

ANNUAL REPORT 2019

Making Hydrogen Energy
an Everyday Reality
Across Europe

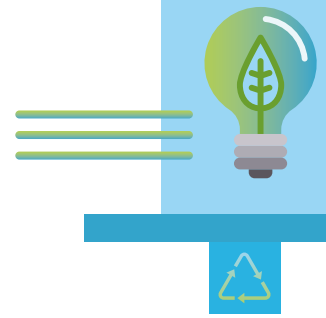


HYDROGEN EUROPE MEMBERS

As per April 2020



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WHAT DOES THE EU GREEN DEAL MEAN FOR HYDROGEN?

Frans Timmermans

Executive Vice President, European Commission

There is magic at every beginning, said Nobel prize winner for literature Hermann Hesse. I believe the magic that we are witnessing is the loud call by citizens all around the world to do something about climate change.

For once, it is the young who are teaching the old, and we owe a great debt to all those young generations who marched for the fight against climate change. Without them there simply wouldn't have been a European Green Deal, the hallmark of this European Commission. Mother Nature is showing every day that we simply cannot go on like this. Floods, droughts, wildfires, and now another pandemic which is currently marshalling all our energy and capacity to get it under control. And it is fitting and proper that our main focus is on fighting covid19.

But climate change and severe biodiversity loss will continue to be a reality. This twin scourge is destroying the moorings of human civilisation and life itself, and it's a relatively new phenomenon.

For if you plot out world history on a timeline, humans have roamed the earth for just a pithy 200.000 years; a mere blip compared to the past 4,5 billion years Earth exists. Yet, our impact on planet Earth is disproportionately large. So large that scientists have defined a new age that starts around 1950 called the





‘Anthropocene age’. In a timespan of just over 70 years humans have had a disproportionately big impact on the planet, mostly negative: to the planet itself, to the atmosphere, to the biosphere and of course to ourselves. Let’s not kid ourselves, this is not about saving the planet, the planet can take good care of itself, and simply will get rid of us if we go too far. No, this is about saving humanity itself.

The good news, we can turn the tide. We have the technology, we have the skills, we have the political momentum, and yes, there is even money out there in the market, just waiting to find its way to commercially viable investments.

What the EU can provide is regulatory certainty. By presenting the European Green Deal as a roadmap towards a green and inclusive transition. By proposing a Green Deal Investment Plan, a just transition mechanism, and lately a Climate law to be a guiding star in all we do, so that we work towards climate neutrality in 2050. And soon we will also present a Circular Action Plan and a Biodiversity Strategy. All of this sends a signal loud and clear. A signal that we are resetting our navigator so to speak, lighting the road we have to take, and thereby helping businesses take the right investment decisions, that will make them competitive and green.

More specifically, the key lies in overturning our economy that has been based on carbon for over a century and a half. We need to abolish the catastrophic use of fossil carriers to produce the energy and the feedstock we need in our everyday lives. It requires a mental change, technological change, and a physical change.

But again, it can be done. Look at the price of renewables that is falling quickly as solar, hydro, and wind power generation is taking off. In other words, we can decouple economic growth from carbon emissions. We can also put an end to the intensive use of raw materials and rare earths and kick-start a true circular economy, where products stay move in cycles, instead of following linear track straight to the garbage dump.

To power a circular economy, to electrify our mobility, to power our industries, to heat and cool our houses, to support our online activities, in short, to realise the energy transition towards a net-zero emission economy, will require a tremendous amount of electricity.

This then is where hydrogen comes in as a new driver of transition and a green economy. To be sure, it has to be produced, and that in itself requires energy. But,

by using renewable energy which exists in abundance, we can produce hydrogen in abundance. To make the “European Green Deal” a success, hydrogen will therefore have to play a pivotal role.

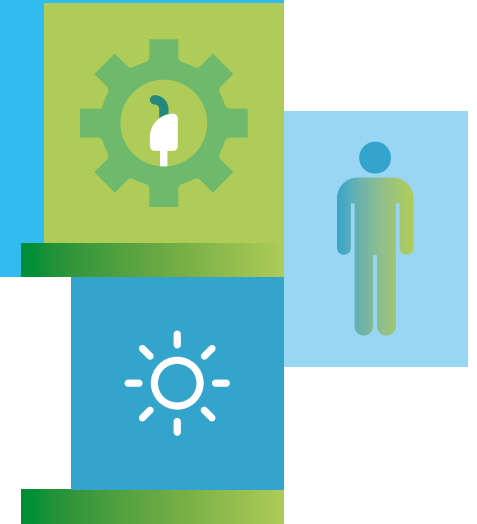
Let me finish by saying that there are few moments in history where we are offered an opportunity to step up, to participate, and to really make a difference. This is one of those moments. Let us relegate the Anthropocene Age to the ash heap of history, and herald a new era. That is why I would like to invite you, and the whole value chain of hydrogen technologies to join us in this great journey towards a new economy, a new society, powered by hydrogen, for better health, increased wellbeing and prosperity, for all. It can be done.



WELCOME BY HYDROGEN EUROPE PRESIDENT

Valérie Bouillon-Delporte

President, Hydrogen Europe





Many things have happened in just one year, and what a year 2019 has been! I'm amazed that hydrogen, as a disrupting technology, can impact both society and our political system. Clean hydrogen technologies have reached a technological maturity that allows early commercial deployments to compete against fossil-based alternatives. The European industry and research have global leadership or strong position in key parts of the hydrogen value chain.

Last year one of my key messages was: hydrogen is here to stay! And I would add this year: not only to stay but to grow massively to enable the most thorough decarbonisation schemes the world has ever seen.

What we are currently witnessing is breath-taking! The speed, the ambition, the clear commitment of industrial partners and governments are unprecedented. It is becoming more and more fundamental to maintain the vision on the one hand but, on the other hand, also the hard work and nitty-gritty of little daily progress. We need both if we want to reach our targets. We need an ambitious vision and everyday small progress.

This is an unparallel moment for hydrogen that we should not miss. It's about us, Europeans, but I would rather say citizens of the world, to make this technology flourish and contribute to reducing global threats and

risks. When both global institutes acknowledge it (e.g. the International Energy Agency (IEA) and the International Renewable Energy Agency (IRENA), we should take it up at a local, regional, national, European and global scale. We need to think big!

If we want to seize the moment, we must do it together! Researchers, policymakers and the industry must join forces. This is exactly the backbone of our joint undertaking. It's important to continue the work that we started more than a decade ago with the FCH JU, to connect research with the needs of the industry. Now it's time to scale it up. Horizon Europe represents a real opportunity to speed up this innovation cycle towards fully decarbonised energies.

Hydrogen is a climate technology. Hydrogen is here for climate action. Therefore, it will be an integral part of the European Green Deal. We will support the European institutions to present the globe's biggest decarbonisation package. We have tools, such as the Important Projects of Common European Interest (IPCEI), which will bring hydrogen fast to industrial scale. We also have a strong base with the FCH JU. Let's become the "lungs of the Green Deal"!

Lastly, the European Union and the Member States and some dedicated regions that regard themselves as

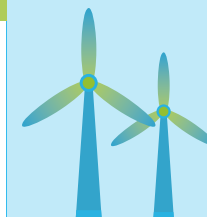
hydrogen champions. Some declared already their ambition to become a global leader in hydrogen technologies: Italy, Austria, Netherlands, Germany, Spain, France amongst others. These initiatives are important and most welcome. But they need good coordination to succeed.

The speed in which whole this is happening is breath-taking. Would hydrogen be a human being it would not be a child anymore, but it's not an adult either. Hydrogen is like a teenager, with a huge potential which deserves to blossom. It is our responsibility to help it grow, to have a very strong character and have a great future. However, adolescence is always a difficult phase. So, let's keep our collective mindset. **We are not there yet! We need to do it together!**



2019: THE STARTING POINT FOR THE EU HYDROGEN INDUSTRY AND WHAT 2020 WILL BRING

Jorgo Chatzimarkakis
Hydrogen Europe Secretary General



2019 was a turning point for hydrogen as it saw the start of industrial growth in different technologies beyond the mobility sector. A clear push towards this change came from the climate debate which is urging European societies to find new and faster solutions for a remedy against the addiction to fossil fuels. Not only young people started demonstrating but also scientists, journalists and big parts of the public came to the conclusion that something needs to definitely change.

At the same time the narrative of an all electric paradigm started to change. As the ramping up of the power grid became more difficult and the fact that only 20% of European energy is carried via electrons while 80% via molecules, hydrogen was more and more looked at. Hydrogen is an energy vector able to transport cheaply the energy, to store it and to be at the same time zero-emission at the end use. The coupling of the power and gas sectors was heavily discussed, the integration of a connected energy system with sectors like transport, heating and industry mobilised ideas on how to use the different hydrogen technologies. Some European countries were already advanced in doing so as they were more

under pressure, the Netherlands for example. Other countries, e.g. Portugal, caught up quite quickly as they saw the enormous potential of using their natural renewable resources, like solar and wind, as a possible way of becoming a future green hydrogen giant in Europe. Finally, some instruments, scaling up the idea of an industrial view on these technologies helped to strengthen the cooperation of sectors and governments: The best example is the Important Projects of Common European Interest (IPCEI) that has boosted dramatically the activities in this field.

Our association mirrors this development by growing quite fast. We welcomed 41 new members throughout the year among which representatives from hydrogen production, hydrogen distribution and hydrogen use in transport, heating and industry. We could continue to foster a dynamic and at the same time solid family of like minded when it comes to decarbonisation via hydrogen. The first signs of the new year show that this trend will continue. This obliges us to proceed to the next step of activity and to help our societies as well as our political leadership to implement our mission: no emission! We need to set the course, now.

**We can,
we want
and we will.**

WHAT THE MEMBER STATES AND THE EU SAY



Noe Van Hulst
Hydrogen Envoy - Ministry of
Economic Affairs & Climate
Policy, The Netherlands

“
‘Policymakers should now be ready to start putting hydrogen plans into action.’
‘Opportunities that could make a crucial difference to our clean energy future are there to be seized.’



Sebastian Kurz
Chancellor, Austria

“
‘Hydrogen is the fuel of the future.’
‘I want Austria to be the number one hydrogen nation.’
‘I want to spend an additional 500 million Euros to speed up the transition to hydrogen.’



Angela Merkel
Chancellor, Germany

“
‘A national hydrogen strategy should be in place by the end of the year.’
‘Hydrogen is ‘perhaps the most interesting source of energy.’



Giuseppe Conte
Prime Minister, Italy

“
‘At European level the fundamental choices on energy will look at the development of renewable sources, of hydrogen, which is finally back to the centre stage.’



Emmanuel Macron
President, France

“
‘I want to resolutely engage France in a "transport revolution" by generalising electric and hydrogen vehicles.’
‘This is a national strategy we have engaged on. It must also accelerate at the European level.’



Raúl Blanco
Secretary-General for
Industry and SMEs, Spain

“Spain can lead the development of hydrogen in Europe.
‘The hydrogen sector is a great opportunity.’
‘It is not so late as in batteries, where Asia has taken
the lead to Europe.’



Kadri Simson
Energy Commissioner,
European Union

“I want to examine how we can best make the gas regulatory framework and infrastructure fit for the future, contributing to decarbonisation through the use of low carbon gases such as hydrogen.’
‘If we are talking about gas, in the future we are talking about bio-gases and hydrogen that can help us for sector coupling.’



Bucharest Hydrogen Declaration

“We aim to maximise the great potentials of sustainable hydrogen technology for the decarbonisation of multiple sectors, the energy system and the long-term energy security of the EU.’

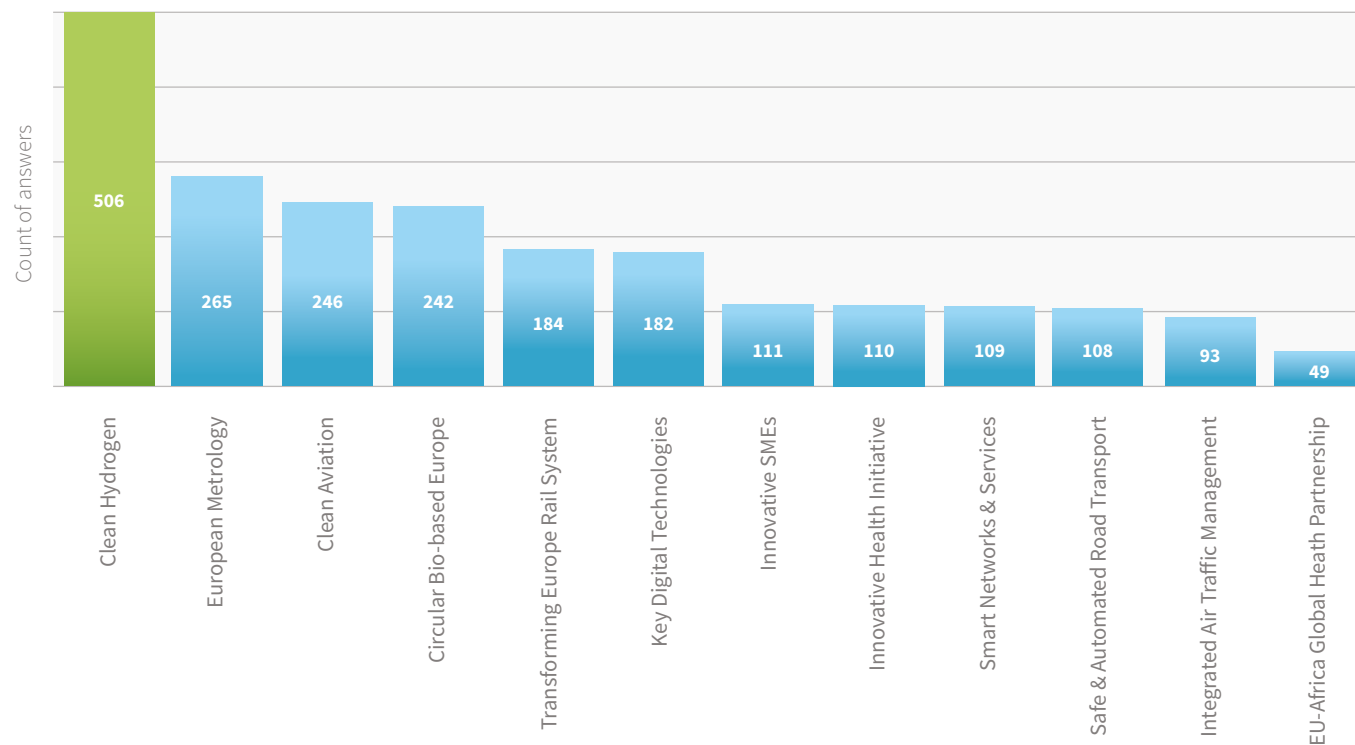
HORIZON EUROPE: CLEAN HYDROGEN PARTNERSHIP

2019 has been a busy year in terms of preparing the next partnership, and significant secretariat resources have been allocated to this field of work. 2020 will be even busier. The state of play is presented below in four points.

Public consultation

The European Commission launched a public consultation in the autumn to gather views on various partnerships and to seek the most appropriate type of

partnership to achieve EU goals within the framework of Horizon Europe. The Secretariat and the Programme Office sent multiple messages to encourage our community to take part in the survey. This action has yielded results, as out of a total of approximately 2,000 responses received, more than 500 responses were sent to the hydrogen partnership. 25% of the total answers received were for hydrogen, making our partnership the most answered!



IPPP request

An Institutionalised Public-Private Partnership (IPPP) is our preferred option. As part of the preparation of the new partnership, Hydrogen Europe and Hydrogen Europe Research have been requested by the European Commission to submit an IPPP request. This took place in the Autumn of 2019.

SRIA & public consultation

Together with the IPPP request, a draft Strategic Research and Innovation Agenda (SRIA) has been sent to the European Commission. This SRIA has been derived from the set of 20 roadmaps developed by Hydrogen Europe and from the Strategic Plan booklet created back in 2018, both of which were prepared with inputs from members.

The draft SRIA has been made public and presented during the FCH-JU Programme Review Days organised by the Programme Office in November. A final version shall be sent to the European Commission in the spring of 2020, considering inputs received through the consultation.

New organisation

Our sector is evolving, and so are our priorities. The new structure will reflect this.





HIGHLIGHTS OF THE YEAR



Hydrogen Europe and the Waterborne Technology Platform signed an MoU

Hydrogen Europe and the Waterborne Technology Platform signed a Memorandum of Understanding (MoU) on 13 May 2019 that will help both parties to identify opportunities for hydrogen-related technologies to reduce the significant emissions of waterborne transport. Furthermore, the MoU will help them both to explore the contribution of the waterborne sector in scaling up the development of hydrogen technologies in ports and industrial zones, in synergy with other sectors (e.g. energy-intensive industries) and other modes of transport.

European Sustainable Energy Week

The EUSEW Policy Conference is the biggest European conference dedicated to renewables and efficient energy use in Europe. Sessions organised by the European Commission and energy stakeholders focus on sustainable energy issues, debate new policy developments, best practices and sustainable energy ideas. In 2019, Hydrogen Europe was heavily present, speaking at 5 high-level sessions of the conference as well as 4 side events.





H2SHIPS project sets sail

The Interreg North-West Europe project H2SHIPS, launched in July 2019, will demonstrate the technical and economic feasibility of hydrogen bunkering and propulsion for shipping and identify the conditions for successful market entry for the technology. Shipping is particularly well suited for the implementation of hydrogen solutions because of tight timetables and predictable routes; the NEW waterway network offers favourable conditions due to synergies with other industries and sectors. The project has 13 partners, including Hydrogen Europe, from 5 countries and will receive almost €3.5 million co-funding from the Interreg North-West Europe Programme (2019-2022).

H2Haul project launch

Hydrogen Europe is delighted to be a consortium partner of the H2Haul project that launched in October 2019. A total of 16 vehicles will be tested in real-world operations at sites in Belgium, France, Germany, and Switzerland. The innovative hydrogen refuelling stations to be deployed will provide fast, high capacity refuelling and support the demonstration of how fuel cell trucks can operate as direct replacements for diesel vehicles, with an equivalent driving range and load capacity, but with zero emissions. The project has been made possible by a grant of €12 million from the European Commission via the FCH JU.



Hydrogen for Climate Action Conference

On 9 October 2019, the Hydrogen for Climate Action conference, co-organised by the European Commission's DG GROW and Hydrogen Europe, took place in Brussels. Over 450 stakeholders from across Europe attended the event, and 1366 followed the web streaming (recording and presentations available on www.hydrogen4climateaction.eu). The conference kick-started the work on the Important Projects of Common European Interests (IPCEI). The IPCEI is one of the most important tools to upscale the European Strategic Value Chain (SVC) on hydrogen technologies and systems, seen as a key sector in the EU, notably for its expected contribution to achieving the EU climate objectives.



+41 New Members

As the sector continues its steady growth, so does our association. Under the industry pillar, we welcomed Airbus, Ansaldo Energia, Baker Hughes, BP, Chantiers de l'Atlantique, Colruyt Group, DAM Group, ESB, Everfuel, EWE, Fluxys, Freudenberg, GAZ Systems, GreenGT, Howden, JSW, Kiwa, Paul Wurth, Persee, PGE, SNAM, SNCF, Solenco Power, Storengy, Swagelok, Teréga, Total, voestalpine, and Worthington Industries. A new associate category was also created in which FTI Consulting, Mayfair Marine, Sumitomo, Tomo Group, Worley were welcomed. Concerning the national associations, AMHYD (Morocco), Cluster of Hydrogen and Clean Coal Energy Technologies (Poland), H2 Platform (The Netherlands), Hydropole (Switzerland), Slovak National Hydrogen Association, and ZSIS (Slovenia) also joined.



Hydrogen Europe signed a joint call with ACEA and the IRU

The European Automobile Manufacturers' Association (ACEA), Hydrogen Europe (HE) and the International Road Transport Union (IRU) have jointly called on European policymakers to ramp up investments in EU-wide hydrogen refuelling infrastructure for fuel cell electric vehicles.



Publication of the Hydrogen Roadmap Europe

According to the FCH JU study 'Hydrogen Roadmap Europe: A sustainable pathway for the European Energy transition', hydrogen is an essential element in the energy transition and can account for 24% of final energy demand and 5.4m jobs by 2050. Developed with input from 17 leading European industrial actors (including Hydrogen Europe and some of its members), the study lays out a pathway for the large-scale deployment of hydrogen and fuel cells until 2050 and quantifies the associated socio-economic impacts.



Hydrogen Europe joins forces with Eurogas for The smarter E conference and exhibition

Hydrogen Europe has signed a cooperation agreement with Eurogas in the framework of the smarter E Europe, the continent's largest energy industry platform. Our objective is to join forces in achieving a decarbonised Europe and work together towards a future powered by renewable energy. The future role of Power-To-X and how hydrogen, together with solar and wind energy, can pave the way towards successful sector coupling were among the topics discussed at The smarter E Europe and its exhibitions, which took place in Munich on 15-17 May 2019.

Position paper on gas with a presentation at Madrid and Copenhagen forums

Hydrogen's Gas Grid Working Group delivered the 'Hydrogen Europe Vision on the Role of Hydrogen and Gas Infrastructure on the Road Toward a Climate Neutral Economy – A Contribution to the Transition of the Gas Market' paper intending to inform and start the discussion with stakeholders about the key role of the gas market in the deployment of hydrogen. The paper was presented at the Madrid and Copenhagen forums. The paper is available on HE's website: <https://hydrogeneurope.eu/publications-0>.



Bucharest Hydrogen Declaration

In April 2019, hydrogen, and its role in decarbonising the gas grid, was the focus of a workshop with the Energy Ministers in Romania. The signature of the Bucharest Hydrogen Declaration took place in this framework. This can be regarded as the follow-up to the Linz Hydrogen Initiative of 2018. Both the European Commission and the Romanian Government wanted to send out a clear message to the Member States and the future Commission: Europe's energy systems decarbonisation is only possible through the integration of hydrogen.

OUR ACTIVITIES

Mobility



2019 has been another year filled with successful mobility developments! To name a few:

- > *The BMW I Hydrogen NEXT concept was unveiled at the Frankfurt Motor Show in September 2019.*
- > *The second generation of the Toyota Mirai was unveiled at the Tokyo Motor Show in November 2019, targeting a 30% additional range compared to the first generation.*
- > *Hyundai announced the plans to deploy 700,000 fuel cells by 2030.*

- > *Renault announced that a range-extender version of the Kangoo and Master would be part of its catalogue.*
- > *Launch of the fuel cell joint venture "Symbio, A Faurecia Michelin Hydrogen Company", to become a market leader with the production of 200,000 fuel cells by 2030.*
- > *At association level, the Hyundai NEXO became present in Hydrogen Europe's daily life, when our Secretary-General started enjoying the experience of driving a fuel cell car daily.*

When it comes to public transport, 2019 has been a dynamic year: Caetano unveiled its first fuel cell bus at the leading global bus fair Busworld and Van Hool received the "Bus of the year" award. Van Hool's 18m Bus Tram was put in commercial operation in the city of Pau in December 2019, thus showcasing the first Bus Rapid Transit System with fuel cell buses worldwide. The city of Wuppertal and the region of Cologne also received their first fuel cell buses.

All these vehicles need a robust infrastructure in place. Several initiatives took place in 2019 in this direction, on different levels:

At European level: Hydrogen Europe played an active role through the year as an expert in the Sustainable Transport Forum, an expert group set up by the Directorate-General for Mobility and Transport of

European Commission. Hydrogen Europe contributed to a report that provides useful input into the ongoing evaluation of Directive 2014/94/EU - Directive on Alternative Fuels Infrastructure.

Hydrogen Europe teamed up with leading associations representing automotive and trucks manufacturers: ACEA, and the end-users association representing operators, IRU, to call EU decision-makers for support of hydrogen infrastructure build-up. The signing ceremony took place during the "Hydrogen for Climate Action" Conference on October 9th, 2019 and received large media coverage.

At national level: Germany saw a growing number of hydrogen refuelling stations, leading the way with 81 stations, and plan for 100 stations by 2020: in this context, an MoU was signed on 5 November 2019 between Minister Scheuer, Minister of the Federal Ministry of transport and with H2Mobility Germany and minister. Thanks to this network, more than 60,000 fuel cell cars and 500 commercial vehicles will be able to refuel in Germany by the end of 2021. This also follows the announcement of an investment of €23.5 million in hydrogen mobility.

On the other transport modes, there is a growing interest in maritime applications (see dedicated chapter), while hydrogen keeps growing when it comes to bikes, trains, planes.

Trucks

2019 has been the year of the hydrogen fuel cell truck, and this is just a beginning as we are convinced that hydrogen is the solution for long-haul trucks.

A key driver in this sense is the new CO2 emission standard regulation (Regulation (EU) 2019/1242) which was agreed upon in April 2019. This is the first time that the EU sets up a regulation applying for trucks manufacturers: new trucks will have to reduce their CO2 emissions by 15% by 2025 and by 30% by 2030 compared to 2019 levels. This is a strong push for original equipment manufacturer (OEM) to invest in innovative technologies such as hydrogen.

In parallel, 2019 has been the year of key industrial announcements in the truck segment, to name a few:

- > After a 250\$ million investment in US truck company Nikola, IVECO/CNH and Nikola set up of a joint venture on 3rd December 2019: the first 40t hydrogen truck will be operational in 2022.
- > Daimler Trucks announced that they would only manufacture battery and hydrogen fuel cell trucks from 2039 onwards.
- > The design of Hyundai Xcient fuel cell truck was unveiled, the first truck will be delivered in 2020 – the Swiss market will receive 1,600 trucks between 2020 and 2025.

- > The trailer company CHEREAU has launched the very first semi-trailer powered by hydrogen.
- > The fuel cell truck from VDL, on a DAF chassis, has passed successful tests and is being homologated.
- > Scania and MAN have started to work on hydrogen trucks as well with test respectively in Norway with retailer ASKO and Germany
- > In addition, leading fuel cell suppliers announced a strong focus on fuel cells for heavy-duty applications such as Bosch and Freudenberg.

On the infrastructure side, the sector is preparing itself as well! H2Energy set up a joint venture with Hyundai (Hyundai Hydrogen Mobility) to deliver Hydrogen.

Hydrogen refuelling infrastructure and vehicles in Switzerland. In December 2019, Nel and H2Energy announced the setup of a joint venture to deliver the infrastructure and the vehicles in Norway.

Hydrogen Europe decided to launch a dedicated trucks group in March 2019. The group is made of over 40 companies and associations active in the truck sector, including manufacturers, infrastructure providers, Tier 1 companies, and logistics services providers.





H

Hydrogen

The objectives of the working group are:

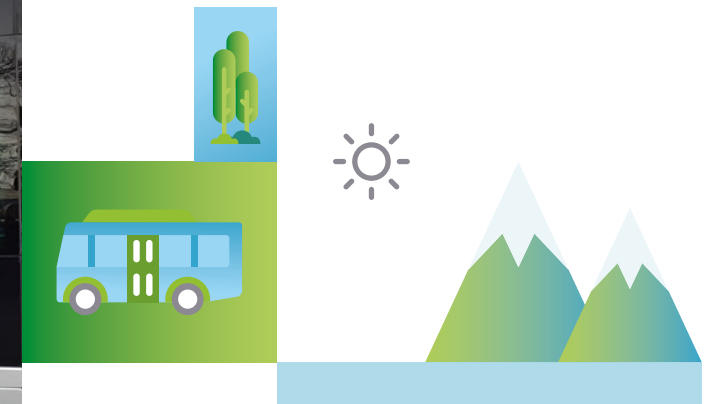
- > *Get a common position and validate hydrogen fuel cell trucks as a key solution to decarbonise heavy-duty transport.*
- > *Understand the conditions needed to go for hydrogen fuel cell trucks: look at demand/ supply side.*
- > *Share and discuss best practices.*
- > *Provide EU decision-makers with a clear view on legislative and investment support needs.*

For this purpose, Hydrogen Europe developed a stakeholders mapping of trucks and logistics companies, Brussels based associations and think tanks active in the field or which could play a role in the future.

To further understand the situation and outlook of the sector, an internal industry survey was launched, encompassing the entire value chain: manufacturers, Tier 1, fuel cell suppliers and infrastructure providers provided their views on how the market will look like in 2025 and 2030. A similar exercise was performed with end-users (hauliers and logistics service providers) from



across Europe. The outcomes will be presented at our dedicated fuel cell truck conference on 5th March 2020. Letters of intent will be unveiled at this occasion, while a position paper will be developed later in 2020. There is no doubt that 2020 will be another year of the hydrogen fuel cell truck!



OUR ACTIVITIES

Energy



Seen as a key sector to the hydrogen ecosystem, 2019 saw Hydrogen Europe working closely with its members, defining several position papers related to the energy sector.

Renewable Energy

First, the very finalisation of the Renewable Energy Directive (REDII) at the end of 2018 created the need for the association to position itself and its members in the capacity to respond to the challenges and opportunities that this new piece of legislation will bring in the next decade. Therefore, Hydrogen Europe created a dedicated subgroup to conduct the analytical work needed to provide further advice on the correct interpretation of key articles and to lay down the groundwork for the preparations for the delegated and implementing acts that will be carried out in the coming years. The subgroup gathers a variety of Hydrogen Europe's members and will continue its work throughout 2020 and beyond, also involving Hydrogen Europe's national associations' members.

Gas

Secondly, given the Smart Integration Package (to be published in 2021), Hydrogen Europe published its vision on the role of hydrogen and gas infrastructure, thanks to the dedication of its Gas Grid Working Group throughout

2019. The group has since grown to 40-member companies representing the entire value chain, from utilities, electrolysers manufacturers, industrial gas companies to transmission system operators, Hydrogen Europe's GGWG includes the broadest views with one single voice. 2020 will see Hydrogen Europe continuing its advocacy on the role of hydrogen in the context of sector coupling/integration.

Partnerships

Building on the successful collaborations of 2018, Hydrogen Europe continued to exchange in 2019 with other associations, companies, NGOs and institutions, to enable true sectoral integration, helping Europe to achieve its climate and energy objectives.

For example, a common statement from 7 European energy associations on hydrogen definitions was presented at the Madrid Forum.

For further information, please visit:

https://ec.europa.eu/info/events/32nd-madrid-forum-2019-jun-05_en

OUR ACTIVITIES

Industrial Policy



Since 2018, Hydrogen Europe has been placing industrial policy at the heart of its activities. As a member of the Strategic Forum, which consists of 45 members representing the Member States, industry and the research community, Hydrogen Europe helped identifying key strategic value chains in Europe and propose a common vision for joint actions and investments between EU, the Member States and industry. As a result, the report ‘Strengthening Strategic Value Chains for a future-ready EU Industry’ was published in November 2019. This report identified key Strategic Value Chains in Europe where joint and coordinated efforts are needed. Amongst the selected ones is Hydrogen Technologies and Systems. This began the work on the Important Projects of Common European Interests (ICPEI).

Hydrogen Europe and the European Commission’s Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, organised the Hydrogen for Climate Action conference on 09 October 2019, which saw industry actors across sectors pledging to intensify their investments into hydrogen activities,

notably through pan-European projects, ranging from hydrogen production to infrastructure upgrade and hydrogen utilisation in transport (e.g., road and maritime), industrial clusters (e.g., ports and refineries) and energy-intensive industries (e.g., steel).

Working with its members and non-members, Hydrogen Europe has launched a series of workshops designed to help to put these projects on the ground, thereby contributing to the much-needed establishment of a strong and competitive value chain in Europe. These workshops will continue in 2020, including bringing Member States and regions to ensure a successful start of a Hydrogen IPCEI. For further information on the IPCEI on hydrogen, please visit www.hydrogen4climateaction.eu.

Additionally, Hydrogen Europe will continue to advocate the need to establish a competitive industry in Europe through various calls and recommendations, and by actively participating in industry-focused initiatives such as the ‘Industry4Europe’ coalition.

OUR ACTIVITIES

Maritime



Following the adoption in 2018 of an Initial International Maritime Organization (IMO) Strategy on reduction of GHG emissions from ships by at least 50% by 2050, 2019 saw a noticeable increase of activity in the development of zero or low emission shipping solutions. Quite naturally fuel cell and hydrogen technologies are among the most promising solutions, allowing for reduction of both air pollution and GHG emissions. Yet, as the shipping sector involves a wide range of use cases, with both the autonomy and power requirements of small vessels and large cruise ships differing by three orders of magnitude, there is still a lot of uncertainty about the exact role that hydrogen will play in the future of the sector.

For certain use types (in-land, coastal and other short-sea shipping applications), there is an emerging consensus that FCs, using hydrogen, are the most promising zero-emission option, with some demonstration projects underway to highlight the viability of hydrogen to power small ships using FCs or modified combustion engines (alas for the latter case NOx emissions remain an issue). Several **design projects are ongoing to test the applicability of FCs to larger vessels**. However, due to the magnitude of energy storage and power requirements in these use cases and the wide availability of refuelling stations at ports, no consensus has been reached on what will be the maritime fuel of the future.

To define appropriate actions to accelerate the mainstreaming of hydrogen use in the maritime industry and to coordinate, collect and amplify members input into the advocacy work developed by Hydrogen Europe, a new Maritime Working Group (MAWG) was created. Working together with stakeholders representing the whole maritime value chain, throughout 2019, the group managed to develop a technology comparison tool, that provides clear and transparent understanding of all key economic parameters influencing the fuel choice.

Results of the research done by the **Maritime Working Group**, show that there is huge potential for FC and hydrogen technologies to provide a viable option for zero-emission marine transport in certain use cases, assuming continued technological evolution and scaling up of technologies. Depending on the vessel's characteristics, its operational profile and business model, there is place for fuel cells and hydrogen as a fuel (either compressed or liquefied) for coastal and short sea shipping as well as for hydrogen derivative fuels, such as e-ammonia, e-LNG, LCOH or e-methanol, for deep-sea shipping. For this second category of ships, pure hydrogen make sense for on-board power generation.

Emerging Conclusions

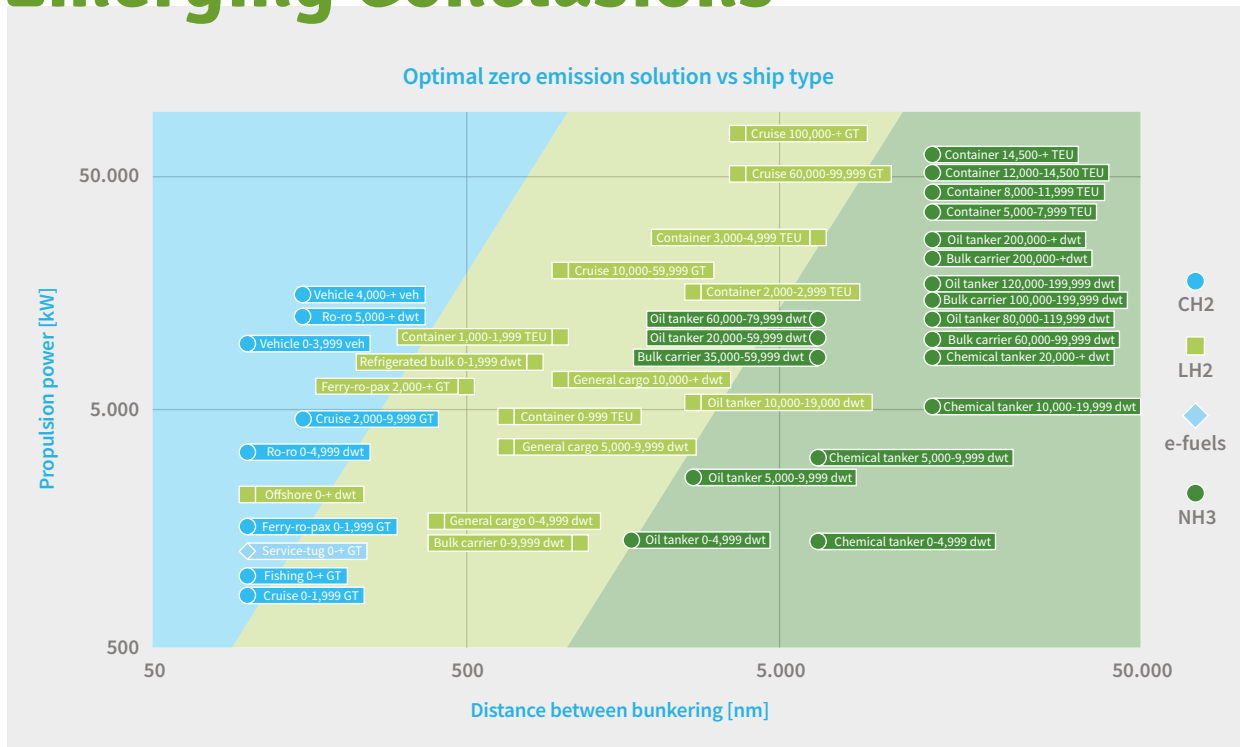


Figure 1 Optimal zero-emission solution vs ship type

Source: Hydrogen Europe.

The increasing interest in hydrogen as one of the possible solutions for decarbonisation of the maritime sector was also recognised by granting Hydrogen Europe a place in the European Sustainable Shipping Forum sub-group dedicated to Sustainable Alternative Power for Shipping, where we can represent our mem-

bers' interests by having a say in shaping future EU polyci- est.

Hydrogen Europe also began to cooperate with the Waterborne Technology Platform in 2019, underlined by a Memorandum of Understanding (MoU) signed in

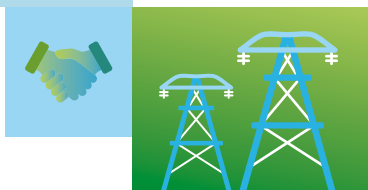
May 2019. This MoU will help both parties to identify opportunities for hydrogen-related technologies to reduce the significant emissions of waterborne transport. Furthermore, the MoU allows both associations to promote the development of hydrogen-related technologies and the market scalability in ports and industrial zones, in synergy with other sectors (e.g. energy-intensive industries) and other modes of transport.

The aim for 2020 is to continue to engage MAWG members in the collective work for the decarbonisation of the maritime sector. In line with the group's terms of reference, key objectives of the MAWG will include:

- Support practical delivery on agreed advocacy priorities and annual action plans, track progress, ensure focus and provide advice on the most impactful actions and any updates/adaptations required,
- Map existing European, national and regional initiatives (e. g., projects, working groups, studies, etc.) on in the inclusion of hydrogen in policies and related legislation,
- Provide technical expertise (steering/advising/reviewing) into regulatory and political activities of interest to Hydrogen Europe.

OUR ACTIVITIES

Finance & Funding



Making the ambitious vision for hydrogen economy a reality will require significant investments. It is unrealistic that the Clean Hydrogen for Europe partnership (FCH JU successor) alone will be able to provide the necessary funding. Therefore, it is crucial that in the area of the transformation of existing industrial processes to low CO₂, substantial additional public and private investment will need to be mobilised, particularly for largescale demonstration projects, which are a necessary prerequisite for a wide-scale roll-out.

For that reason, it is an area of intense focus of Hydrogen Europe to look for potential synergies with other funding sources that could allow to fund large scale demonstration projects and then to bridge the last step between demonstration and first industrial deployment of technologies. To explore those synergies, a new Funding and Financing Working Group was created mid-2019.

This WG primarily focuses on EU funding or national funding coordinated by the EU, such as:

- > *ETS Innovation Fund,*
- > *support provided by other EU programmes and by the Member States (e.g. in the context of a possible IPCEI),*

- > *investment support in the form of loans and guarantees (e.g. InvestEU Fund),*
- > *financing of infrastructure elements of the projects (e.g. via coordinated investments in Connecting Europe Facility and European Structural and Investment Funds).*

We are in a key moment where all the European funding programmes for the 2020s are being shaped. There is a hydrogen momentum and we need to ensure that this is reflected in these new funding programmes. The group will also look at national and regional funding, as well as private finance.



OUR ACTIVITIES

Intelligence



Hydrogen Europe has significantly increased its capacity to generate regulatory and market intelligence in 2019 and a clear, multi-annual development plan to ensure market leadership in this area has been set in motion.

HyLaw (www.hylaw.eu), the European database of EU and national legislation and regulations relevant to fuel cell and hydrogen applications, coordinated by Hydrogen Europe, has continued to increase its user base, proving that a growing number of stakeholders (more than 4,400 unique users /month) actively seek to understand the rules and regulations which impact the FCH sector. Hydrogen Europe and its network of national partners use internal knowledge and feedback from users to keep this database relevant and up to date as the regulatory environment evolves.



Figure 2 *Number of active users (daily, weekly, monthly) on www.hylaw.eu*

To complement HyLaw, Hydrogen Europe, with support from the FCH JU, has begun working on the Fuel Cells and Hydrogen Observatory (FCHO) which will become the go-to source for facts, statistics and analysis covering the entire hydrogen sector. The FCHO will be open to all stakeholders and will cover technology and market statistics, socio-economic indicators (e.g. jobs, skills), policies and regulations, patents and publications, higher education and training and financial support. A global network of national correspondents covering more than 35 countries will support Hydrogen Europe in analysing local and national rules across all relevant jurisdictions around the world.



Technology and Market Statistics

Financial Support

- > Eu Regional and national programmes
- > National funding

Patents and Publications

Higher Education and Training

Policy and Regulation, codes and standards

- > Eu policy & legislation
- > National policies & incentives
- > Standards

Levelized cost of Hydrogen H2 Molecule Market

Figure 3 *The scope of the Fuel Cells and Hydrogen Observatory*

Beyond these two major projects, Hydrogen Europe is using its strong regulatory and market intelligence capacities to analyse the opportunities for advancing FCH technologies. Internally, we are generating models that analyse (hydrogen and hydrogen-based fuels) costs and compares them to various benchmarks on existing markets. These models are helping us tailor our advocacy efforts in support of promising early business cases and our strategic research and innovation agenda.

Going forward, the ability of Hydrogen Europe to foresee major trends and capitalise on (or create) legislative opportunities for hydrogen technologies will increase significantly as a result of the enhanced intelligence and data gathering capacity. Beyond the indirect benefit for the sector, Hydrogen Europe members will be encouraged to make use of this intelligence service directly soon.

OUR ACTIVITIES

Projects

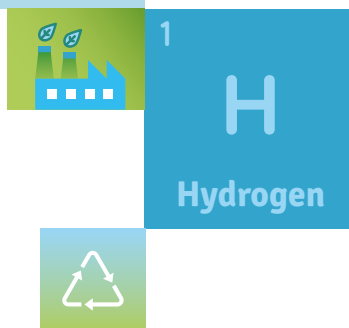
Hydrogen Europe can participate in grant-funded projects when it is beneficial for the hydrogen sector and when it fits with its missions.

Accordingly, Hydrogen Europe can contribute to:

- > **Techno-economic assessment:** Preparing a techno-economic model for the application demonstrated in the project. Beside the techno-economic assessment of the specific demonstrator, our added value is to be interested in generalising the results (by comparing them with other projects and studies) and to communicate them.
- > **Innovation roadmap and link with hydrogen supply chain:** Integrate the results of a project in a broader innovation roadmap exercise and assessment of the value chain.
- > **Regulatory (barriers) analysis:** The application of hydrogen technologies in new applications is conditioned by a proliferation of technical regulations and standards. It is a core mission of Hydrogen Europe to review these regulations and standards and identify legal and administrative barriers that need to be overcome.
- > **Policy analysis and recommendation:** Linking the latest technology developments in H2 sectors and policy is the core business of Hydrogen Europe. It can assess the impact of existing or envisaged policies. It also benchmarks national policies.
- > **Dissemination and communication in flagship projects:** By flagship project, we mean a large demonstration project that gathers all or most of the key stakeholders in an hydrogen application.

When evaluating participation in projects, we also avoid competing with our members.

Participation can be as project partner or occasionally in lighter participation into an advisory board.



H2SHIPS



The Interreg North-West Europe project H2SHIPS will demonstrate the technical and economic feasibility of hydrogen bunkering and propulsion for shipping and will identify the conditions for successful market entry for these technologies. Two pilot projects will be implemented as part of H2SHIPS: A hydrogen-powered port vessel will be built in Amsterdam, and in Belgium, an H2 refuelling system suitable for open sea operation will be developed and tested. A further major output will be an action plan for the implementation of an H2SHIPS pilot on the river Seine in Paris in 2022. H2SHIPS will demonstrate the added value of H2 for water transport and develop a blueprint for its adoption across North-West Europe, which can avoid considerable GHG and particle emissions arising from shipping. Hydrogen Europe's role in this project touches: techno-economic analysis, innovation roadmapping, regulatory barriers, coalition building, policy analysis, communications support.



For further information, please visit www.nwe.eu/h2ships

H2 Haul



The H2Haul project (Hydrogen fuel cell trucks for heavy-duty, zero emission logistics) is a European project deploying 16 zero emission fuel cell trucks in four demonstration sites. A total of 16 vehicles will be tested in real-world operations at sites in Belgium, France, Germany, and Switzerland. The innovative hydrogen refuelling stations to be deployed will offer rapid, high capacity fuelling and thus support the demonstration of how fuel cell trucks can operate as direct replacements for diesel vehicles, with the same driving range and load capacity, but with zero emissions.

The project will run for five years from 2019 with a minimum of 2 years in operation for the 16 trucks. H2Haul has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking.

Hydrogen Europe's role in this project touches: communications and dissemination, policy analysis and recommendations.



For further information, please visit www.h2haul.eu

H2Share



'H2-Share' stands for 'Hydrogen Solutions for Heavy-duty transport Aimed at Reduction of Emissions in North West Europe'. The objective of 'H2-Share' is to facilitate the development of a market for low-carbon heavy-duty vehicles, run on hydrogen (H2), for logistic applications. It will develop practical experience in different regions in North-West Europe (NWE), creating a transnational living lab. This will form a basis for the development of a zero-emission heavy-duty vehicle industry in the area. The project will demonstrate the readiness of hydrogen technology for heavy-duty applications in real life conditions.

Hydrogen Europe's role in this project touches: communications and dissemination, outreach to end-users.



For further information, please visit www.nweurope.eu/h2share

JIVE/JIVE2



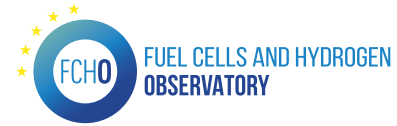
The Joint Initiative for Hydrogen Vehicles across Europe (JIVE) and The Second Joint Initiative for Hydrogen Vehicles across Europe (JIVE 2) are two exciting and ambitious sister projects that promise to facilitate and expedite the full commercial viability of hydrogen fuel cell buses in Europe. 20 cities and regions across 10 member states are grouping together in regional clusters to procure nearly 300 fuel cell hydrogen buses over seven years in a €212m project. The buses will be deployed in cities in Denmark, France, Germany, Iceland, Italy, Latvia, Norway, Sweden, The Netherlands and United Kingdom.

Hydrogen Europe's role in this project touches: communications and dissemination, major events, outreach to bus operators and OEMs.



For further information, please visit www.fuelcellbuses.eu

Fuel Cells & Hydrogen Observatory



The Fuel Cell Hydrogen Observatory (FCHO) is the go-to source for facts, statistics and analysis covering the entire hydrogen sector. The FCHO focuses on technology and market statistics, socio-economic indicators, policy and regulation, and financial support. The FCH JU has provided funds for the development of this observatory on fuel cells and hydrogen technologies, which will gather data from primary sources, and they will be presented in a user-friendly manner for policy-makers, a general audience and FCH stakeholders to easily retrieve information of their interest.

Hydrogen Europe's role in this project touches: market intelligence, policy intelligence and communications and dissemination.



For further information, please visit www.fchobservatory.eu



ABOUT US



Innovation

In innovation, our association partners with the FCH JU. The Fuel Cells and Hydrogen Joint Undertaking (FCH JU) is a unique public-private partnership supporting research, technological development and demonstration (RTD) activities in fuel cell and hydrogen energy technologies in Europe. It aims to accelerate the market introduction of these technologies, realising their potential as an instrument in achieving a carbon-lean energy system. The FCH JU under Horizon 2020 has a total budget of €1.33 billion, provided on a matched basis between the EU represented by the European Commission, industry, and research. The projects under the FCH JU will improve performance and reduce the cost of products as well as demonstrate on a large scale the readiness of the technology to enter the market in the fields of transport.

Through our three pillars, namely Industry, Research and National Associations, Hydrogen Europe can embark in both areas efficiently.

Hydrogen Europe is the European Hydrogen and Fuel Cell Association. It currently represents more than 140 industry companies, 78 research organisations, as well as 21 National Associations. The association partners with the European Commission in the innovation programme Fuel Cells and Hydrogen Joint Undertaking (FCH JU).

Trade Association

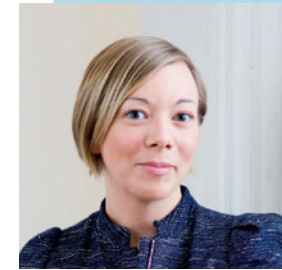
Hydrogen Europe serves two main goals. As a trade association in the classical sense, we play a crucial role in promoting best practice, helping companies become more competitive and formulating effective public policy. Hydrogen Europe has the tremendous potential to act as a coordinated voice of industry and research when talking to policymakers and great value in terms of quickly disseminating messages about regulatory decisions and policies to our members. Moreover, as a trade association, we provide the necessary intelligence and a solid network to support our members.

THE HYDROGEN EUROPE BOARD



The association is led by the Board which currently consists of eight members with specific roles. Board members are elected directly by the Hydrogen Europe General Assembly. As the executive body of the association, the Board is supported in its work by the association's staff and by the Coordination Group (Committee Leaders).

*We would also like to warmly thank **Aliette Quint** for her dedication while being a member of our Board.*



Valérie Bouillon-Delporte
(Michelin)
PRESIDENT



Oliver Weinmann
(Vattenfall)
TREASURER



Wolfram Schwab
(Alstom)
BOARD MEMBER



Nils Aldag
(Sunfire)
ENERGY PILLAR CHAIR



Didier Stevens
(Toyota)
TRANSPORT PILLAR CHAIR



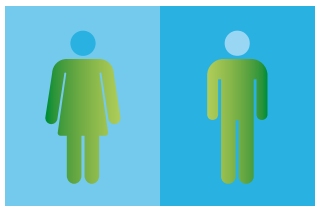
René Schutte
(Gasunie)
CROSS-CUTTING PILLAR CHAIR



Aivars Starikovs
(Latvian Hydrogen Association)
NATIONAL ASSOCIATIONS



Werner Diwald
(German Hydrogen Association)
NATIONAL ASSOCIATIONS



THE HYDROGEN EUROPE SECRETARIAT

The Brussels based secretariat has grown considerably incorporating 15 full time members of staff – a concrete demonstration of the sector’s growth and success.



Nicolas Kraus
Policy Coordinator



Sabine Skiker
Transport, Comms
& Policy Manager



Michael Diderich
Technology Manager



Alexandru Floristean
Legal & Project Manager



Michela Bortolotti
Communications
& Events Manager



Grzegorz Pawelec
R&I and Funding Manager



Vera Ventura
Executive Assistant



Amy Allsop
Project Assistant



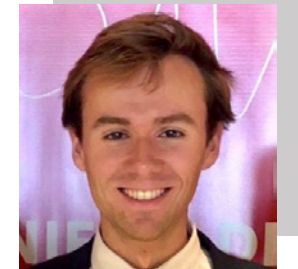
Adrianna Trojak
Communications
& Events Assistant



Vincent Brenninkmeyer
Policy Assistant



Matus Matus Muron
Policy & Market Analyst



Bastien Bonnet-Cantalloube
Intelligence Trainee



Jorgo Chatzimarkakis
Secretary General

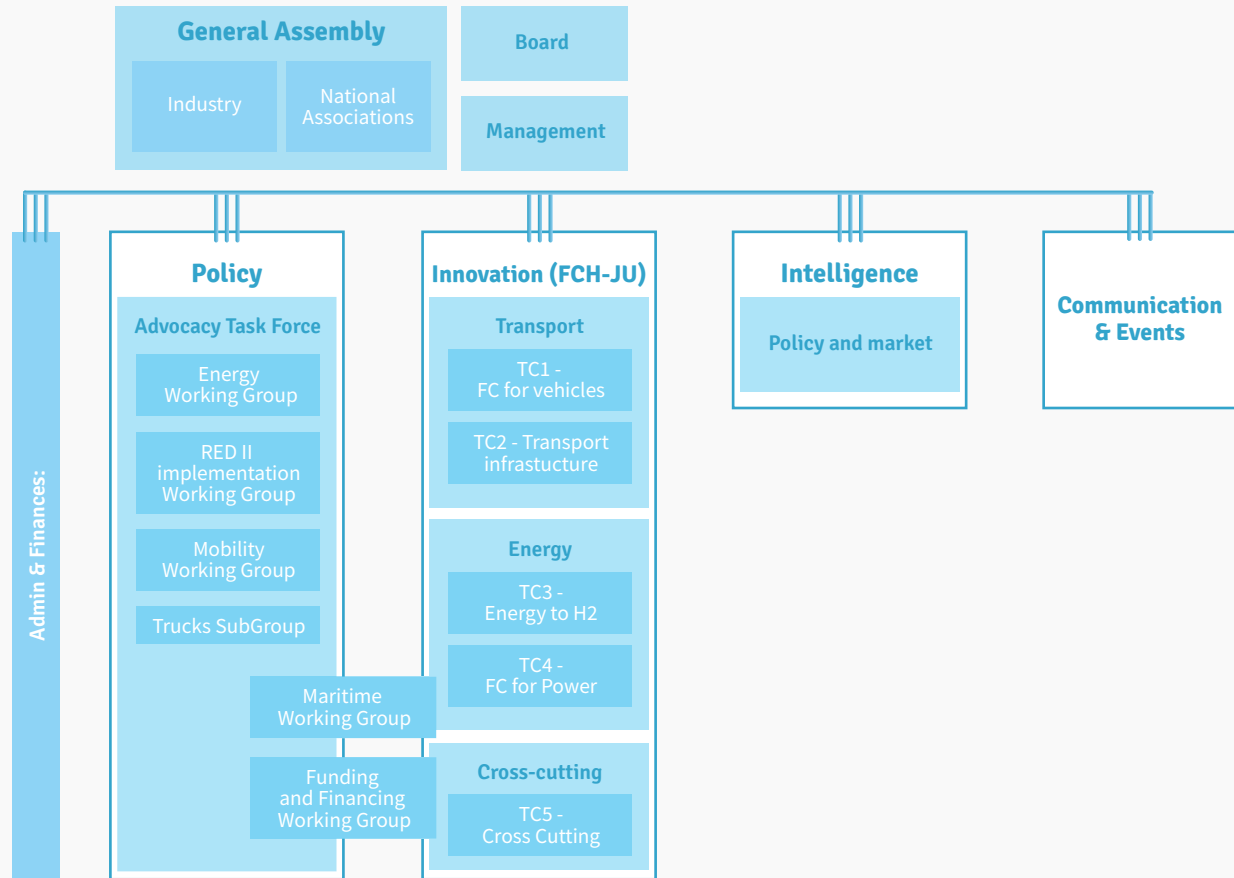
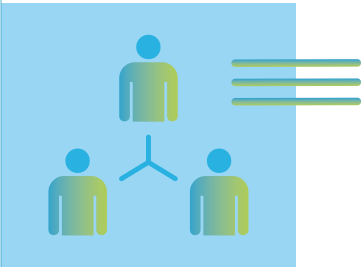


Nicolas Brahy
Director



Nevena Sarić
Finance & Administration
Manager

OUR STRUCTURE



NATIONAL ASSOCIATIONS



Hydrogen Europe greatly values its collaboration with local, regional and national associations. Only by working as a team at all jurisdictional levels can we hope to overcome the complex landscape of barriers and market failures. It is for this reason that Hydrogen Europe has, in 2019, invested in strengthening its ties with national associations.

In 2019, the number of national associations reached 19 with the inclusion of eight new national associations (H2Platform (NL); Hydropole (CH); the Ukrainian Hydrogen Council (UA); the Association of Mechanical Engineers of Slovenia (SI); the Cluster of



Figure 4 The total number of national associations, members of Hydrogen Europe reached 19 in 2019

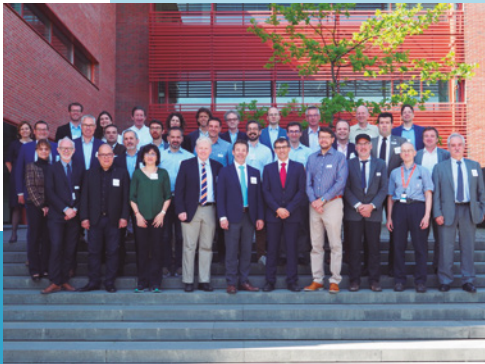
Hydrogen and Clean Coal Energy Technologies (PL), the Association Marocaine pour l'Hydrogène et le Développement Durable (MA), the Croatian Hydrogen Association (CROH2) and the Italian Hydrogen and Fuel Cell Association (H2IT).

Our relationship with national associations is a special one. It aimed at complementing each other's knowledge and outreach (EU vs national/local) to serve the hydrogen sector best. In this context, 2019 has seen an intense collaboration between Hydrogen Europe and its cluster of national associations on several key files such as the implementation of the Renewable Energy Directive (REDII), the drafting and revision of National Energy and Climate Plans (NECPs); the preparation of the successor of the FCH 2

JU, the Clean Hydrogen for Europe partnership as well as many others. In addition to these (horizontal) issues, activities tailored to the specific needs of each national association were enacted. For example, in 2019, we were happy to offer a platform for our national associations to be present at major European events focused on hydrogen (e.g. the Hannover Messe) and we were very proud to participate in and support the preparation of national events aimed at promoting the industry at a local and regional level.

Going forward, we will continue to work closely with national associations to ensure that the hydrogen sector benefits from strong representation not only at EU level but at the national, regional and local level as well.

HYDROGEN EUROPE RESEARCH



Hydrogen Europe Research (HER) is an international non-profit association representing universities and research organisations or centres (RTO) within the European hydrogen and fuel cell sector. Its secretariat office is based in Brussels since April 2018. We partner with Hydrogen Europe Industry as well as the European Commission in the Public-Private Partnership Fuel Cells and Hydrogen 2 Joint Undertaking (FCH JU).

Established in 2008, the organisation has today doubled its members and grown to almost 80 members across 24 countries throughout Europe. This year, HER welcomed twelve new full members: Austrian Institute of Technology (AIT), Austria; Israeli Fuel Cells Consortium (IFCC), Israel; MARIN, The Netherlands; Politecnico Di Milano (Polimi), Italy; Research Institutes of Sweden (RISE), Sweden; SINTEF Energy, Norway; University of Antwerp, Belgium; HyCenta TU Graz, Austria; University of Tartu, Estonia; University College of London (UCL), The UK; National University of Ireland Galway (NUI Galway), Ireland; IK4 Tekniker, Spain.

Promoting international collaborations, the General Assembly voted this summer in Espoo, Finland, to create a new members' category – 'Associate member' open to research organisations outside of Europe and H2020 programme. IRESEN, a Moroccan

research organisation became the first Associate member to join Hydrogen Europe Research. HER is looking forward to seeing more Associate members join the association soon.

The work within HER evolves around three pillars – Transport, Energy and Cross-cutting to develop a portfolio of clean, efficient and competitive solutions based on fuel cells and hydrogen technologies in energy and transport.

The association is led by the Board consisting of six members. As the executive body, the Board is supported in its tasks by a Coordination Group made up of five Vice-Chairs. The secretariat is responsible for the operational management of the Association and is run by one full-time staff member. From July this year, the secretariat has also be reinforced by an additional person by 30% to increase HER's visibility and impact further.

EVS32 event

On 19-22 May 2019, Hydrogen Europe Research shared a stand with Hydrogen Europe Industry and the FCH JU at the International Electric Vehicle Symposium and Exhibition (EVS32) in Lyon, France. This was the first time the EVS dedicated an entire part of the exhibition and

conference programme to hydrogen, to support the transformation of the transport sector towards zero-emissions mobility.

WHTC 2019 event

HER has been invited to give a plenary lecture on the status of the European research activities in hydrogen and fuel cells at the World Hydrogen Technologies Convention 2019 (WHTC2019), held in Tokyo from 2- 7 June 2019. WHTC2019 aims at sharing most recent findings and ideas on frontier research topics of the hydrogen energy technologies for realising a future hydrogen society with participants from all over the world. We hope to provide.

Discussion dinner in Espoo with Finnish representatives on Fuel cells and Hydrogen Technologies in Europe

Before the General Assembly in Espoo, Finland, earlier this year, HER and its host VTT organised a discussion dinner with representatives from the Finnish Hydrogen Technology Platform, political and industrial representatives to raise the awareness and the important role of clean hydrogen alternatives at the European level and to discuss the contribution of the Finnish research and industry.

HER Young Scientist Awards 2019

For the second year running, HER awarded three young researchers the HER Young Scientist Awards at the Royal Museum of Fine Arts in Brussels, Belgium. The awards were presented to the winners at the joint FCH JU Awards' ceremony on 20 November by Patrick Child the Deputy Director-General DG Research and Innovation, European Commission. Our three winners are Fabrice Micoud (CEA, France) who won the transport pillar award, Pierpaolo Polverino (University of Salerno, Italy) who won in the Energy pillar category and Anahid Pournemat (ZSW, Germany) who won the prize for the cross-cutting pillar category. HER is looking forward to receiving many applicants for the awards next year.

Preparation of the next Clean Hydrogen for Europe partnership

In close collaboration with Hydrogen Europe Industry, Hydrogen Europe Research has established 20 technological roadmaps to be proposed to the European Commission for the next public-private partnership under Horizon Europe. These roadmaps will allow Europe to stay a global leader in the hydrogen and fuel cell technologies and to make a signifi-

cant contribution to achieving carbon neutrality in Europe by 2050.

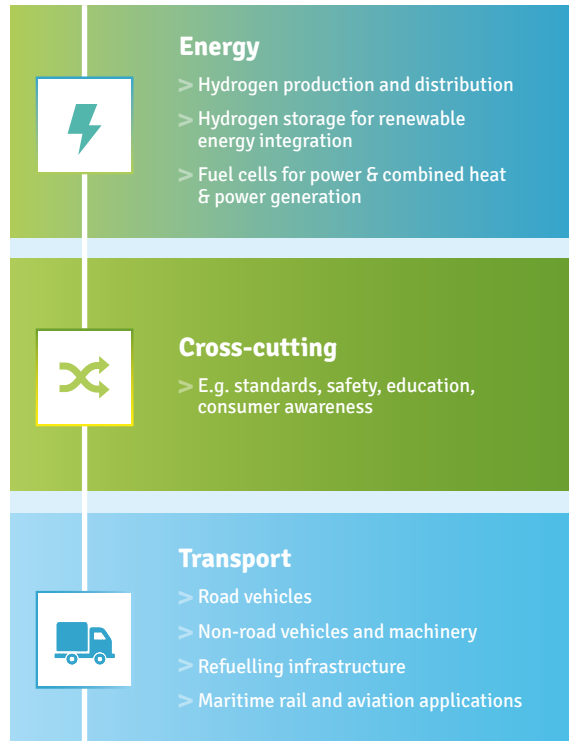


FUEL CELL & HYDROGEN JOINT UNDERTAKING (FCH JU)

Hydrogen Europe, Hydrogen Europe Research and the European Commission (DG RTD, DG ENER & DG MOVE, led by DG RTD) teamed up to create the Fuel Cell and Hydrogen Joint Undertaking (FCH2-JU) which is a Public-Private Partnership supporting research, technological development and demonstration activities in the field of fuel cell and hydrogen (FCH) energy technologies in Europe for the Horizon 2020 period (2014-20).



The FCH2-JU is articulated around three pillars to develop a portfolio of clean, efficient and competitive solutions based on fuel cells and hydrogen technologies in energy and transport.



A total of 915M€ to date has been allocated on 246 projects aiming to accelerate the market introduction of FCH technologies, showing their potential as an instrument in achieving a carbon-lean energy system.

Strong public-private partnership with a focused objective

A combined private-public of 1,85 billion Euro has been invested to bring products to market readiness by 2020



FUEL CELLS AND HYDROGEN JOINT UNDERTAKING



Energy

H₂ production and distribution
H₂ storage F/C for CHP



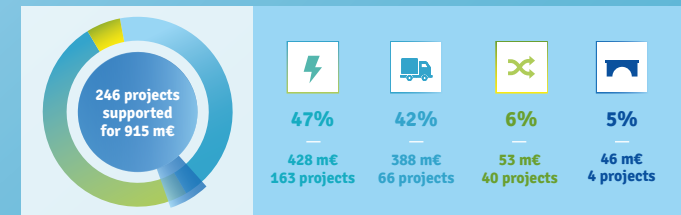
Transport

Road vehicles
Non-road vehicles
Refueling infra
Maritime, rail and aviation applications



Cross-cutting

Standards, safety, education, consumer awareness,...



Similar leverage of other sources of funding: 935m€



Being a member of Hydrogen Europe or Hydrogen Europe Research means being active in defining funding priorities and shaping Calls for next year publication, with a budget usually comprised between 75M€ and 125M€. 2019 was a special year since it was the last round of Horizon 2020. We are now busy preparing the continuation of the FCH2-JU for the period 2021-27 within the framework of Horizon Europe.

We want to thank all participants that took part in the design of topics along the Horizon 2020 period and the Coordination Group for their relentless support.

FINANCIAL EXPLANATION (IKAA)



What is IKAA?

IKAA stands for In Kind contribution of Additional Activities, and it is a way for Hydrogen Europe and Hydrogen Europe Research members to fulfil their legal obligation as per Council Regulation (EU) No 559/2014 of 6 May 2014 establishing the Fuel Cells and Hydrogen 2 Joint Undertaking, to demonstrate the leverage effect of the programme and the growth of the sector.



The purpose of the IKAA exercise is to demonstrate private investments in the hydrogen sector and ensure a balanced contribution made by the private and public entities in the context of the partnership.

2019 & Overview in numbers

In 2019, Hydrogen Europe and Hydrogen Europe Research, in cooperation with the external consulting company 'PKF Littlejohn', launched the 2019 preliminary report and 2020 plan report collection.

Hydrogen Europe and Hydrogen Europe Research members submitted their investment plans for the sixth reporting period, from 1 January to 31 December 2020, to the FCH JU Governing Board on 7 November 2019. A total of 56 research and industry organisations submitted their investment plans for a total amount of € 316M.

Under Horizon 2020 rules, the FCH 2 JU was required to demonstrate a leverage effect of 0.57.¹ This requirement was significantly over-achieved. By the end of 2018, the leverage effect from members alone had reached EUR 1.36.²

Furthermore, as seen in the table below, certified, reported and planned additional activities over 2014–2020 total an amount of € 1.2 billion. In other words, for every euro of EU contribution for all signed H2020 FCH 2 JU grant agreements, private partners (Members of Hydrogen Europe and Hydrogen Europe Research) will have committed to spend EUR 2.67 either on FCH 2 JU projects or on additional activities.

This speaks volumes about the positive impact that an institutional public private partnership (PPP) has on incentivising private funding around the achievement of EU policy objectives.

The Boards of both groupings, Hydrogen Europe and Hydrogen Europe Research express their gratitude to every member who as per Regulation declared IKAA (In Kind Additional Activities) during 2018, confirmed the figures this year in the Preliminary Report for 2019 and submitted 2020 Plan figures. This exercise demonstrated a joint effort by the Members. **Thank you!**

Period	Certified IKAA	Preliminary report	Plan
2014-2018	667.001.320		
2019		240.762.059	
2020			316.235.231
Total IKAA 2014-2020	1.223.998.611		

¹ Article 4, Council Regulation 559/2014 establishing the Fuel Cells and Hydrogen 2 Joint Undertaking

² FCH 2 JU Annual Activity report 2018, available at: <https://www.fch.europa.eu/sites/default/files/FCH%202020JU%20Annual%20Activity%20Report%202018%20-%20%28ID%206079970%29.pdf.pdf>

JOIN US!



Our Charter

By joining Hydrogen Europe, the members:

- > Support and aim to achieve the climate targets of the Paris Agreement and improve air quality.
- > Recognise hydrogen as a net zero-emission society enabler.
- > Support hydrogen as a clean energy carrier and as a raw material to achieve the transition to a zero-net emission in the electric power, gas, heating and cooling, industry and transport sectors, enabling sectoral integration.
- > Respect that hydrogen can be produced in many ways.
- > Support the different carbon-free/neutral hydrogen production pathways to enable a zero-emission society.
- > Aim to act together to enable the energy transition through hydrogen and fuel cells technologies and develop strong European fuel cells and hydrogen industry.

Our Vision

Promoting hydrogen as the enabler of a zero-emission society.

Our Mission

We bring together diverse industry players, large companies and SMEs, who support the delivery of hydrogen and fuel cell technologies. We do this to enable the adoption of abundant and reliable energy which efficiently fuels Europe's low carbon economy.

We represent the European Hydrogen and Fuel Cell sector:

- > 160+ industry companies
- > 78 research organisations
- > 21 national associations

Benefits Overview

- > Shape the course and be part of the leading European association for hydrogen and fuel cells. Get your voice heard!

- > Work closely with the EU institutions on strategic objectives.

- > Enjoy the exclusive privilege to shape the yearly call for proposals through FCH 2 JU Annual Work Plans and benefit from valuable resources made available through the collaboration of FCH JU private and public partners.

- > Benefit from a tailored communication and advocacy programme vis-à-vis EU institutions, key decision-makers and other stakeholders.

Get access to industry knowledge and business intelligence, information on EU and global developments, and keep up to date with relevant activities and events in the sector.

- > Network with potential business partners and interact with decision-makers and stakeholders covering the whole supply chain at EU level.

MEMBERS TESTIMONIALS



Nils Aldag

CCO, Sunfire

The latest developments prove that Hydrogen Europe was successful in establishing hydrogen as the enabler of a zero-emission society. Being part of Hydrogen Europe allows us to join forces with our stakeholders to further drive the development of the hydrogen sector in the EU.



Didier Stevens

Senior Manager European and Government Affairs, Toyota Motor Europe

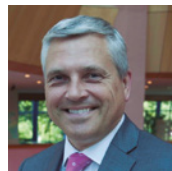
Hydrogen Europe makes a real difference regarding the gathering of information and the promotion of hydrogen. Working together as a team guarantees a bright future for hydrogen.



Wolfram Schwab

Vice President R&D and Innovation, Alstom Transport

Hydrogen is a key enabler to transform our society and economy into a carbon-neutral ecosystem. Additionally, it is storable and transportable for cross-sectoral applications. Hydrogen Europe is managing to bring together all stakeholders together and to communicate in a very efficient way.



René Schutte

Program Manager Hydrogen, Gasunie

Scaling-up hydrogen requires cooperation between sectors of demand and supply throughout Europe. Hydrogen Europe builds the bridge between these sectors and with the EU to unlock the great potential of hydrogen as a sustainable, affordable and secure energy carrier.



Oliver Weinmann

Managing Director, Vattenfall

Hydrogen based on renewable energy can play an essential role in the decarbonisation society and in reducing the CO₂-emission of a number of industrial and transportation sectors. Hydrogen Europe, being a strong and recognised association in Brussels, is well situated to promote the development and deployment of hydrogen.

MEMBERS CATEGORIES

FCH techno providers and/or pure players

Hydrogen Production & Distribution



FC Transport



FC Stationery



Others



Energy companies



National Associations



Industrial Companies




Transport Companies



Hydrogen Europe Research



Avenue de la Toison d'Or 56-60
BE-1060 Brussels
+32 (0) 2 540 87 75
www.hydrogeneurope.eu
secretariat@hydrogeneurope.eu
 @H2Europe

