

WP1 TASK 1.1

Regulation of raw materials and end products

ABSTRACT

Task 1.1 was motivated by the need to understand how countries leading the hydrogen uptake have designed their legislative frameworks and what regulatory choices they have made in support of the implementation of these policies. It focused on the question of what type of regulatory framework can ensure that national interests (both in terms of public and private actors) in P2X can be realized when considering the regulatory choices in leading countries in this area and how international law, and international trade law in particular, impacts the trade in hydrogen and related products.

These questions were studied through comparing the regulatory frameworks in the EU, the US and Australia. In this comparative approach, EU was used as the base-case and the US and Australian frameworks were compared to the EU framework. The findings confirm that the regulatory frameworks in these areas are similar but have certain significant differences. Some of these differences are driven by the policy goals (importer/exporter) of PtX products, i.e. hydrogen and its derivatives. Other differences are connected to the approach to markets (public vs private sector having the leading role, public sector leading the market formation in the EU and market forces having a more profound role in the US), available resources and the constitutional division of competences between the Federal and State levels. Results indicate clearly that the EU framework is leading the developments in this area globally.

In relation to EU regulatory framework, we also found that that the EU framework is extremely detailed, and the risk of overregulation is apparent. Similarly, we found that the future changes in the regulatory framework (especially through multiple delegated acts foreseen by the current regulations) create uncertainty for the investors, slowing the pace of investments in PtX projects.

MOTIVATION

The investments to clean hydrogen and its derivatives hold great promises in terms of achieving carbon neutrality on a global scale, but also in strengthening the Finnish economy. However, many final investment decisions are being held back by regulatory and market uncertainties. It is important to identify the main drivers and barriers from the investors' perspective. Furthermore, the lack of international standardization and differing regulatory structures hamper the international trade in PtX products. The regulatory framework for hydrogen is indicated in Figure 1.

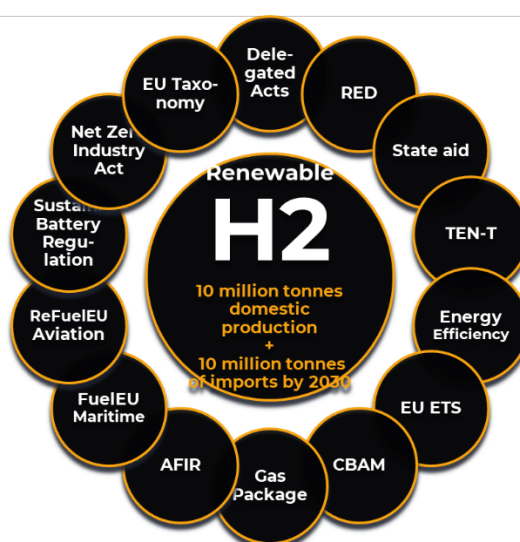


Figure 1. The regulatory framework for hydrogen.

RESULTS

In all three case regions the first policy question was whether the focus should be on green hydrogen, or whether other forms of hydrogen should be included in the regulatory framework, subsidy schemes in particular. This policy level discussion was also connected with the available resources. In Australia and the EU, the decision was to focus on green hydrogen. The US approach was to a certain extent different, and the focus was on emissions reductions, rather than on renewable quality. In all three regions, all kinds of hydrogen can be produced and sold, but the public subsidy is focused on green or clean hydrogen.

The details of the regulatory frameworks in these three systems are connected to the vertical division of competences between federal and state levels. While there are strong similarities in the EU and the US systems, with strong EU level or Federal role, Australian approach is more focused on the State level regulation. However, also Australia has strong Federal level public subsidy schemes in place.

Another driver of the differing regulatory frameworks in the three systems, was the general approach to markets. The EU approach to energy markets has traditionally been public sector driven, and this is visible in the approach to hydrogen and PtX markets and their regulation. This entails that the EU level regulation is driving market development and uptake of hydrogen. Contrary to this, the US approach has traditionally been more market driven. Although this is also visible in the regulatory frameworks for hydrogen and PtX products, the Inflation Reduction Act (IRA) created a change in this respect. IRA creates a public sector subsidy mechanism that is geared to kick-start a hydrogen economy within the US. The Australian system is somewhere between the EU and the US, with focus on State level decision-making but significant role is given to the Federal level through the green hydrogen subsidy mechanisms.

The EU framework, in particular, is currently focused on electrolyser-based production and departs from the more traditional technology neutral approach. It leaves little scope for technical innovation in this area. This is beneficial for Finland but may slow down the creation of a liquid hydrogen market in the EU.

In terms of international trade, the EU framework for hydrogen and its derivatives apply fully to production of these products in third countries. However, as the EU regulatory framework is created by the EU and for the EU, some of the EU requirements for green hydrogen are difficult to implement and comply with in third countries. Such example is the rules around bidding zones, which are based on EU electricity market design. Also, a number of required important international agreements and international certification mechanisms are still missing and this is likely to slow down international trade in hydrogen. Different regions have different rules and for a potential importer, this means that the product has to be separately certified for all intended import markets. There are also international trade rules under the

WTO framework that applies to the future hydrogen trade and create certain constraints on national policy approaches, an example of this being the carbon border adjustment mechanism in the EU. Similarly, the national or EU level certification schemes for green hydrogen need to be designed in a way that does not impose unfair or restrictive requirements on imports, as this could lead to violations of WTO trade laws.

The Finnish industry is likely to benefit from the slower emergence of international trade in hydrogen and its derivatives. Finland aims to become a supplier of hydrogen within the EU and due to slow start in international trade, it faces less competition from third countries. Similarly, the focus on green hydrogen and electrolyser technology within the EU framework benefits the Finnish industry, as the conditions to produce green hydrogen and e-methanol in Finland are comparably strong, in particular because of the low energy costs. In order to further strengthen the competitive position of the Finnish industries, decisions on national State aid for hydrogen production and hydrogen value-chains should be taken without delay.

APPLICATIONS/IMPACT

The planned hydrogen facilities are mainly still waiting for investment decisions to proceed for building the facilities. The regulatory frameworks are in the makings and EU has been a global leader in this respect. The rules on the production of green hydrogen are in place, although there is some uncertainty regarding their future development. The subsidy mechanisms at EU level, but also national level, are focused on green hydrogen and provide opportunities for public subsidies for production, transport and end-use of hydrogen. There are still limited opportunities for subsidies in Finland, but Finnish companies can apply for EU level funding. Both EU and national funding for hydrogen economy needs to be significantly increased.

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