June 2025

Position paper for the creation of a lead market

for steel in cars

Executive Summary

At the level of the European institutions, the desire to provide a coordinated response to the challenge of industrial competitiveness, combined with the EU's limited financial room for manoeuvre (any tax measure requires the unanimity of the Twenty-Seven) and the strike force of the Single Market, is leading to a growing emphasis on the role of *clean-lead markets* in decarbonising and maintaining basic industries in Europe.

Threatened by high energy costs, Indian and Chinese overcapacity combined with low-cost steel imports and a lack of domestic demand, the European steel industry is facing an unprecedented crisis. Indeed, most analyses converge to note that the competitiveness of Europeans is largely insufficient.

However, maintaining steel production sites on European soil is a quasi-security imperative at a time when the threat of conflict is multiplying. In addition, with nearly 3 billion tons of CO_2 emitted each year worldwide, or nearly 8% of global emissions, the steel industry is one of the most carbon-intensive industrial sectors in the world. In Europe, it accounts for around 150 $MtCO_2$ per year, or more than 20% of industrial emissions and around 6% of total emissions.

Among the solutions, the positioning of the European steel industry in the "green" steel segment (produced via DRI from natural gas and/or hydrogen; scrap metal; or relevant decarbonized inputs) offers a privileged way out. Indeed, the regulatory framework offered by the EU-Ets and European climate policy has made it possible to initiate significant investments in decarbonisation that offer a competitive advantage vis-à-vis international competition.

Definition of a green lead market

A green lead market is understood as a manufacturing sector in which decarbonisation standards will be put in place – binding or incentivising – leading the sector's players to source all or part of their inputs from low-carbon products. These standards for a downstream sector provide market depth for the low-carbon manufacturing of the inputs concerned, and can therefore be crucial for structuring low-carbon sectors upstream of the chain.

These policies can result in the application of quotas for the use of certain inputs (e.g. decarbonized H2) or the reduction of emissions related to the production of the product. These measures must target end markets *marketed* on the Single Market to avoid circumvention strategies through the import of finished products to which European constraints on the greening of components have not been applied.

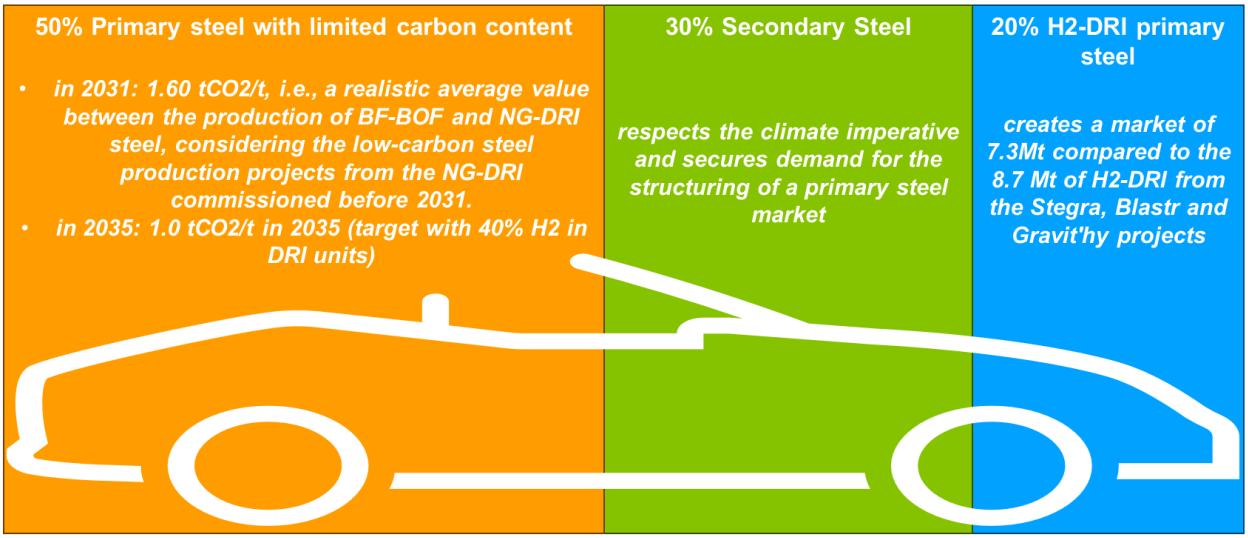
For France Hydrogène, the architecture of a lead market for steel must ensure a dual objective: to accelerate the scale-up of the production of carbon-free hydrogen, and to promote the maintenance of sites threatened with closure on the continent by creating outlets for them.

Thus, France Hydrogène proposes the introduction of criteria explained in this note that would apply to car manufacturers on the steel contained in cars placed on the European market. These measures would be incorporated into the European legislative proposal entitled "*Circularity requirements for the design and management of end-of-life vehicles*" or in the *Industrial decarbonisation acceleration act* (IDAA).

Anticipating the risks of substitutability

While the focus here is on the steel in cars, it should be borne in mind that this approach can lead to substitution effects towards other materials, such as plastic or aluminium. The proposal below will therefore have to be supplemented by specific measures to avoid a shift to materials not subject to CO_2 emission obligations.

Diagram of France Hydrogen's proposal



Why steel in automobiles?

The choice of markets to be addressed is particularly strategic, particularly because of the political effort required to achieve structural reforms. To target the most relevant markets, several criteria must be considered:

- **Volumes:** the market must cover a % of significant outlets for the production of hydrogen and "green" steel in this case;
- **The impact on the price of the final product to determine the social acceptability of the measure;**
- **The capacity for administrative and political processing of such a lead market**: it is necessary to be able to propose a regulatory translation that is realistic in its management by the public authorities.

In the case of steel, several interesting "candidate" lead markets have already been identified without ticking all these boxes:

- **Defence:** the volumes envisaged seem at this stage insufficient to ensure robust outlets for the sector.
- **Shipping containers**: the increase in the cost of production would be too high.

The automotive sector ticks all the boxes:

- **Volume:** it accounted for nearly 20% of European steel outlets in 2023[1], sufficient volumes to cover the majority of European green steel production;
- **Final price impact:** the additional cost of using green steel in the production of a car would be less than 1% according to T&E[2] ;
- **Administrative processing capacity**: As a highly regulated and concentrated market, the automotive sector offers optimal conditions in terms of administrative processing.

Regulation to protect the European steel industry and its automotive industry

This regulation must not only be a lever for the decarbonisation of European steel, but **also a tool for fair protection (WTO compliant) vis-à-vis the overcapacity of third countries (mainly India and China) which threatens in the current framework the maintenance of a steel base in Europe, which is nevertheless essential to our sovereignty**.

Similarly, this tool is designed in such a way as not to have side effects on the competitiveness of the European automotive industry. And thus, respond to certain inadequacies of the CBAM, which are widely documented.

To this end, three provisions are key in the design of the system detailed below:

- Low-carbon steel quotas are to be applied to **vehicles *marketed* on the territory of the European Union**. Vehicles imported from third countries would thus be subject to the same requirements. And the share of vehicles manufactured in Europe but exported outside the EU would not be subject to the obligation, thus maintaining the export competitiveness of the European automotive industry.
- In order to avoid the effects of *resource shuffling* in States with steel overcapacity, i.e. that India and China direct their fraction of low-carbon steel towards the European market, or towards vehicles produced in India/China and intended for the European market: **steel from countries outside the Union and used in the European automotive industry, would be assigned an average carbon content in the European Union, by default**. The same applies to cars from third countries: it will have to be considered by default that they use steel with the average carbon content of the defined country. This country value on the carbon content of steel will have to be reviewed regularly, ideally on an annual basis, in order to encourage third countries to decarbonise their steel production. If a country value falls below the EU average value, the country will have to be allowed to carry out *resource shuffling* (for the purpose of fair commercial treatment, since the proposal leads to *resource shuffling* in Europe**). In this way, the European market is structurally protected, because states with overcapacity (India, China) will take at least 15 years before competing with the EU on the average carbon content of their steel.** Where direct customs barriers can only be temporary, or at least of too uncertain a sustainability to support massive investments.
- Each third country must have an option to avoid having the default country value applied to the carbon content of its steel: to apply the same low-carbon steel quotas as the EU for vehicles marketed on its internal market. Such an option **does not diminish the protective effect of regulation vis-à-vis India and China, but it may make it possible to involve these and other powers in a common coordinated approach to the decarbonisation of the steel industry.**

[1] https://www.transportenvironment.org/uploads/files/2025_04_Report_Recycled_steel_EU_automotive_industry_final.pdf

[2] https://www.transportenvironment.org/articles/green-steel-can-cut-climate-impact-of-car-production-for-just-eur57-a-vehicle

Legislative Vectors

In 2023, the Commission published a legislative proposal on "*Circularity requirements for vehicle design and management of end-of-life vehicles*". This text seems to be the most relevant for integrating measures aimed at creating a lead market for green steel contained in automobiles. At this stage, the plenary date envisaged for the first reading of the text proposed by the responsible committees is scheduled for 9 September 2025. On the Council's side, nothing has yet been proposed at this stage.

Failing that, the proposal could also be incorporated into the *Industry Decarbonisation Accelerator Act* (IDAA).

Last November, France Hydrogène published an initiative alongside several national hydrogen associations, T&E and major European steelmakers addressed to the Commission and MEP Jens Gieseke. The purpose of this letter was to provide expertise for the introduction of green steel quotas under the above-mentioned regulation.

Proposal by France Hydrogène

Objectives of the proposal

To come up with a proposal that considers the specific challenges of steelmakers and producers of carbon-free hydrogen, France Hydrogène has considered several imperatives regarding its objectives. Thus, the proposal must:

- **provide sufficient outlets for steel production via H2-DRI;**
- **Securing transition investments in historic European sites**
- **maximize the share of scrap metal.**

To provide sufficient outlets for steel production via H2-DRI and NG-DRI

The primary steel sector has several decarbonisation paths, the most massive of which is currently the conversion of blast furnaces into direct iron reduction units (DRIs). Steelmakers have two procurement strategies – which can be combined – for inputs from DRI units:

- The natural gas will be reformed to obtain a reducing gas composed of hydrogen and carbon monoxide used in the DRI unit (NG-DRI)

- That of the substitution of natural gas by non-fossil hydrogen coupled with carbon monoxide (e.g. from biomethane, but in much smaller quantities than for the 1st option) to constitute the reducing gas, thus increasing the decarbonization of the process while reducing dependence on fossil fuels (H2-DRI)

Many historic industrial sites are now in a tangent situation between maintaining the site thanks to the conversion of the blast furnaces into DRI-EAF units or closing.

For example, ArcelorMittal halted its DRI green steel projects in Bremen and Eisenhüttenstadt, rejecting €1.3 billion in German subsidies, while ThyssenKrupp was able to benefit from an extension of its subsidy until 2031. Its CEO has announced that it is stepping up its efforts to commission natural gas-based DRI facilities, which would be gradually replaced by carbon-free hydrogen.

Quickly giving these sites visibility on a market for low-carbon steel (for which Europe is ahead) should enable them to make the planned investments and thus consolidate a steel base that is vital for European sovereignty.

To maintain the competitiveness of steel production via DRI, it is crucial that the proposal creates outlets for all production from direct iron reduction units. This implies a differentiated design of the regulatory framework for steels made from H2-DRI and NG-DRI due to the stronger competitiveness of natural gas vis-à-vis non-fossil hydrogen.

Based on the latest reports, DRI production capacity in Europe will be 27.9 Mt in 2030. The distinction between natural gas and electrolytic hydrogen DRI projects is not always available at this stage since the list of projects that will be operational on time is still unclear, but most projects foresee a natural gas start-up, with a gradual transition to low-carbon hydrogen.

However, 100% H2-DRI projects could represent 8.7Mt by 2031:

Enterprise	Expected production 2031 (Mt)
Stegra	4,2
Gravit'hy	2
Blastr	2,5

Maximizing the share of scrap metal

The supply of recycled steel from scrap is another challenge for the steel industry and must be taken into account in the definition of the proposal given its relevance in terms of decarbonisation, the maintenance of European industrial value by developing circular approaches, and the competitiveness of this type of steel. Only its incorporation into the steel contained in cars presents a major challenge: reducing copper contamination to produce a high-quality steel suitable for the manufacture of a car.

In the "European Steel and Metals Action Plan", the Commission plans to conduct a feasibility study by the end of 2026 on ways to increase the share of steel produced from scrap in the automotive sector. The T&E association has already conducted a similar study via the Oeko Institute, [3] which was also chosen by the Commission to carry out an impact study on the "*Circularity requirements for vehicle design and management of end-of-life vehicles*" regulation.

According to the conclusions of the study and the institute reported by T&E: " *It is feasible and economically desirable to set a* ***target of 30% recycled steel in 2030 and 40% in 2035****, as well as* ***requirements for the dismantling of copper-rich components****, combined with* ***quality requirements for recycled steel, in particular a level of copper contamination not exceeding 0.1%".***

The proposal must take account of these high incorporation targets, which also allow for an optimum competitive steel supply for the automotive industry.

However, it is crucial to remember that the development of the recycling sector must go hand in hand with that of other decarbonisation sectors and that the strong competitiveness of this steel production method allows it to easily position itself in other markets and sectors to be decarbonised. In addition, the availability of scrap metal is structurally limited, with the share of the G7 steel mix increasing from 53% to 60% between 2020 and 2050 according to the IEA. In this context, even if the DRI sector will not be massively deployed before 2030, it remains at this stage the only technically credible option for producing a low-carbon steel compatible with the current requirements of the sector.

Thus, the objectives must be calibrated to consider the capacities of the different sectors to position themselves on different markets, the physical characteristics of their production, their needs to ensure their transition to industrial scale and the financial constraints weighing on end users.

Detailed proposal

To reconcile the different objectives, contribute to the safeguarding of industrial assets and maximise the leverage effects on the transition to the hydrogen sector, France Hydrogène proposes the introduction of criteria that would apply to car manufacturers and to the steel contained in cars placed on the European market.

[3] https://www.transportenvironment.org/articles/setting-recycled-content-targets-for-steel-under-the-elv-regulation

The calculation of these criteria is based on the needs of the automotive sector in 2022 (i.e. 36Mt) and the anticipated steel production for the different decarbonization pathways.

1. **Incorporate 30% secondary steel by 2031;**
2. **Incorporate 20% of primary steel from H2-DRI by 2031;**
3. **Incorporate 50% primary steel with a carbon content of 1.6t CO2eq/t of steel in 2031 and 1t CO2eq/t of steel in 2035.**

These targets were calculated from the automotive sector's needs in 2022 of 36Mt.

Incorporate 30% secondary steel by 2031

As mentioned earlier, the objective of incorporating secondary steel must be calibrated according to two factors:

- difficulties related to the dismantling requirements for copper-rich components, combined with quality requirements for recycled steel that technically do not allow a ceiling of 30% to be exceeded by 2031;

- Despite the production of significant volumes, steel recycling is reaching structural limits (increase in demand; insufficient deposits, etc.) which makes it impossible to envisage fully circular decarbonisation scenarios. Its strong competitiveness could also lead to a significant part of this production – European and non-European – being earmarked for the automotive sector and thus cannibalising the market shares of a sector that has the capacity to absorb the additional costs of low-carbon primary steel. This issue is all the more significant as the current design of the Carbon Border Adjustment Mechanism (CBAM) – and the absence of an import duty for scrap metal – could encourage its import if non-European countries strategically allocate the share of recycled production to European demand[4].

Thus, the incorporation of 30% of secondary steel from 2031 makes it possible to take into account the European Union's climate ambition in terms of decarbonisation while securing the demand for the structuring of a European primary steel market.

Incorporate 20% primary steel from H2-DRI by 2031

The launch of the first steel production sites from H2-DRI units is crucial to accelerate the scale-up of the electrolytic hydrogen sector. As mentioned earlier, the anticipated production of these sites by 2031 is estimated at 8.7 Mt.

The creation of a target that would cover 80% of this production would have two virtues: to stimulate investor confidence and thus ensure the launch of the first sites; create a sufficiently tense and competitive market for producers to value their steel at a price that does not incorporate too high a premium for forced consumers.

In this case, this would correspond to an incorporation criterion of 20%, i.e. 7.3Mt out of 8.7Mt.

As the purpose of this criterion is to secure the scaling up of a European H2-DRI sector and thus strengthen its competitiveness on the global market, it will remain stable over time.

Incorporate 50% primary steel with average carbon content in 2031 and 2035

As explained earlier, the condition for safeguarding certain historical steel activities and securing transition investments in the blast furnace sector must also involve the creation of a flexible market for other modes of decarbonisation of production.

[4] https://www.strategie.gouv.fr/en/publications/decarbonising-steel-and-other-base-metals-lets-send-right-signals

Thus, in order for players to maintain a certain flexibility in their strategy for the decarbonization of sites and their overall production (e.g. incorporation of pig iron; use of CCUS; NG-DRI...), France Hydrogène proposes that for the remaining 50% of primary steel in cars, an average emission content be adopted.

With a view to the gradual decarbonisation of production in line with the steelmakers' projections, two time milestones would be adopted:

- 1.60tCO2eq/t steel in 2031: this figure takes into account the average emissions for the production of steel from blast furnaces and NG-DRI according to a methodology of the World Steel Association[5]. This is a realistic average value taking into account the low-carbon steel production projects from the NG-DRI commissioned before 2031.

- 1t CO2eq/t steel in 2035: this figure corresponds to the reductions in emissions linked to an assumption of an average supply of 40% of hydrogen in DRI units alongside natural gas. It thus creates a signal for the gradual defossilisation of primary steel production sites.

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Table of proposals according to needs

Type of steel concerned	Corresponding requirements	Target (%)
Primary steel <1.6-1tCO2eq/t steel	23.4 (out of 27.9Mt total)	50
H2-DRI Primary Steel	7.3 (out of 8.7Mt total)	20
Secondary Steel (Scrap)	12,6	30

Sanctions

The introduction of sanctions through financial penalties like the framework established by the EU Aviation Refuel Regulation will also be necessary to force the automotive sector to apply these criteria.

[5] World Steel in Figures, 2025