articles 22a and 22b. National governments shall strive to increase renewable energy use in their domestic industrial sectors by at least 1.6% as an average for 2021-2025 and 2026-2030 and to ensure that the share of renewable fuels of non-biological origin (among which renewable hydrogen defined in delegated acts)[2] in industry's total hydrogen consumption is 42% by 2030 and 60% by 2035. Furthermore, the revised Directive allows Member States to reduce their target for RFNBOs by 20% in 2030 if a) the country is on the trajectory to meet its national contribution to the EU's overall renewable energy consumption target and b) the share of hydrogen or fossil-fuel derivatives in the national energy mix is not greater than 23% in 2030 and 20% in 2035

National governments will need to transpose the RED III into law in the next 18 months and complement their National Energy and Climate Plans (NECPs) by June 2024 with policies, measures, and data on how to achieve such targets in their industrial sectors.

With this paper, the European steel industry provides its key recommendations to national policymakers on the most cost-effective way to implement the RFNBOs sub-targets.

Towards a holistic and pragmatic approach to hydrogen policy design ensuring an economically sustainable market ramp-up phase focused on industry sectors

The European steel sector is *en route* to reduce CO2 emissions by 2030 for about 80mio tonnes, by implementing more than 60 low-carbon projects across Europe. However, such transition will require a high amount of low-carbon electricity and hydrogen. Specifically, the sector's demand for electricity and hydrogen in 2030 will amount to 165TWh (twice Belgium's final electricity consumption in 2020), of which 90TWh is just for hydrogen production to produce 2.12Mt hydrogen a year. In 2050, the total amount of energy required will skyrocket to 400TWh (i.e., today's electricity purchases in Germany) and 5.5Mt hydrogen per year.

Energy is an essential input to produce steel, next to scrap and raw materials. Together with electricity, hydrogen plays a fundamental role in the decarbonisation of steelmaking, since it enables the avoidance of CO2 emissions by substituting fossil inputs, such as coking coal, at the

[1] Directive (EU) 2023/2413 of the European Parliament and of the Council, amending Directive (EU) 2018/2001, Regulation 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repleaing Council Directive (EU) 2015/652, 18 October 2023

[2] Commission Delegated Regulation (EU) 2023/1184, supplementing Directive 2018/2001 of the European Parliament and of the Council by establishing a Union methodology setting out detailed rules for the production of renewable liquid and gaseous transport fuels of non-biological origin, 10 February 2023

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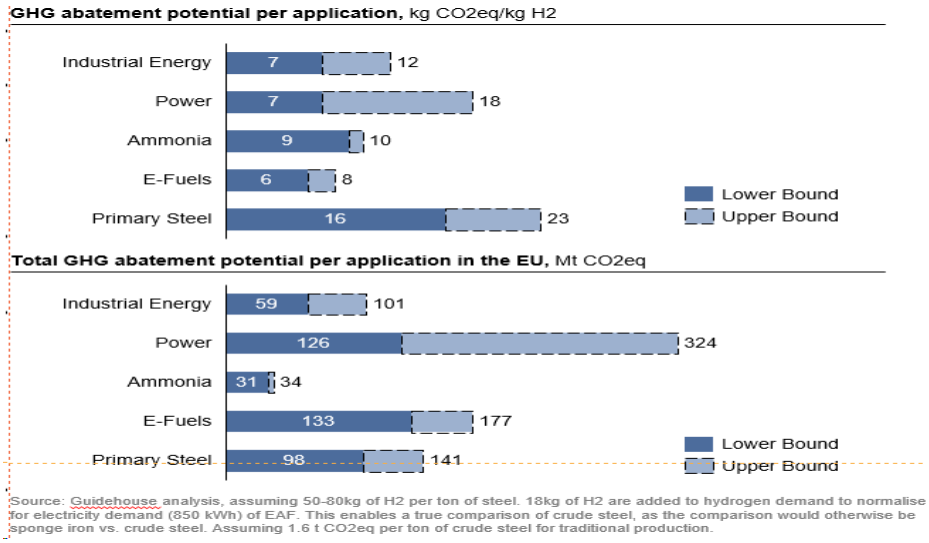
point source. Compared to current and potential hydrogen applications, the use of hydrogen in the steel industry yields the highest CO2 abatement potential per tonne consumed in primary steelmaking, with the lower and upper ranges comprised between 16kgCO2/kgH2 and 23kgCO2/KgH2.



Source: Guidehouse analysis, assuming 50-80kg of H2 per ton of steel. 18kg of H2 are added to hydrogen demand to normalise for electricity demand (850 kWh) of EAF. This enables a true comparison of crude steel, as the comparison would otherwise be sponge iron vs. crude steel. Assuming 1.6 t CO2eq per ton of crude steel for traditional production.

Well beyond 2030, the European steel sector is expected to be the largest industrial user making up 26% of total demand (industry, power, transport) and a key driver of the market ramp-up If the right conditions are in place.

Table 1-2. Industrial Hydrogen Demand in Europe (EU27 + UK) in TWh[6]

Application	2030	2040	2050
Industrial feedstock	183	291	319
Fertilizer (Ammonia)	60	114	114
Primary steel	97	168	205
Refining	26	9	0
E-fuels production	125	483	738
HVCs (Naphtha)	37	66	111
HVCs (Methanol)	21	107	193
E-kerosene for aviation	21	216	311
E-methanol for shipping	22	64	96
Biokerosene upgrading	10	25	27
Industrial energy	65	204	280
Aluminium	4	12	14
Cement	21	58	80
Glass	8	22	28
Paper and Pulp	9	36	51
Steel	5	14	20
Others	17	61	87
Total Industrial Hydrogen demand	**373**	**979**	**1,337**

However, the current levels of hydrogen production in Europe alongside the corresponding infrastructure must speed up considerably for the steel sector to succeed in its efforts.

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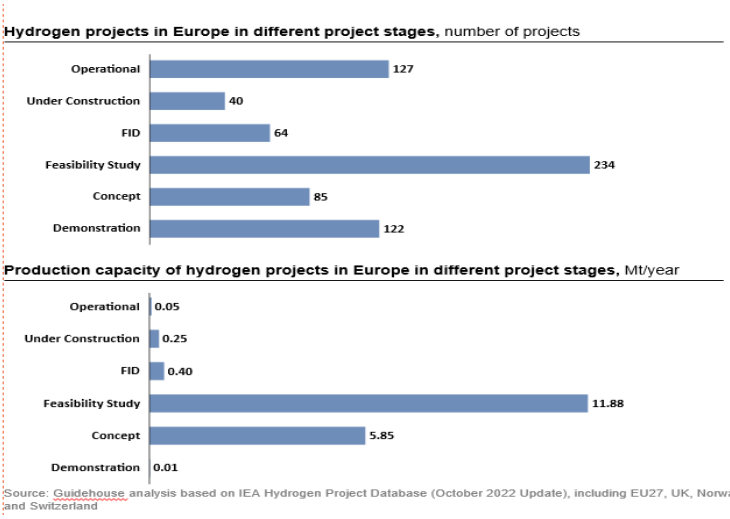
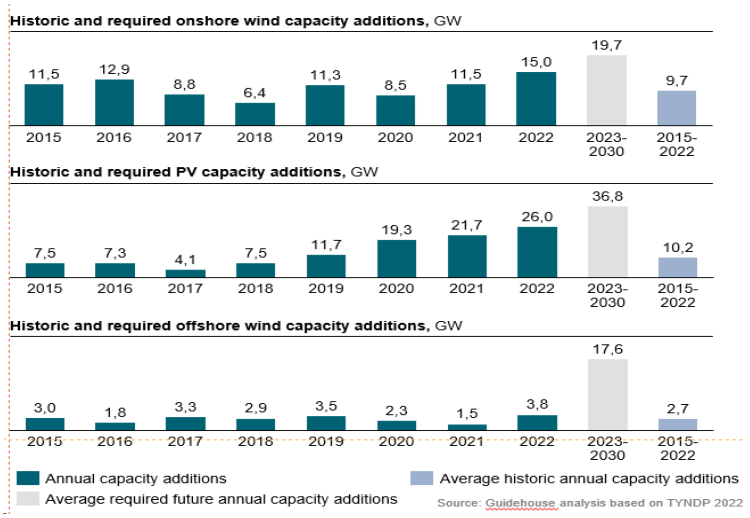
As of 2022, the European renewable hydrogen production capacity stands at 50.000 tons a year from 127 projects in the operating phase. 642 hydrogen production projects are currently in the pipeline. The total production capacity of projects beyond the feasibility phase amounts to just 1 million tonnes per year which is 10% of the RePowerEU ambitious targets. The urgency for Europe to scale up and accelerate its hydrogen production capacity in line with its realistic potentials should be carefully reflected in all domestic hydrogen policies.





At the same time, fossil-free generation capacity from solar and wind should grow by 80GW annually between 2023 and 2030, starting from geographic areas with high renewable energy potential, and accompanied by a properly meshed transport network connecting industrial demand centres with generation points.

A holistic and pragmatic approach to the design and implementation of domestic hydrogen policies is crucial, given a progressively increasing decarbonisation pressure deriving from the EU Emissions Trading Scheme (ETS revised) and the need for a cost-affordable supply of fossil-free energy deriving from the highly competitive global steel market in. Within such an approach, national governments should focus on supporting priority sectors to access hydrogen volumes cost-competitively to begin unlocking economies of scale, laser-focus infrastructure development where needed for the safe and reliable transportation of clean molecules and continue supporting the ramp-up and speed of development of hydrogen production projects altogether. Once market maturity is within reach, market fundamentals should kick in.

National hydrogen policies should not result in double obligations and targets and should not seek to duplicate the effects of existing decarbonisation policies such as via the detrimental creation of binding consumption quotas for companies.

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Our policy recommendations

1. **The setting of RFNBOs sub-target shall be based on a realistic and holistic assessment of supply and demand, taking international competitiveness into account (overall Art.22a)**

The renewable hydrogen economy is still at a nascent stage, with the market expected to ramp up only from 2035 onwards. The total currently installed capacity amounts to 150MW in Europe with less than 50,000 tonnes of green hydrogen produced with most of the energy procurement done through bilateral contracts[3]. For European steel companies, Renewable hydrogen remains out of reach for European steel companies, primarily due to 1) lack of a cost-competitive supply, 2) missing available infrastructure developed timely for the secure transportation of hydrogen to industrial centers [most of which are located in geographic areas that are not conducive to on-site hydrogen production via electrolysis], and 3) an insufficiently scaled up European production capacity (i.e., as of 2022 the amount of renewable hydrogen produced amounts to 50.000 tonnes with 150MW of installed capacity against the need of steel sector which alone amount to 2.1MtH_2/year).

Persistent high wholesale power prices, combined with inflation-driven costs, are driving up hydrogen purchasing costs even further, thus compromising both the competitiveness of electrolyzer manufacturing and the affordability of hydrogen supply for industrial consumers.

Recommendation: Policy tools that will allow Member States to reach their RFNBO industry target shall factor in the current context and be based on an in-depth analysis that captures the realistic potential of both hydrogen demand and generation in the country (and imports if relevant), as well as end-users' technology potential, affordability constraints, and international competitiveness. Failure to consider this approach could lead to setting unrealistic targets, significantly increasing the risk of industries relocating due to international competition.

2. **The responsibility to achieve the RFNBOs consumption targets shall be placed at Member State level with no binding obligation on individual companies (fifth subparagraph, Art.22a)**

The way industry targets will be implemented in a Member State can have a dramatic impact on the competitiveness of the industry. The effects depend ultimately on which entity will be responsible for such targets (e.g., government, utilities, or end-user sector) and the *realistic* supply potentials of the country, including renewable generation and transport. As described in point 1, individual companies only have a very limited influence *inter alia* on the actual availability of hydrogen at their locations and the expansion of infrastructure and renewable energies up to 2030 and 2035. The implementation process should always consider that

[3] Guidehouse, Low-Carbon Energy Transition – implications for the EU steel industry, 2024

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industrial sectors, such as steel, are already subject to existing binding policy tools, mainly the Emissions Trading system. These tools already exert significant pressure on their decarbonization efforts and serve as the main incentive to transition from fossil inputs to clean energy inputs.

Adopting binding RFNBO quotas at installation and/or company level would result first and foremost in double-regulations. It would force end-users to purchase the energy at costs that are unsustainable and non-economically viable for the industry, ultimately exposing it to a serious risk of relocation and carbon/investment leakage.

Recommendation: anchor the responsibility for attaining the RFNBOs targets at the Member State level and to strive toward the creation of framework conditions enabling a cost-effective uptake of hydrogen in industrial sectors, particularly in those with the highest CO2 abatement potential.

3. **Provide enabling framework conditions supporting the final uptake of renewable hydrogen in industrial uses as a key precondition for the industry**

To fulfil the obligation of the industry sub-quota, a sufficient supply of renewable hydrogen at competitive prices and a hydrogen infrastructure must be created by 2030. In the absence of a liquid and competitive hydrogen market, a broader set of supportive conditions is therefore necessary. The EU governments should adopt a holistic approach that connects the provisions of RED III with other hydrogen-related European legislation and instruments. These include the Hydrogen and Gas Decarbonisation Package, the European Hydrogen Bank, the Energy Taxation Directive, and relevant State aid guidelines (i.e., CEEAG & TCFT).

We encourage governments to focus on:

- Endorsing the prioritisation principle in all national initiatives and policies to ensure that the supply of hydrogen and the planning and development of dedicated networks are targeting hard-to-abate sectors with the highest GHG emissions abatement potential per unit of hydrogen used, **as set by article 3(5a) and art.51 of the recently adopted Gas and Hydrogen Decarbonisation Directive**;
- Closing the price gap for renewable hydrogen via targeted funding schemes such as the European Hydrogen Bank (EHB), Auction-as-a-service, Carbon Contracts for Differences and other national and European schemes;
- Adopting short-term solutions to alleviate wholesale electricity prices, for energy-intensive industries exposed to international competition and engaged in decarbonisation, to further improve the affordability of renewable hydrogen. In support of this, we wish to highlight the concerning findings from the latest Market Monitoring Report 2024 by ACER, which confirms that prices are still twice as high as in 2019, and their volatility has increased dramatically. On a similar note, the European Commission

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has recognised before the Member States the fact that energy prices are "*likely to be higher than in the recent past, with long-term economic consequences*"[4];

- Providing predictability and maintaining a flexible approach in the rules on the production of renewable hydrogen established in the delegated act on additionality and correlation criteria[5] - the grandfathering of additionality principles for early movers and at least a monthly temporal correlation criterion. Adopting stricter rules, even after 2028, will suffocate hydrogen production capacity and deteriorate the cost-effectiveness of hydrogen use in industrial processes. The report announced by the European Commission in the revised text of the RED III (Art.27) by 1 July 2028 at the latest on the impact of the green electricity criteria on hydrogen production costs, GHG savings and energy system should be submitted as soon as possible;
- Improving the availability of and accessibility to renewable power and hydrogen purchase agreements (i.e., respectively PPAs and HPAs) for energy-intensive industries, such as steel, according to the new provisions of both RED III and the revised Electricity Markets Design regulatory framework. This should include but not be limited to the creation of common European instruments supporting the off-takers payment default risks and alleviating the shaping and firming costs of such contracts;
- Fostering the expansion of renewable energy capacity by concretely accelerating and streamlining administrative permit-granting processes as provided for in RED III in Art. 15+;

On a final note, as a sector fully engaged in the transition toward climate neutrality and a key upcoming hydrogen player, we are ready to cooperate and provide our expertise to find tailored solutions to such a complex challenge.

[4] European Commission, Note to the attention of the Euro Group meeting 12 January 2024, "Developments of energy prices in the euro area and policy responses", 12/01/2024
[5] See footnote 2

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