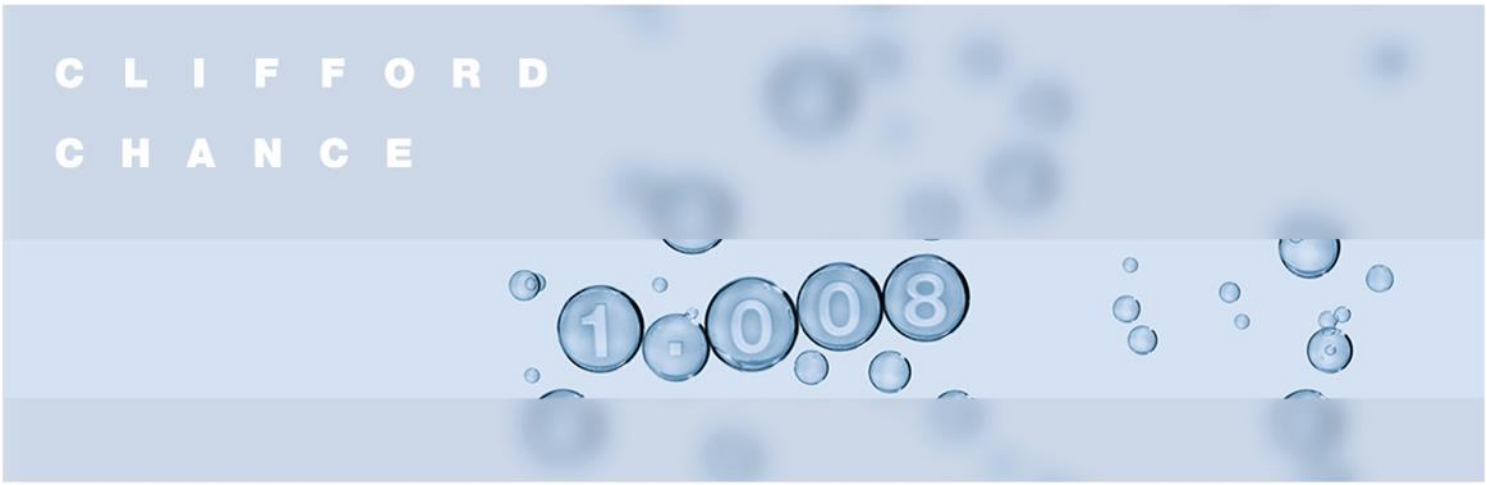

FOCUS ON HYDROGEN: A €7.2 BILLION STRATEGY FOR HYDROGEN ENERGY IN FRANCE

The French Government has published its national strategy for the development of decarbonised hydrogen in France. The strategy is backed by a plan for €7.2 billion in public investment by 2030. This briefing presents the main features of the strategy.

SUPPORTING DECARBONISED HYDROGEN

On 8 September 2020, the Minister for the Economy, Finance and Recovery, Bruno Le Maire, and the Minister for the Ecological Transition, Barbara Pompili, announced a major Government initiative to develop the hydrogen industry in France.

This announcement was consistent with the clear signals already sent by the French Government (see our briefing Focus on Hydrogen: Time for New Energy in Europe and France, which includes an overview of hydrogen uses and the European Union's positioning on hydrogen).

The Government confirmed that it views hydrogen as a major lever for the energy transition. The Government focuses on the ability to produce decarbonised hydrogen, i.e. hydrogen produced by electrolysers, using decarbonised electricity.

Hydrogen is considered to be 'decarbonised' if neither its production nor its consumption emits carbon dioxide.

Whereas green hydrogen is produced by electrolysis of water using renewable electricity, the Government plan focuses on 'decarbonised' hydrogen, which includes hydrogen produced using nuclear energy (nuclear electricity currently accounts for 70% of the electricity produced in France). In what is undoubtedly a French specificity, the Government intends to harness nuclear power for the energy transition, at least in the short and medium term.

The French Government views the use of decarbonised hydrogen as a means of achieving the goal of carbon neutrality by 2050. In the shorter term, decarbonised hydrogen is to play a part in cutting atmospheric carbon dioxide emissions from industry to 53 million tonnes per year by 2030, from a baseline of 80 million tonnes per year in France today, in accordance with the target set in the French National Low Carbon Strategy.

The plan does not include any specific measures to support 'blue' (or low-carbon) hydrogen, i.e. fossil fuel-based hydrogen with carbon capture. This

Key features

- €7.2 billion in public investment to develop a decarbonised hydrogen industry by 2030, with €3.4 billion to be implemented by 2023
- The multi-faceted approach aims to:
  - establish a French electrolysis industry
  - decarbonise heavy industry sector
  - develop heavy vehicle sector using decarbonised hydrogen
  - support R&D and skills development to promote future uses
- The plan also envisages support mechanisms, some of which are based on existing mechanisms for renewable energies
- The French strategy will dovetail with the EU approach.

technology appears to be considered, notably by ADEME (the French Energy Agency), as having limited potential in France.

DECARBONISED HYDROGEN – A GOVERNMENT PRIORITY AND A PILLAR OF FRANCE'S ECONOMIC RECOVERY PLAN

Aligning with climate challenges, the national hydrogen strategy is part of the €100 billion special economic stimulus package (including €30 billion for the ecological transition) presented on 3 September 2020 by the French Government, with the aim of enabling France to cope with the economic fallout of the Covid-19 epidemic.

The economic stimulus plan reflects the Government's decision to massively accelerate its support for the development of a domestic hydrogen industry in order to generate jobs and growth in France, to position France at the cutting edge of emerging disruptive technologies and to successfully accomplish the ecological transition.

The plan aims to inject €7.2 billion of public investment to develop decarbonised hydrogen by 2030, of which €2 billion over the period 2020-2022 and €3.4 billion by 2023.

MULTIPLE DEVELOPMENT PRIORITIES

In its national strategy, the Government has chosen several priorities to guide its action to promote decarbonised hydrogen:

- **Develop a French electrolysis industry**: The aim is to move electrolysis-based decarbonised hydrogen production to industrial scale, paving the way for larger, higher-capacity projects able to deliver significant cost savings. The objective is to reach 6.5GW of electrolyser installed capacity in France by 2030.
- **Decarbonise industry by phasing out carbon-based hydrogen**: The industrial sector is by far the leading consumer of hydrogen, which is currently produced from fossil sources. Decarbonising this hydrogen used in industrial processes is regarded as a significant vector for reducing atmospheric carbon dioxide emissions. The priority sectors identified by the Government for the use of decarbonised hydrogen include: refining, chemicals (including ammonia and methanol production in particular) and other sectors, such as electronics and agri-food.
- **Develop heavy vehicle sector using decarbonised hydrogen**: Hydrogen storage technologies can supplement electric batteries, providing a good fit for applications that require high motive power or a long operating range. For the initial phase of conversion to hydrogen, the Government has targeted the heavy vehicle sector (which includes commercial vehicles, heavy goods vehicles, buses and refuse disposal trucks) as well as trains. Ongoing development of the technology is expected to include pilot projects for river shuttles and hydrogen-powered ships. Lastly, the Government aims to put a hydrogen-powered aircraft into service by 2035, in line with the industrial roadmap (Airbus having announced, on 21 September 2020, its intention to commission the first decarbonised hydrogen aircraft by 2035).

"Our ambition is simple: to establish France as the leader of decarbonised hydrogen."

Bruno Le Maire
Minister for the Economy, Finance and Recovery, 8 September 2020

Clean mobility solutions are expected to avoid 6 million tonnes of carbon emissions by 2030, equivalent to the annual CO_2 emissions of the City of Paris.

- **Support research, innovation and skills development to promote future uses**: The French Government will support R&D efforts in the hydrogen field, as a means of promoting the industrialisation of new technologies. For example, efforts will focus on decarbonising the gas industry, which raises the question of repurposing existing natural gas transmission infrastructures to carry hydrogen. Training and skills development initiatives also feature prominently in order to support the development of hydrogen use cases.

A national hydrogen committee with representatives from all industrial stakeholders, chaired by the Minister for the Economy, Finance and Recovery, will be tasked with tracking the rollout of the investment programme and monitoring the objectives set by the national strategy.

Although at this stage, the Government plan does not focus on hydrogen transport and storage, these action priorities show that the Government is aware that the success of its strategy will require the development of the various links in the hydrogen value chain (from production to consumption).

MULTIPLE SUPPORT MECHANISMS

Several support mechanisms are either already available or will be provided by a range of public sector stakeholders and investors, including ADEME, the French National Research Agency and the funding institutions Banque des Territoires and Bpifrance.

With this plan, the French Government has chosen to significantly increase the resources available for these support programmes. For example, from 2020 to 2023, ADEME will issue new calls for projects worth several hundred million euros. Additionally, the ADEME-sponsored Investments for the Future Programme will remain active in this space, with the aim to support the construction of demonstrators and the acquisition of participating interests in specialist companies operating in the hydrogen sector.

Investment and operating aids (or a combination of both) will also be available for electrolysis-based decarbonised hydrogen production facilities. These operating aids would take the form of a 'contract for difference' system subject to calls for tender, in an approach inspired by mechanisms already implemented for renewable energies. Rollout of this support mechanism is scheduled to begin in 2022, when the sector is more mature.

There are also plans to introduce a reliable guarantee of origin system to promote decarbonised hydrogen relative to fossil fuel-derived hydrogen.

A EUROPEAN APPROACH

The French strategy to promote the development of clean hydrogen will dovetail with the broader European approach. The European Union has identified hydrogen as a priority level for achieving the European *Green Deal* and the continent's transition to clean energy. In July 2020, the European Commission published a paper on the development of a hydrogen ecosystem within the European Union.

"By 2035, we must have successfully developed an aircraft that can operate with hydrogen."

Bruno Le Maire
Minister for the Economy, Finance and Recovery, 8 September 2020

In this context, France has announced its intention to actively contribute to the European roadmap.

To this end, France is an active participant in the *Clean Hydrogen Alliance*, which will make it possible to organise and coordinate the actions carried out by Member States and manufacturers in the hydrogen sector.

It will also strive, alongside its European partners and the *Clean Hydrogen Alliance*, to design and build a hydrogen-focused Important Project of Common European Interest (PIIEC), similar to the European battery project initiated in late 2019.

This PIIEC project may, for example, support the industrialisation and rollout of electrolysers or the development and industrialisation of fuel cell solutions, tanks and materials to enable the development of hydrogen vehicles.

PIIECs, which are designed to unite public authorities and industrial partners from multiple Member States around large-scale projects and facilitate the pooling of knowledge, expertise and financial resources, benefit from more flexible regulations on State aid.

The French strategy will also leverage European financial tools, including the *Next Generation EU* instrument developed by the European Commission, with a €750 billion budget allocation, as part of the European economic recovery plan to cope with the consequences of the health crisis.

NEXT STEPS

Hydrogen-specific laws and regulations are expected to be introduced in France over the coming weeks and months.

In accordance with the legislative authorisation granted to the Government by the Energy and Climate Act of 8 November 2019, one or more orders are likely to be enacted in the coming weeks, establishing the framework applicable to hydrogen production, transportation, storage and traceability, as well as the related support mechanisms.

In addition to the announcements concerning public funding allocations, all stakeholders are awaiting the construction of a clear legal framework governing the development of hydrogen, which is an essential prerequisite for the bankability and the successful completion of projects.

"None of these ambitious strategies... can work unless we quickly develop them at European scale."

Bruno Le Maire
Minister for the Economy, Finance and Recovery, 8 September 2020

ABOUT

Focus on Hydrogen is a Clifford Chance briefing series covering hydrogen-related developments globally. 1.008 is the standard atomic mass of hydrogen.

For other hydrogen publications, please see our climate, sustainability, green finance and renewables page here.

For hydrogen queries in other jurisdictions, please contact Anthony Giustini and Andreas Formosa (listed under Global contacts below).

CLIFFORD CHANCE

CONTACTS

FRANCE

Gauthier Martin
Partner
Energy and Public Law

T +33 1 4405 5181
E gauthier.martin@cliffordchance.com

Katrin Schallenberg
Partner
Competition Law

T +33 1 4405 2457
E katrin.schallenberg@cliffordchance.com

Daniel Zerbib
Partner
Project Financing

T +33 1 4405 5352
E daniel.zerbib@cliffordchance.com

Emmanuel Mimin
Partner
Corporate – M&A

T +33 1 4405 5129
E emmanuel.mimin@cliffordchance.com

Nadezhda Varbanova
Counsel
Project Financing

T +33 1 4405 2475
E nadezhda.varbanova@cliffordchance.com

Daphné Celet
Senior Associate
Energy and Public Law

T +33 1 4405 5924
E daphne.celet@cliffordchance.com

GLOBAL

Anthony Giustini
Partner

T +33 (0)1 44 05 59 26
E anthony.giustini@cliffordchance.com

Andreas Formosa
Senior Associate

T +44 20 7006 4421
E andreas.formosa@cliffordchance.com