Hydrogen – An opportunity for the future

Project planning, regulatory framework and investments

Hogan Lovells

Hydrogen as part of the energy transition

Climate policy is becoming increasingly important in Germany and Europe. A change in thinking is underway in both society and politics, with measures to make Germany and Europe more climate-friendly now on the agenda. Above all, this entails finding alternatives to fossil fuels.

The use of hydrogen as an energy source could make a key contribution to a more climate-friendly economy.

Potential applications

Where practical reasons prevent the use of electricity from renewable sources, hydrogen is often an alternative energy source. It can largely replace fossil fuels, in particular natural gas, in an energy mix that includes a merely fluctuating availability of renewable energies.

The use of hydrogen can make energy-intensive industrial processes (e.g. in the steel or chemical industry) more climate-friendly. The same applies to the heat generation sector. The use of hydrogen can also contribute to decarbonisation efforts in the transport sector, especially in the shipping and commercial vehicle sectors.

Hydrogen production

To ensure a successful market ramp-up, the availability of significant amounts of hydrogen is required.

With electricity from renewable sources, "green hydrogen" can be produced carbon-neutral through electrolysis. For example, wind and solar energy could be used in an electrochemical procedure to generate hydrogen from electricity and water – without emitting carbon dioxide.

Alternatively, the use of "blue hydrogen", which can be produced, for example, from natural gas, could be taken into account. The carbon dioxide released in this process is captured and stored.

Sector coupling

Power-to-gas facilities, which convert electricity to hydrogen and (methane) gas through electrolysis, enables energy to be swapped between the sectors, thus allowing synergies to be efficiently utilised.

In particular, the option of converting electricity to hydrogen (which is easier to store) is a suitable way to meet the challenges arising from the volatility of renewable energies. Especially surplus quantities of electricity, which exist in the market from time to time, can be chemically converted into climate-friendly hydrogen by way of electrolysis and used or stored (and even be converted back into electricity at a later stage).

This means that, to a certain extent, the share of electricity from renewable energy can be increased independent from grid expansion measures.

Hydrogen strategies

While the research and promotion of the use of hydrogen was initially slow, the pace of developments has increasingly quickened in the more recent past.

For example, the German federal government recently announced a hydrogen strategy that aims to position Germany internationally as a pioneer in the development and export of hydrogen technologies. The corresponding package of measures is expected to contain various support mechanisms, such as possible exemptions from the levy imposed under the German Renewable Energy Sources Act (EEG) or from grid fees, combined with various other support schemes.

Transmission system operators in Germany recently presented their own vision for a purely hydrogen-based infrastructure that especially includes a rededication of existing natural gas pipelines.

At the same time, numerous German industrial companies are already investing billions in preparation for the restructuring of their processes.

Creating a legal framework for safe investments

The use of hydrogen as an energy source will require substantial investments – both equity and debt – in the construction and operation of hydrogen infrastructure and plants.

In addition to strategic investors, interest is likely to be shown in particular by infrastructure funds, private equity firms, venture capital providers and (alternative) lenders.

In order to win such financial investors for the development of a new industry, one thing will be decisive: securing a long-term repayment of the invested equity or debt capital with an appropriate return on investment.

Legal challenges

However, establishing hydrogen as an energy source on the German and European energy markets currently poses numerous legal problems for the sector.

Unclear regulatory regime

From a legal perspective, it is currently completely unclear what regulatory framework (under energy law) will be applicable to the economic use of hydrogen. While some market participants and especially network operators have pointed out that the existing regulatory framework for natural gas could be applied, the German Federal Network Agency, as the competent regulatory authority for the energy sector in Germany, has recently expressed that, from the regulators point of view, hydrogen pipelines are not covered by the current network access regime under German energy law. Accordingly, a new regulatory framework would have to be created or the existing regulatory framework would at least have to be adapted appropriately by the legislator.

No market standard exists

In the course of establishing hydrogen as an energy source, new supply chains and relationships will be formed to enable import and trading of hydrogen. However, no market standard exists yet for the contractual documentation of such supply chains and relationships, which means that appropriate – and risk-adequate – contractual documentation must be developed.

Questions relating to planning law

The rededication of existing natural gas grids into hydrogen grids raises questions with regard to environmental and planning law. In particular, it must be clarified whether existing planning approval decisions can further apply and whether new approvals under planning or environmental law are required.

Comparable questions also arise where completely new infrastructure facilities are to be built. Planning procedures are becoming increasingly complex and therefore require careful preparation in order to avoid costly delays.

Plant construction law

Numerous industrial plants, in particular electrolysis plants as well as the corresponding transport infrastructure for hydrogen will have to be newly constructed, financed and operated. The projects in question will have to take into account the special characteristic of the industry and of hydrogen (as the new energy source) in terms of plant construction law.

For the successful implementation of hydrogen use, necessary facilities will be required in the infrastructure sector. For example, there is an urgent need for a large-scale expansion of hydrogen stations and hydrogen grids. Without the corresponding infrastructure, it will be difficult to meet the demand for hydrogen technologies from companies and private individuals, which could result in barriers to investment. Regulatory access and fee regimes will have to take this into account.

The development of power-to-gas and electrolysis plants is not only necessary to satisfy demand for (green) hydrogen, to drive forward sector coupling and to reduce the burden on the grid. In fact, a need for electrolysis plants also exists in particular in the

steel and chemical industries due to their highly energy-intensive production processes. In order to achieve their climate targets, companies in these industries are forced to embrace alternatives to traditional energy sources.

State aid law

If the implementation of hydrogen as a new energy source in the marked is to be driven forward by government subsidies, the planned statutory incentive systems – such as exemptions from levies imposed under the EEG – must be assessed with regard to state aid law.

Antitrust law

The implementation of a hydrogen strategy will require a considerable use of resources. In this respect, cooperation between companies that are active as competitors in the same segment or upstream or downstream economic stages is a good option. If new companies (or joint ventures) are to be formed for this purpose, merger control approvals must be obtained once the parties involved reach a certain size. In addition, any cooperation among competitors, but also at upstream or downstream levels, is also subject to general antitrust law.

Legal protection of invested capital

Finally, from a legal perspective, to secure a necessary return on investment in the hydrogen sector, projects needs to be carefully structured with an appropriate distribution and hedging of the risks between the parties involved – for example using joint venture structures, concession models, etc.

At the same time, it must be ensured that all regulatory requirements are complied with and that sufficient investment incentives are in place, especially if the regulatory framework to be defined by the legislator provides for an access-fee regulated third party regime, as it is expected.

Hogan Lovells can help you to successfully realise hydrogen projects

To benefit from these developments in the energy market, companies need legal advisors who are strong partners capable of successfully navigating the legal challenges mentioned above. The lawyers at Hogan Lovells have extensive know-how in all relevant legal areas that is required to be such partner.

The members of our energy law team have many years of experience in the field of energy law regulation, in particular with regard to the gas sector, as well as in the fields of energy trading law and energy contract law.

In public commercial law, we regularly advise energy companies on aspects of planning and environmental law in connection with infrastructure projects.

We successfully advised on the construction of numerous early hydrogen infrastructure projects – not least one of the first hydrogen stations in Germany – as well as on investments in infrastructure projects. We are thus at the forefront of this trend.

Extensive practical experience and industry knowledge enable us to quickly adapt to new technologies and to transfer and adjust our know-how accordingly. We cover all transaction-related aspects for the entire duration of your project. Hogan Lovells will support you through the entire process – from project development, (project) financing, construction and operation as well as refinancing through to a possible sale.

Hogan Lovells advises regulated companies in the energy sector as well as investors, developers, banks, funds and government institutions and helps them to find the optimal structure and implementation according to their ideas and the individual project.

In addition, as a full-service law firm, Hogan Lovells also has highly experienced lawyers in all areas of law that may become relevant in the context of hydrogen implementation or related projects. This includes, for example, aspects of real estate or competition law which may play a role in the context of a hydrogen project.

Supporting clients and helping shape the future

Finally, Hogan Lovells does not want to merely provide advice and follow the development of hydrogen usage in a reactive manner. Our clear objective is to help shape this trend as proactively as possible – for example through publications and statements.

To this end, Hogan Lovells began the year by setting up an internal initiative that connects our colleagues worldwide so that they can help shape the legal framework for hydrogen.

This enables our clients to benefit not only from our national expertise, but especially also from our active involvement in shaping the relevant legal developments and the cross-border exchange of experience.

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