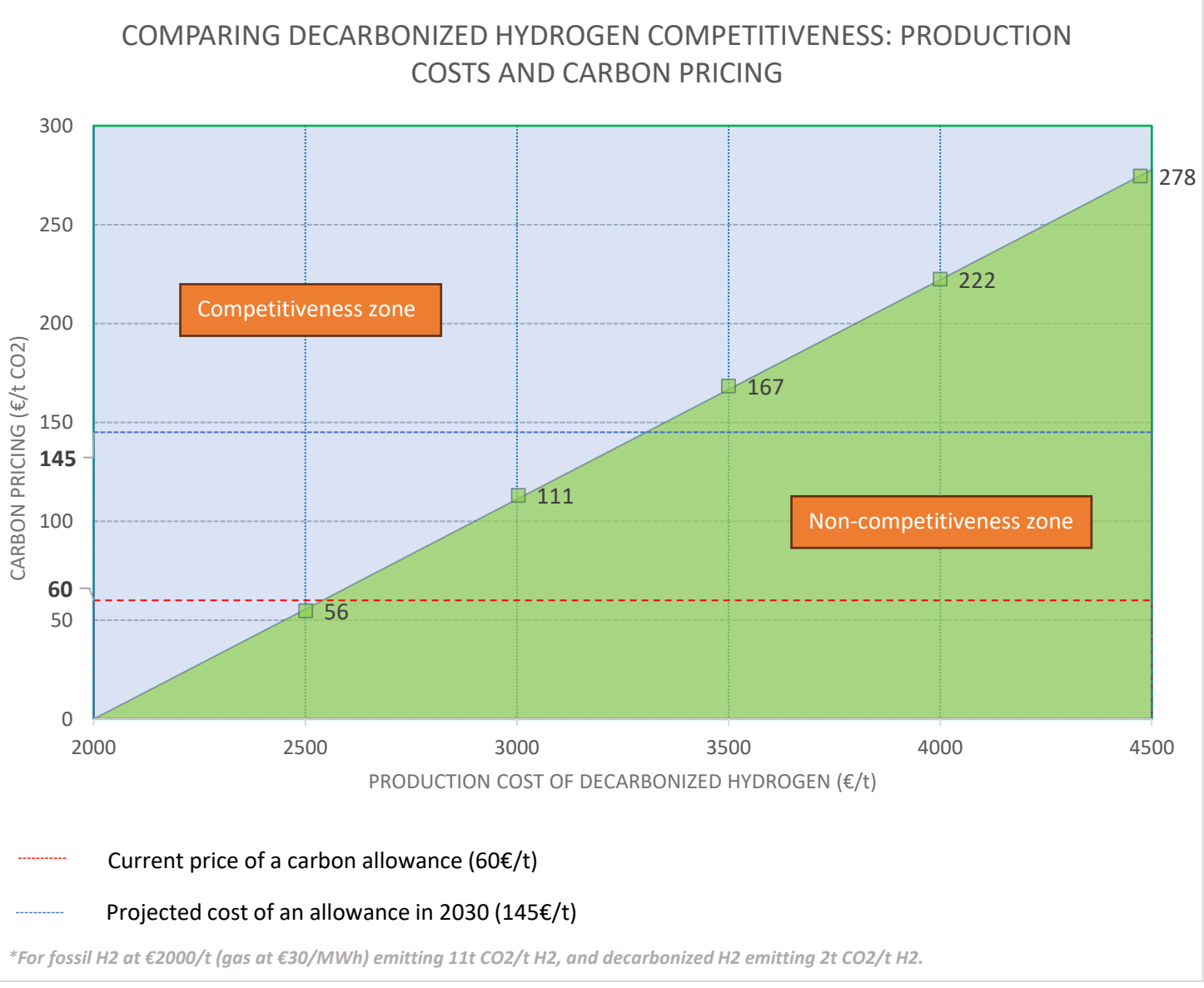
April 2024

Position Paper on Transposing RED3 Industrial Targets

Executive Summary

Until now, the European Union's Carbon Trading System (EU-Ets), now coupled with the Carbon Border Adjustment Mechanism (CBAM), has served as the main regulatory framework to support the decarbonisation of industries. **However, neither the current level of the carbon quota price, nor that anticipated by 2030, is sufficient to make the switch to the use of non-fossil hydrogen (RFNBO; low-carbon electrolytic; biogenic) competitive for industries using hydrogen as a feedstock (currently or later, following process changes, such as for steel).**

The following table sets out this observation and establishes the price signals that the EU-Ets should give to achieve iso-competitiveness between fossil and non-fossil hydrogen according to its cost of production:



**For fossil H2 at €2000/t (gas at €30/MWh) emitting 11t CO2/t H2, and decarbonized H2 emitting 2t CO2/t H2.*

As a result, **France Hydrogène welcomes the action of the European Commission through the revised Renewable Energy Directive (RED3) aimed at addressing the shortcomings of the EU-Ets for hydrogen-consuming industrial sectors**. Indeed, RED3 sets important milestones to ensure visibility for investors and structure demand for non-fossil hydrogen in the industry, with Articles 22a and 22b:

- article 22a sets a target for the use of renewable hydrogen of non-biological origin (RFNBO) in industry of 42.5% by 2030 and 60% by 2035.

- for Member States achieving between 77 and 80% non-fossil hydrogen consumption (low-carbon electrolytic; biogenic) in industry by 2030 and 2035 respectively, the target for the use of RFNBO may be reduced to 33.6% and 48% (Article 22b).

The framework set out in Articles 22a and b of RED3 is a decisive and unique tool globally to accelerate the decarbonisation of basic industries in the EU, which is essential for achieving our national and European climate objectives. **Now, finalising the structuring of a market for non-fossil hydrogen in industry requires transposing these two articles, through a set of concrete measures giving the right price signal to carbon in the markets of basic industries.**

The achievement of these objectives will have to be strictly measured at the national level so as not to generate a wait-and-see attitude towards the launch of projects on the part of States that would bet on hypothetical future exchanges of certificates with States that have exceeded the targets: the regulatory framework must promote the development of industrial decarbonisation projects within all European States to comply with our collective climate objectives.

Without going back on the national nature of these objectives and penalties, France Hydrogène recalls that it will be crucial to adopt a European approach that is as harmonized as possible in order to avoid the risks induced for the industry located on the territory of a State more willing than the others in the transposition of RED3 (comparative decline in competitiveness; carbon leakage).

Achieving these national objectives will require two legs: quickly transposing the obligations to the level of industrial hydrogen users; and create opportunities for low-carbon industrial products by establishing a fair price on carbon. These pillars can be concretely reflected in the following recommendations (*See simplified diagram on next page*):

- **Measures to implement the obligations at the right level while anticipating the particularities inherent in certain basic industrial sectors:**

    - *Reflect objectives at the company and capital group level in order to offer flexibility in the strategy of the companies;*

    - *create sector-specific mechanisms to mitigate the risk of circumvention of targets by imports of fossil energy products;*

    - *apply the same objectives for all sectors (except steel – adapted target) and develop a sectoral tool for exchanging certificates for exceeding non-fossil hydrogen consumption targets;*

    - *adopt national and European financing measures to initiate the scale-up of low-carbon basic industries;*

- **Measures to create downstream outlets for carbon-free industrial products in order to avoid any phenomenon of carbon leakage and loss of competitiveness of companies:**

    - *Apply a maximum carbon content to certain finished or semi-finished products, with the application of non-discharging penalties (to set a carbon cost) via the following methods:*

        - *define a list of finished or semi-finished products to which the maximum carbon content will apply, in connection with the identification of the economic actors in the value chain capable of bearing the cost of this measure;*

- *apply the mechanism at the level of products put on sale on the European market (including those imported from third countries) and direct penalties to the EU's own funds (e.g. Hydrogen Bank);*

- *determine a multi-year trajectory for reducing the maximum carbon content, consistent with the availability of decarbonisation solutions: the objective is not for distributors to pay the tax, but to encourage upstream investment in decarbonisation projects;*

- *create a system for the sectoral exchange (excluding refineries) of certificates allowing the actors concerned to financially value the achievement of pre-established targets.*

This system, and generally any mechanism aimed at stimulating final demand for low-carbon industrial products, has as **a mandatory prerequisite the development of a mechanism for certifying the carbon intensity (or "non-fossil content", for steel) of targeted products based on voluntary schemes.**

As the steel industry is a new sector using hydrogen, it will have to be subject to a **specific regulatory framework to ensure a non-fossil hydrogen development pathway for the DRI without imposing a level of obligation that would distract steelmakers from converting blast furnaces**. France Hydrogène proposes that this regulation on the production and use of steel be based on the following two mechanisms: *an adapted target of non-fossil hydrogen consumption in DRI units; a minimum non-fossil content of hydrogen in automotive steel.*

As a first step, this package of measures should be part of the Commission's framework document ("RED3 Guidances"), which is intended to guide and advise Member States on the policies to be implemented to transpose RED3.

This position paper elaborates on and explains each of the above-mentioned proposals.

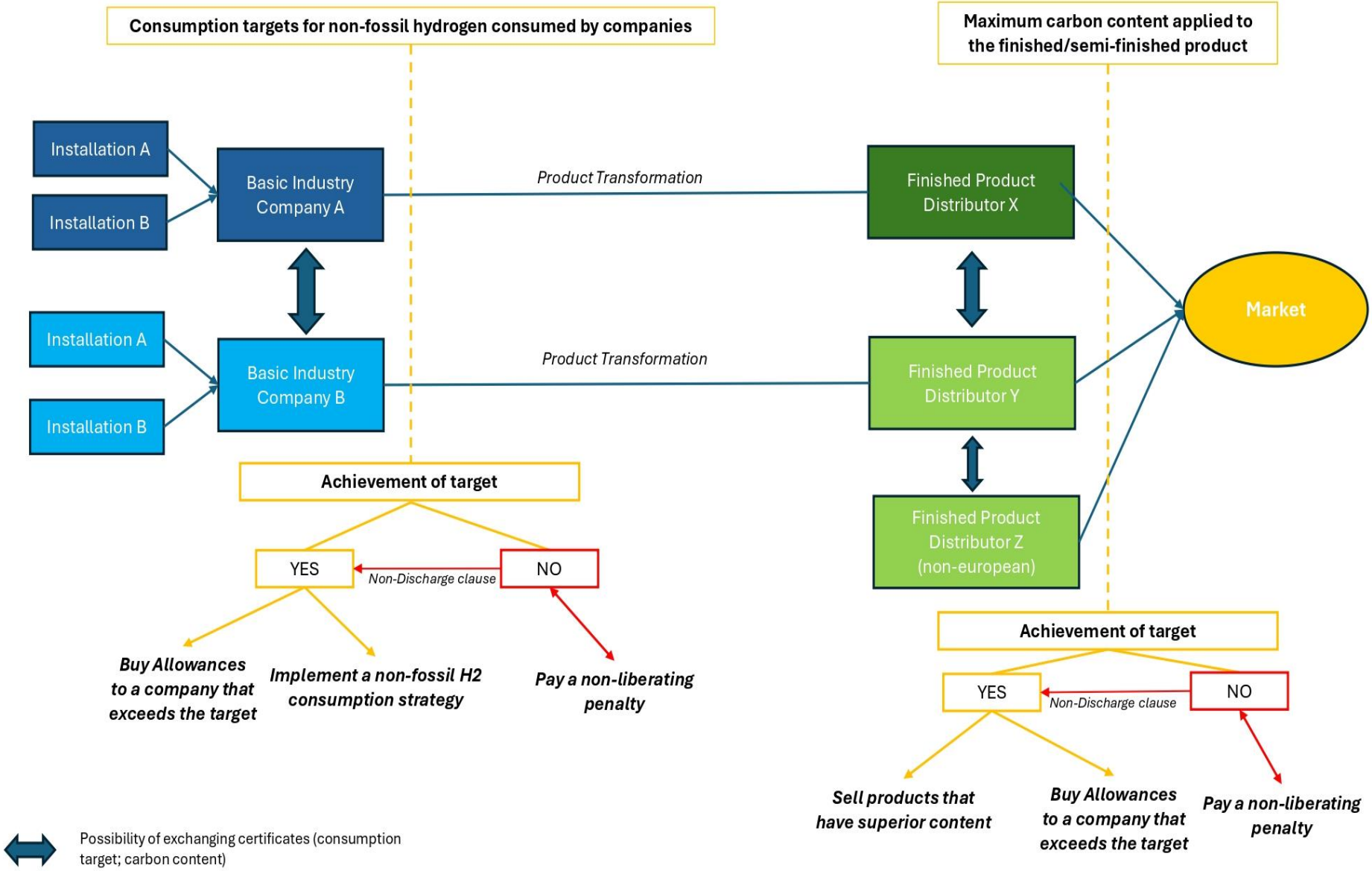


Figure 1: Simplified diagram of the regulatory framework for the transposition of industrial targets

1. Applying the obligation to basic industries

This first dimension of the transposition of the targets for the use of non-fossil hydrogen must finalise and concretise the European framework set out in Articles 22a and b of RED3.

To this end, a package of budgetary and extra-budgetary measures must be deployed to ensure that these obligations are applied at the right level and to effectively support the transition to the use of non-fossil hydrogen in all EU Member States.

Adopt sector-specific mechanisms to avoid target circumvention strategies

The adoption of specific mechanisms to avoid any circumvention strategy is based on the following interpretation of the definition of hydrogen consumption targets (Article 22a) of RED3 (same for 22b by replacing RFNBO with non-fossil): The term industrial H2 in the RED3 target is understood as the addition of H2 consumed in industry and imports of derivatives (NH3[1] and MeOH[2]). Either:

$$\frac{\text{industrial H2 RFNBO consumed} + \text{H2 RFNBO derivatives (NH3 and MeOH) imported}}{\text{industrial H2 consumed} + \text{H2 RFNBO derivatives (NH3 and MeOH)imported}}$$

Unless this interpretation proves to be erroneous and the Commission specifies the inclusion of all imported H2 derivatives (incl. fossils) in the calculation of the denominator for the targets of Articles 22a and b (which would be positive), **the adoption of a mechanism to avoid strategies to circumvent the target for ammonia is necessary.**

- Observation: Currently, only the direct consumption of hydrogen on the territory of the Union is considered in the denominator used to calculate the target for the use of hydrogen in industry.
- Induced risk : this opens up the possibility for States and industrialists to circumvent the target and achieve their objective by reducing production within the EU and increasing the import of fossil ammonia (incl. with CCS) from a third country.
- Proposal: **France Hydrogène proposes to anticipate this risk by increasing the denominator by a volume equivalent to any additional import of fossil ammonia (incl. with CCS) from a third country, compared to a reference year.**

[1] *Ammonia*
[2] *Methanol*

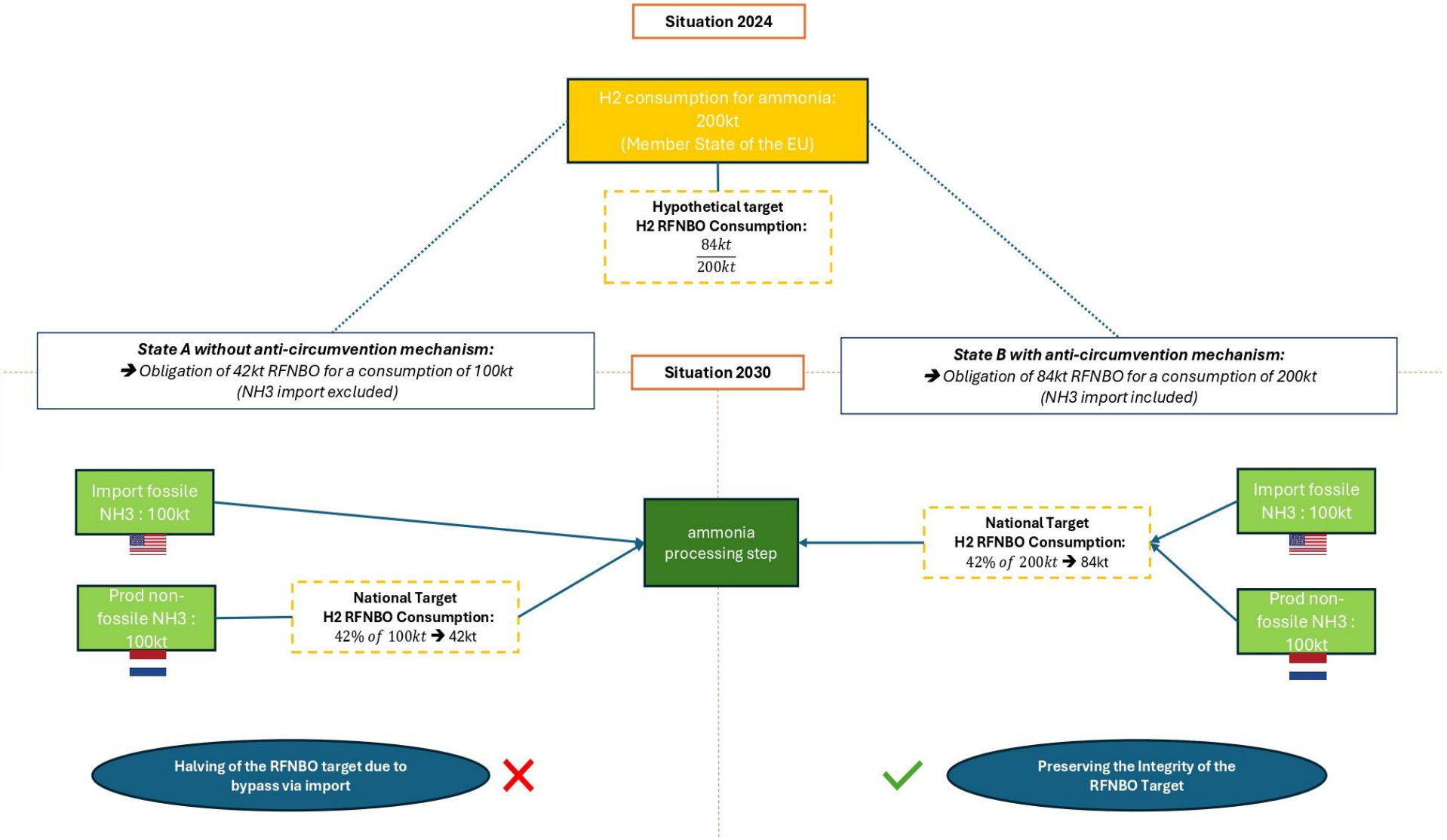


Figure 2: Anti-Bypass Mechanism Diagram for Ammonia target

Passing on targets at the company and capital group level

In order to provide greater strategic flexibility to industry to meet utilization targets, it is **essential that the obligation apply not at the facility level but at the level of companies and capital groups**. The flexibility provided to companies thus allows them to concentrate their efforts on certain assets while respecting the objectives, if this corresponds to an economic optimum and/or a technical need. The calculation at the level of companies and capital groups is understood in relation to hydrogen or its derivatives used by the assets of the legal person concerned which are located within the same Member State.

Apply the same objectives for all sectors and develop a certificate exchange tool

To maintain sufficient predictability for investors and not to place a greater burden on the industrial sectors concerned in order to achieve the national objective, France Hydrogène proposes two recommendations:

- **apply the same target of use to each sector (except steel, with an adapted target);**
- **develop a tool for the exchange of sectoral (chemicals, metallurgy) certificates of exceedance of targets to promote the most decarbonized facilities.** The fungibility of these certificates should allow certain facilities facing longer decarbonisation deadlines to purchase certificates from installations (e.g. greenfields) exceeding their target, thus contributing to their financing. Such a measure also aims to reduce the dependence of players on state subsidies by making the use of non-fossil hydrogen more competitive. The fungibility of certificates would remain strictly sectoral and limited to each Member State. Indeed, the more fungible a target is, the more individual players are led to speculate on the future availability of certificates, and therefore to base their strategy for achieving the target on a "virtual decarbonization" (purchase of certificates), thus delaying the overall launch of projects.

Adopt financing measures to kick-start the decarbonisation of low-carbon basic industries (H2 Bank, MSP, CcFD)

While the creation of a regulatory framework leading to the formation of markets for low-carbon products will make it possible to no longer depend on public subsidies in the long term, public financial support will be essential for the start-up and learning of sectors on industrial-scale projects.

France Hydrogène therefore welcomes the European Union's investment through various measures that contribute to the launch of decarbonised industrial sectors and recalls the structuring nature of the Hydrogen Bank window.

However, it is crucial for the rapid development of a competitive European hydrogen sector addressing the targeted industrial needs, that these funds are designed in line with the European legislative framework. France Hydrogène recalls in this respect that Article 22b recognises the complementarity of the different sources of non-fossil energy for the production of carbon-free hydrogen for industry. **It is now necessary to take note of this framework in and open up the possibility that the Hydrogen Bank, from the second call for tenders (autumn 2024), will finance volumes of non-fossil hydrogen, and will no longer be limited to RFNBOs alone.**

Carbon-free hydrogen is an essential part of achieving European climate objectives and represents a major opportunity for basic industries within the Union. But, as highlighted in the European Commission's impact assessment for a 2040 climate target, the challenges inherent in its deployment within the targeted timeframe are numerous. In this context, it seems essential to capitalise on all the differentiated technological and energy assets of the Member States, rather than opposing them.

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All the measures in this first pillar must therefore provide conditions conducive to the development and relocation of low-carbon basic industries in Europe. **However, it cannot be effective without a second pillar aimed at creating opportunities for these industries by structuring markets for decarbonised products, in order to avoid any decline in the competitiveness of manufacturers and the associated risk of carbon leakage.**

2. Creating opportunities and consolidating demand for low-carbon industrial products

In order to control the risks that the measures could pose to players in basic industries, it is essential to establish a regulatory framework structuring the development of markets for decarbonised products. A fair price on carbon must be set at the level of downstream markets. **France Hydrogène proposes to introduce a maximum carbon content on certain products sold on the European market and whose price signal will depend on penalties in the event of non-compliance with the carbon content.**

These mechanisms will have to be harmonised at European level to prevent industries located in a voluntary state from suffering a loss of competitiveness.

This is, for example, what the French Government plans to study as part of the French Energy and Climate Strategy (SFEC), with the creation of a "sectoral incentive bonus-malus" on the carbon content of nitrogen fertilizers, which gives a double economic signal, both to reduce the use of these fertilizers, and to decarbonize ammonia production upstream of their manufacture. This mechanism under consideration provided that a fertilizer distributor whose carbon content of the volumes placed on the market was below the set threshold, could financially value this performance by selling certificates to distributors who had not reached the target.

Such a type of obligation should apply to products **sold on the European market, regardless of their origin (European Union or third country).** In the same way as for the CBAM (or rather: in a complementary way, because the EU-ETS is insufficient for the de-fossilisation of sectors using hydrogen as a feedstock): one of the objectives is to "collide" other major industrial economies and to send, thanks to the major consumer market that the EU represents, the signal for the decarbonisation of these industries using hydrogen.

Beyond the issue of competitiveness, the application of this mechanism at the level of finished products allows a dilution of the additional cost linked to the consumption of non-fossil hydrogen upstream. The following diagram illustrates that in the case of cars, the use of carbon-free steel from a direct reduced iron (DRI) unit coupled with the use of non-fossil hydrogen contributes to an increase of less than 1% in the final cost price[3]:

[3] *From Niche to Mainstream: Shaping Demand for Green Steel, January 2024, Sandbag: Unspecified study on the initial cost of producing non-fossil hydrogen*

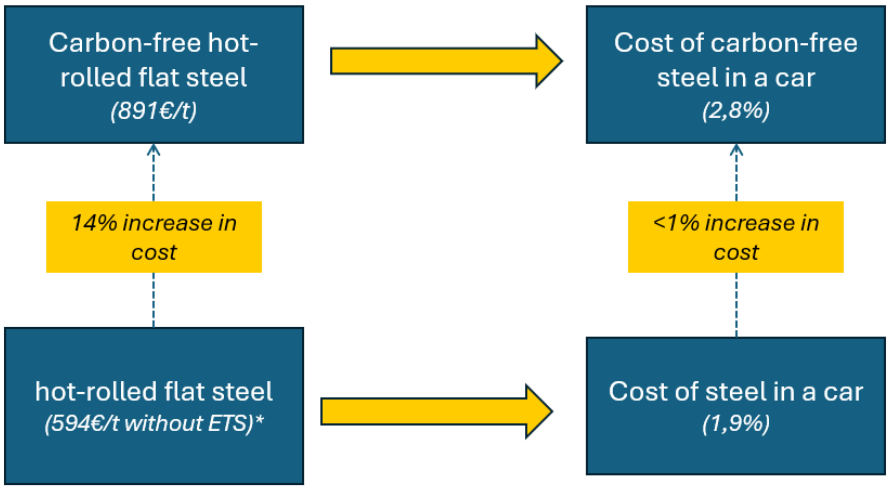

Figure 4: Diagram of the dilution of the cost of the premium of non-fossil hydrogen consumption for the steel contained in cars

Modalities for the application of the maximum carbon content

The application of this maximum carbon content should be applied as follows:

- **European scope**: the application range of the mechanism at the European level should entail allocating penalties to the European Union's own funds, thereby contributing to the funding of the Hydrogen Bank. This requires harmonisation of the mechanism at the level of all Member States.

- **Define a list of finished products to which the maximum carbon content will apply:** to determine the list of the most relevant products to target to achieve the hydrogen use targets, a global reflection will have to be carried out in order to facilitate the methodology of application by sector. Two dimensions can be addressed to establish this list:

    - ***Target the stage of product processing that is most likely to avoid any decline in the competitiveness of industries while facilitating the implementation of the measure.***

    - ***Identify the obligated among the economic actors in the value chain:*** given the structuring nature of this measure, it will be crucial to identify the obligated according to their ability to pass on the cost of decarbonisation to the final price. ➔ *For example, in the case of the nitrogen fertiliser value chain: should the obligation rest on agricultural cooperatives or on downstream agri-food processing groups?*

- **Determine a multi-year trajectory for the reduction of the maximum carbon content:** its definition will have to be based on two elements: to guarantee demand in line with the consumption objectives in order to stimulate related investments; to limit as much as possible the inflationary effects linked to the pass-on on to final costs. Adopting a multi-year trajectory should provide visibility for investors.

- **Create a sectoral certificate trading system allowing the players concerned to financially value the achievement of pre-established targets:** a certificate trading system would offer players whose products placed on the market would be below the pre-established threshold, to benefit from relevant financial leverage. This certificate trading system would be strictly sector-specific to contribute to the decarbonisation of each category of finished products.

This system, and globally any mechanism aimed at stimulating final demand for low-carbon industrial products, has as **a mandatory prerequisite the development of a mechanism for certifying the carbon intensity of targeted products based on voluntary schemes:** like the RFNBO volume certification system, the Commission will have to validate voluntary schemes and national certification schemes attesting to the carbon content of products placed on the market. The certifying bodies would rely on a harmonised methodology at European level for calculating the carbon content of the products concerned.

3. Specific regulatory framework for the steel industry

Technical and economic context

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

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

Apart from specific regulations, a steelmaker operating a DRI unit would now have a clear interest in prioritising a natural gas supply, due to the competitiveness of the gas input in relation to the cost of producing non-fossil hydrogen, as anticipated in 2030 for example.

Regulatory context

The steel sector is not included as such in the calculation for the achievement of the RFNBO and non-fossil hydrogen use targets, since it does not currently consume hydrogen in blast furnaces (excluding co-products). For inputs that will be used in DRI units, the question arises as to whether or not to include the fossil hydrogen used (by natural gas reforming) in the denominator of the RED3 target.

Problematic

As a new industrial use of hydrogen, with a natural gas alternative, a dilemma arises as to the application of an obligation to use non-fossil hydrogen on DRI units (with penalties in case of non-compliance):

- Risk: if poorly calibrated, the obligation could slow down the momentum of European steelmakers to convert blast furnaces to DRI.
- Necessity / Opportunity:
  - the non-fossil hydrogen DRI and the natural gas DRI cannot be put on the same level. The use of non-fossil hydrogen allows for a deeper decarbonisation of steel activities, while reducing our dependence on natural gas and its producing countries, which are third to the Union.
  - In addition, a regulatory framework that does not differentiate between fossil and non-fossil quality and the hydrogen used could quickly lead to a strong lack of competitiveness of European low-carbon steel production facilities vis-à-vis countries with access to more

competitive natural gas (particularly the United States and the states of the Arabian Peninsula). On the contrary, **providing a framework that positively discriminates against the use of non-fossil hydrogen in DRI units opens up a more balanced international competitive framework, geopolitically less risky in the long term, between European production and imports of iron briquettes** (and in this case, import projects from third countries can be used for the export of European technologies, such as electrolysers).

Proposal : Creating a specific target for steel based on a massive experimental market

Based on this observation, France Hydrogène proposes to create a specific regulatory framework for the application of RED3 obligations to the steel sector. This framework is intended to ensure a non-fossil hydrogen development pathway for the DRI without imposing a level of obligation that would distract steelmakers from converting blast furnaces. It will also be based on two interdependent mechanisms: first, to achieve a predefined consumption target of non-fossil hydrogen in DRI units; and the second is to introduce a minimum non-fossil content of hydrogen in steel in the automotive sector.

- **Target for non-fossil hydrogen consumption in DRI units:**
  - ***Scope of application:*** this target should apply to the inputs of electric arc furnaces (EAF) located on the territory of the European Union.
  - ***Methodology for calculating the target:***
    - only the share of inputs from DRI (iron briquettes) is used to calculate the denominator; scrap as an input to EAFs is not included in the denominator, as this would amount to creating undesirable competition between two technological pathways that are essential for the decarbonisation of the steel industry.
    - the denominator shall correspond to the total calorific value of the material inputs used recorded at the inlet of the electric arc furnaces. This choice makes it possible to account for the non-fossil hydrogen content of iron briquettes imported, for example, from a non-European country. And, conversely, to mitigate the risk of circumvention of imports of iron briquettes manufactured in a third country by natural gas DRI.
    - to impose a target for which a market exists/is created, it will be defined initially according to the non-fossil steel needs identified for the automotive market alone (see next point), before a possible extension to other end-user sectors.
  - ***Certificate trading scheme*:** for installations concerned that do not physically reach their consumption target, it will be possible to purchase certificates corresponding to the exceedance of the targets by other installations located in the same Member State.

- **Adressing a Massive experimental market : Minimum non-fossil hydrogen content in automotive steel:**
  - ***Problem to be addressed:*** unlike other downstream markets of industries using hydrogen as a feedstock, we cannot base the 2nd pillar on setting a maximum carbon content of products placed on the market. Indeed, this would open up unfair competition between the production of European low-carbon steel, subject to obligations on the use of non-fossil hydrogen, and the import of steel produced in third countries from DRI and natural gas. And, unlike ammonia (which is a sector that already uses hydrogen, and is therefore affected by RED3 obligations), the implementation of an import adjustment mechanism would be impossible for steel.

- ***Proposal:*** France Hydrogène therefore proposes the application of a minimum non-fossil content of hydrogen in steel used by the automotive sector.
    - Scope of content:
        - the volumes of scrap-based recycled steel used in automotive manufacturing would be excluded from the denominator so as not to create a regulatory framework that would put these two production routes – DRI H2 and scrap recycling – in competition with each other, both of which are essential for the decarbonisation of the sector.
        - To meet the above-mentioned challenges**, the identification of the automotive sector as a massive experimental market to apply this content has several interests**: *manufacturers have a greater propensity to pay a premium (i.e. low increase in the final price of a car[4]); the share of the cost of carbon-free steel in the final cost price is minimal; this market represents less than 20% of steel uses and makes it possible to define an initial consumption target measured, while remaining a massive launching pad.*
        - This obligation should apply to products **offered for sale on the European market**. Thus, a car manufacturer with activities in the territory of the European Union will apply this objective "only" to the part of its production marketed within the EU, not to the part intended for export to third countries. Conversely, a car manufacturer operating in the territory of a non-EU country, but exporting part of its production to the EU, will have to apply this obligation to that part of its production. In the same way as for the CBAM, one of the objectives is to "collide" other major industrial economies and to send, thanks to the major consumer market that the EU represents, the signal for the de-fossilization of steel production.
    - Certificate trading system: As with the other mechanisms, it will be possible for marketers to purchase certificates corresponding to the exceedance of the target non-fossil hydrogen content of products offered for sale by other companies.

Mechanism for certifying the non-fossil content of steel: as a mandatory prerequisite for the entry into force of this system, the European Commission will have to validate voluntary schemes and national certification schemes attesting to the non-fossil content of steel. The certifying bodies would rely on a harmonised accounting methodology at European level.

[4] *See Figure 4: p.8*

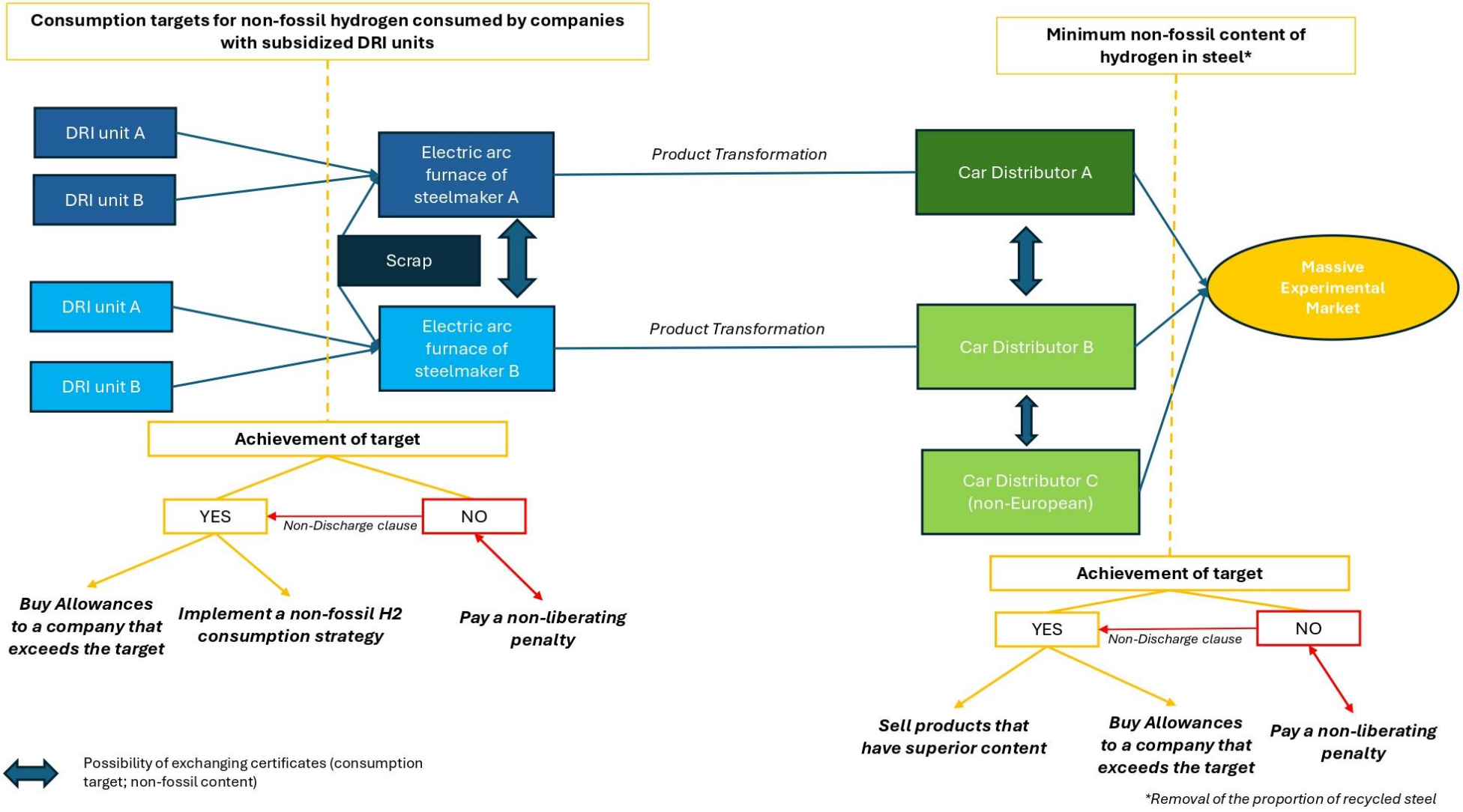

Figure 3: Diagram Mechanism for Steel