

Finnish Energy on the EU Hydrogen and Gas markets Decarbonisation Package

Finnish Energy



Energiateollisuus

Finnish Energy's key messages for EU Hydrogen and Gas Markets Decarbonisation Package

- 1. Technology neutrality should be in the core of Commission's policy proposals to ensure that all carbon neutral gases including synthetic gases fit the market criteria and will have an opportunity to contribute to reach the goals of EU climate targets.**
 - All CO₂-neutral electricity should be accepted for clean hydrogen production, including nuclear, hydropower, and bioenergy, and other CO₂-neutral electricity being produced into the existing electricity grid. In Finland, 85 % of electricity production was carbon neutral in 2020.
 - Many hydrogen applications as well production technologies are in the development phase at the moment and need more research and demonstration. Most promising technologies need to be scaled up during upcoming decade. Limiting of technology development at this phase is not beneficial for emission reductions or technology development.
- 2. Existing low carbon electricity grid and gas infrastructure should be the foundation for developing hydrogen markets.**
 - Only this way hydrogen can be an enabler of full system integration . Electricity market and hydrogen can provide great flexibilities for each other.
 - Utilising and developing existing grids is essential to minimise costs for companies, citizens and society and to guarantee just transition.
 - In case there are no existing gas grids available, off-grid production should have the same equal treatment as grid connected production.

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- 3. Clear legislative principles, preferably by integrating hydrogen into the gas legislation, are relevant for current stage of hydrogen development.**
 - Providing long-term visibility and clarity on as market based as possible policy framework is crucial for companies to make investments.
 - Role of energy NRAs to implement common cross border regulatory principles throughout the European grid access and operations should be strengthened.
 - A regional MAM (Market Access Manager) approach should be developed to accommodate problems arising from common cross border gas balance areas e.g. Finland, Estonia, Lithuania.
- 4. Well-functioning energy markets and carbon pricing through EU ETS are crucial for achieving the EU climate targets, and state aid should not jeopardise competition nor bring distortions to the system.**
 - Safeguards against competition distortions must be put in place, and all temporary support schemes for decarbonisation solutions must be subject to clear sunset provisions.
 - For all technologies, aid should only be considered at early stages of development.
 - Eventually, market prices of different energy products and carriers as well as CO2 price should create incentives for investments in hydrogen where it is cost efficient abatement technology.

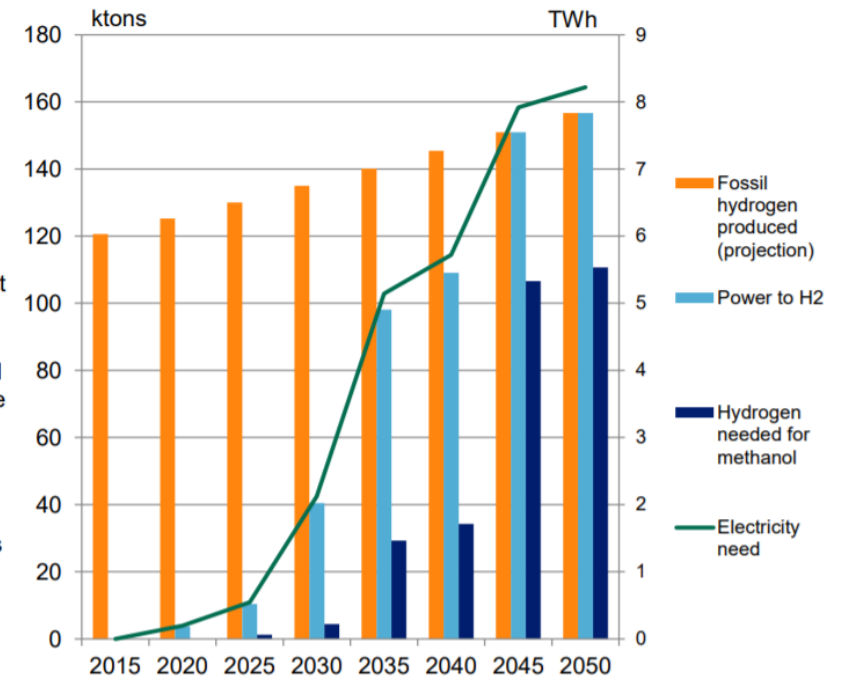
Finnish industry sectors have developed sectoral low-carbon roadmaps to reach Finland's 2035 carbon neutrality target

- Finnish industries need Power to H2 for decarbonisation
- This requires large amounts of carbon neutral electricity
 - Investments for electricity production will follow the increasing demand immediately when industry starts to invest in emission reductions
 - Therefore construction of new capacity should base on market prices and commercial contracts between electricity producers and users
 - Legislation should make investing in all carbon neutral production as smooth as possible and minimise political risk of investments

CARBON NEUTRAL CHEMISTRY 2045 AND HYDROGEN

Hydrogen and electricity are closely linked

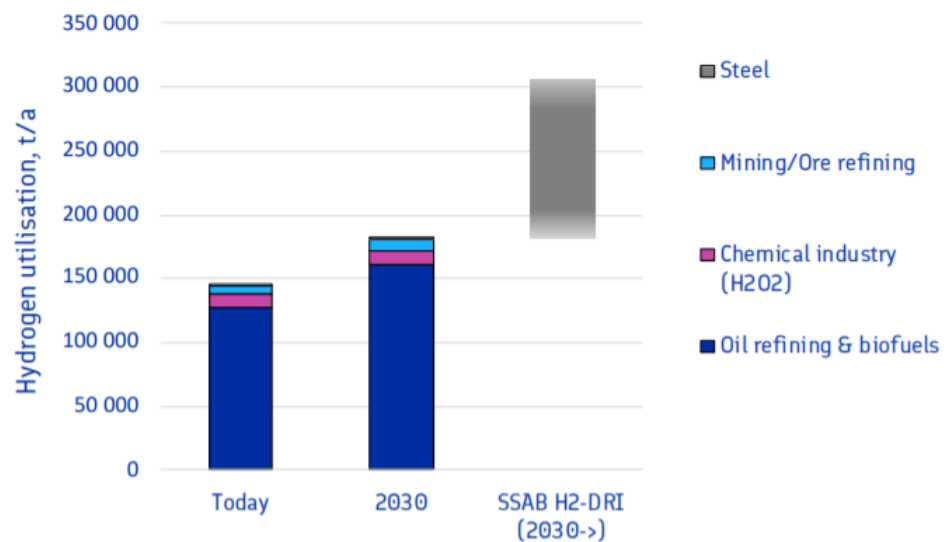
- Hydrogen produced by Power-to-H2 technologies is projected to reach almost 160 kton by 2050. This projection is a result of current production level and the agreed volume growth (0,75%/a).
- The development and deployment scale of Power-to-hydrogen technologies is different in each scenario. Slow development and fast development scenario figures are presented in Appendix 3.
- Hydrogen used to produce methanol through the Power-to-methanol route comes from Power-to-H2. Methanol is then used in the Power-to-Olefins and Power-to-BTX routes.
- Overall hydrogen demand for the whole chemical industry in Finland is addressed partly by low-carbon hydrogen production and partly fossil-hydrogen production.



Source: [The Finnish chemical industry's roadmap to carbon neutrality, 2020](#)

Steel and cement industries need low-carbon hydrogen

Use of hydrogen in steel and cement industry



SSAB has publicly communicated a plan that during 2030-2040 the blast furnaces in Raahе steel mill will be replaced with electric arc furnaces. This would require an estimated 100 000 to 120 000 m³/h of hydrogen gas, which would correspond to 450-550 MWe electrolyser input, if produced with electrolysis. This would add about a third on top of the current production and use of hydrogen.

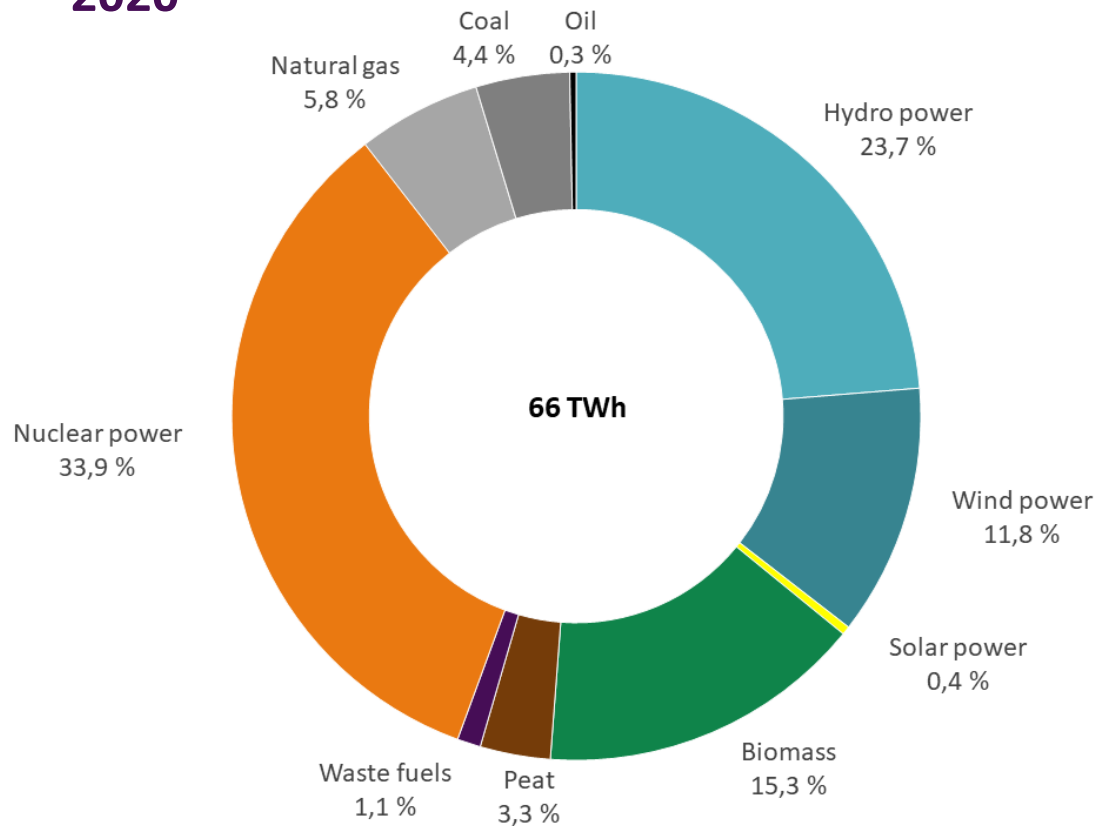
There are significant opportunities for producing power-to-X fuels also in Finland, even before 2030, but only if the production cost level in Finland is competitive. If competitive cost level is reached, hydrogen use in the power-to-X production can reach the same order than all other use combined.

FIGURE 14: ESTIMATES FOR HYDROGEN USE FOR 2030 AND BEYOND. Hydrogen use in various industrial sectors, present and new. Source VTT.

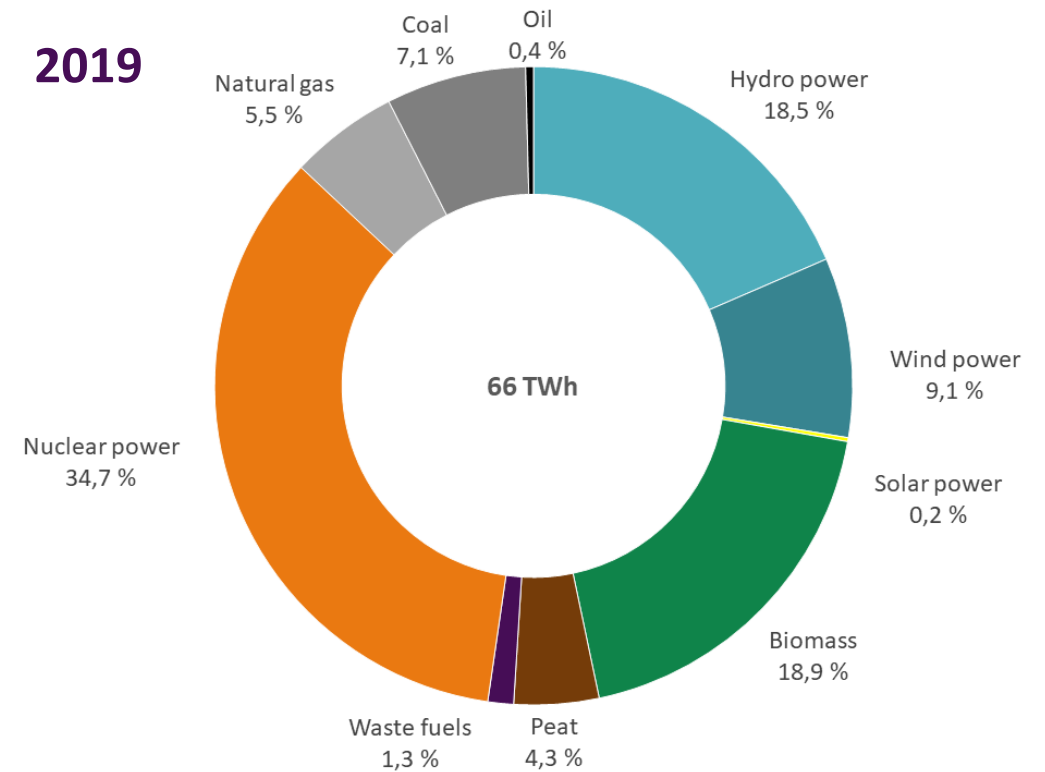
Source: [Business Finland, National Hydrogen Roadmap for Finland, 2020](#)

In Finland, 85 % of electricity production was carbon neutral in 2020 – nuclear, hydropower, and bioenergy have a crucial role

2020



2019



- ✓ Renewable: 51 % (47 % in year 2019)
- ✓ CO₂-neutral: 85 % (81 % in year 2019)
- ✓ Domestic: 55 % (51 % in year 2019)

Conclusions

- Clean hydrogen production should be subject to local and regional circumstances
- Technology neutrality is the key to minimise the distortions to the energy markets
- For synthetic gases to develop from hydrogen, CCU for bioenergy and WtE plants is needed
- State aid must be subject to clear sunset provisions
- Well-functioning energy and CO2 markets are crucial

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