Occasional Analysis Brief Series

KONRAD ADENAUER STIFTUNG
REGIONAL PROGRAMME AUSTRALIA AND THE PACIFIC

PERISCOPE

Analysis #1 August 2020

Germany and the EU's Hydrogen Strategies in Perspective – The Need for Sober Analyses

Dr Frank Umbach* / Dr Joachim Pfeiffer**

For the last two years, hydrogen has enjoyed an unprecedented political and industry hype around the world. The number of companies which joined the International Hydrogen Council, for instance, increased from 13 to 81 in the last three years. Hydrogen is regarded as a clean, secure and affordable energy carrier (similar to electricity) rather than an energy source and an industrial raw material, which may play a key role and be the 'missing link' as feedstock in hard-to-abate sectors such as steel-making and refineries, ammonia production and chemical industry in decarbonised energy systems.

In the future, it may also fuel buses, trains and trucks and even ships and planes. By mid-2019, 50 new targets mandates and policy incentives were initiated globally to directly support hydrogen as a clean, sustainable and resilient chemical energy carrier. In 2017, a 'Hydrogen Council' with relevant private-sector actors was set up. In 2019, the World Energy Council started a 'Hydrogen Global Initiative'. Of the G20 member countries, nine had already national roadmaps and eleven had support policies for hydrogen in place.

In the beginning of June, delayed by more than five months, the German Government finally agreed on its long debated and disputed national hydrogen strategy[1]. The delay was caused by major disputes primarily between Germany's Ministry for Economic Affairs and Energy and the Ministry for the Environment. The core of the dispute was whether Germany should only support 'Green Hydrogen' or be technologically neutral, which would also allow research, development and pilot projects of other hydrogen options (see Figure 1)[2].

–

* Dr Frank Umbach – Research Director – European Centre for Climate, Energy and Resource Security (EUCERS)

** Dr Joachim Pfeiffer MP – Spokesperson for Energy and Economic Affairs, CDU/CSU Parliamentary Group, German Bundestag

1 See The Federal Government of Germany, 'The National Hydrogen Strategy', Berlin, June 2020 (www.bmbf.de/files/bmwi_Nationale%20Wasserstoffstrategie_Eng_s01.pdf)

2 See also F.Umbach, 'Hydrogen: Decarbonization's Silver Bullet?', Geopolitical Intelligence Service (GIS), 2 July 2020 (https://www.gisreportsonline.com/hydrogen-decarbonizations-silver-bullet,energy,3233.html)

The German *Energiewende* (energy transition) and global energy transition programmes continue to focus on the energy (i.e. electricity) sector itself, but have not yet solved major technological challenges such as storing large-scale electricity for certain industrial sectors, in particular the energy-intensive industry (chemical, steel, iron, paper) and long-haul transport. Existing technologies allow hydrogen being produced, stored, moved and used in different ways and for various purposes. Hydrogen may be produced from renewable energy sources (RES), biomass, nuclear as well as fossil fuels (oil, gas, coal). It is seen as the leading und currently only realistic option for storing electricity from RES for a longer time.

In support of its new hydrogen strategy, Berlin will invest €9 billion (bn) of its €160bn Covid-19 economic recovery plan in green hydrogen projects. €7bn will be invested in its own national market and €2bn have been designated for hydrogen projects in Ukraine and North Africa (Morocco). The aim is to forge partnerships as the future green hydrogen production might be more cost-efficient outside of Europe. Nonetheless, up to 5GW of electrolyser capacity are planned by 2030 (including offshore) in Germany.

Figure 1

Hydrogen options based on energy resources

Green hydrogen:	Produced without CO_2 emissions (by nuclear or renewable electricity based on solar and wind).
Blue hydrogen:	Commonly used term for the production of hydrogen from fossil fuels (mostly from natural gas) with CO_2 emissions reduced by the use of Carbon Capture, Use and Storage (CCUS).
Turquoise hydrogen:	Made by pyrolysis with carbon black as a by-product.
Gray (or brown) hydrogen:	Produced with fossil fuels (hard or lignite coal or natural gas) without CCUS.
White (or natural) hydrogen:	Discovered by chance, when wells were drilled for oil and gas in Mali. It is estimated that its cost of exploitation is much cheaper than manufactured hydrogen from fossil fuels or from electrolysis.

Note: *the environmental effects cannot only vary considerably due to the energy source used for hydrogen production, but also due to production routes and supply chains, as well as the type of CCUS applied.*

GIS GEOPOLITICAL INTELLIGENCE SERVICES www.GISreportsonline.com

Source: GIS 2020

The German strategy includes 38 concrete measures to support implementation. In promoting its preferred ‘Green Hydrogen’ projects, Germany will exempt electricity used for ‘Green Hydrogen’ from the feed-in-tariff-system (EEG) and review quotas for ‘green kerosene’ as well as ‘green steel’. The German Government hopes to turn the country into the world’s leading supplier of state-of-the-art hydrogen technology. In addition to developing roadmaps, light-house projects for clean and green hydropower projects as well as adequate regulations for attractive investment conditions, Germany and the EU also need to develop supporting transnational hydrocarbon clusters as for instance between Germany (North Rhine Westphalia), Belgium and the Netherlands.

The German Government also uses its current EU-Council presidency (July through December) to promote and develop the ambitious EU hydrogen strategy for common energy policies. But despite its strong political and industry support as well as its overall strategic importance, hydrogen is not a silver bullet solution, neither for Germany's *Energiewende* nor global energy transitions. Moreover, a commercialisation of large-scale hydrogen projects is only expected from 2030 onwards.

Figure 2: Germany's Hydrogen Strategy

- Total funding: €9bn;
  - For domestic projects: €7bn;
  - Projects in foreign partner countries (Morocco, Ukraine): €2bn;
- The strategy covers the full hydrogen value chain, supporting the automobile, steel, power and agriculture sectors;
- Total German hydrogen production in 2015: 57 terawatt-hours (TWh) from oil (45%), gas (33%), coal (15%), electrolysis (7%);
- Goal for total hydrogen production by 2050: up to 1,800-2,500TWh (the latter figure is Germany's total final electric and non-electric energy consumption in 2018 – almost five times of Germany's entire electricity production in 2019 (511TWh). The chemical sector alone accounts for some 600TWh of hydrogen demand;
- Expanding green hydrogen production (via electrolysis) to 5 gigawatts (GW) by 2030, 10GW by 2035 and 15GW by 2040;
- German power company RWE and steelmaker ThyssenKrupp have agreed to produce 50,000 tons of steel from green hydrogen.

Other EU countries such as the Netherlands, Denmark, Belgium, Portugal and Austria have also pushed ahead national hydrogen policies and projects.

The new EU Hydrogen Strategy

In the beginning of July, the European Commission published the EU hydrogen strategy[3], after the EU agreed on its newly codified target of reducing the EU-27 CO_2-emissions by 50-55% (plus 10-15% compared to its previous target) by 2030. As 75% of the EU's greenhouse emissions result from the energy system, the European Commission also considers hydrogen as a central element of its newly released 'Energy System Integration Strategy' and the 'European Green Energy Deal' (EGD) entered into last December. The Commission sees the Deal as both the 'motor' and 'compass' of the EU's recently adopted €750bn 'Next Generation' economic recovery programme. The hydrogen strategy has been designed using a phased approach and with the goal to increase the hydrogen share from less than 2% today up to 13-14% by 2050. Similar to Germany's hydrogen strategy, the EU's strategy prioritises the domestic development of renewable hydrogen through a cumulative investment up to €180-470bn by 2050.

3 See European Commission, 'A Hydrogen Strategy for a Climate-Neutral Europe'. Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions, Brussels, 8 July 2020 COM(2020) 301 final (https://ec.europa.eu/energy/sites/ener/files/hydrogen_strategy.pdf).

In order to implement a successful pathway and cost-effective integration of its long-term hydrogen strategy, the EU will introduce new energy and climate legislation as well as regulations for common standards, investor certainty, terminology and certification based on life-cycle emissions, in line with EU taxonomy for sustainable investments.

Figure 3

The EU's 3-Phase Hydrogen Strategy:

- 2020-2024: support the installation of more than 6GW of renewable electrolysers and the production of up to 1 million tons (mt) of renewable hydrogen;
- 2025-2030: hydrogen becomes an important part of the EU's integrated energy system with at least 40GW of renewable hydrogen electrolysers of up to 10mt of renewable hydrogen in the EU;
- 2030-2050: expand renewable hydrogen technologies at large scale across all hard-to-decarbonise sectors (such as chemical and steel).

The Commission has announced that it will scale up clean hydrogen production to 1mt per year with its 'Innovation Fund' and other programmes as part of its next trillion-euro budget for 2021-27. The Commission has also introduced a 'carbon contracts for difference' pilot programme, which will pay the cost spread between pre-set and actual permits in the EU-Emissions Trading System (ETS) through sales of carbon allowances to encourage investment in hydrogen. Brussels hopes that a 'Green Hydrogen' economy could create 1 million new jobs for highly qualified personnel in the EU by 2030 and up to 5.4 million by 2050 across the entire value chain.

The Commission has also been supported the creation of the 'Clean Hydrogen Alliance'. In April 2019, 'Hydrogen Europe' initiated a '2x40 GW Green Hydrogen Initiative', which promotes the production of 40GW (4.4mt or 173TWh) green hydrogen in the EU and the very inexpensive production of 40GW (3mt or 118TWh) in Ukraine (10GW) and North Africa (30GW). The total investments have been estimated at €430bn complemented by grants and subsidies of €145bn.

Eleven European gas companies from nine EU member states have recently unveiled a hydrogen pipeline network of 6,800km to be completed by 2030 and almost 23,000km by 2040, which could be used to complement the natural gas grid. The network could transport more than the expected 1,130TWh of annual hydrogen demand in Europe by 2040 at rather limited costs between €27-64bn of the overall EU decarbonisation. This estimate is based on the assumption that 75% of the network will consist of retrofitted natural gas pipelines.

Current Situation of the Worldwide Hydrogen Production

At present, 18 economies, representing over 75% of the global GDP, are implementing different hydrogen strategies and projects. Some EU member states, South Korea, Japan and other countries have included support for hydrogen in their post-Covid economic recovery programmes.

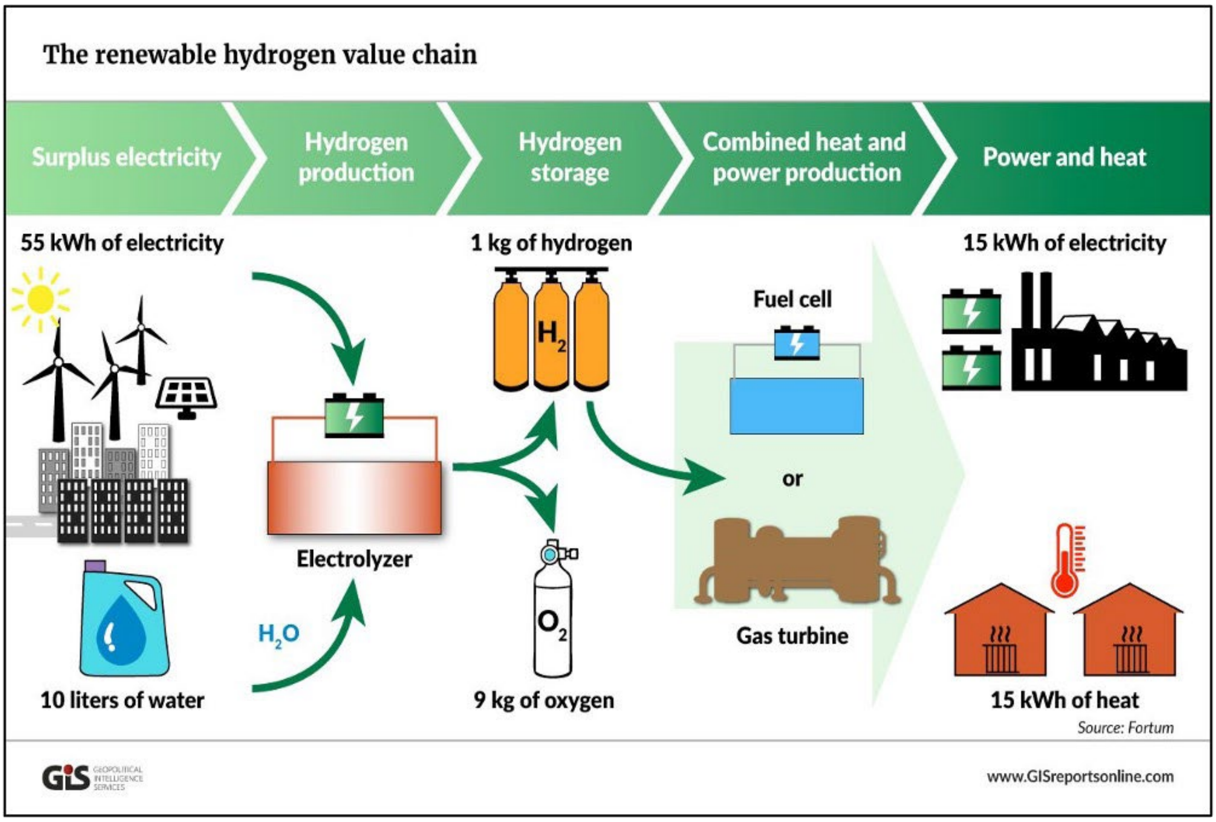
Since 1975, the worldwide hydrogen production has increased threefold up to 70mt per year or 330mt of oil equivalent - larger than Germany's primary energy demand. Natural gas is currently used for three-quarters of the global hydrogen production of some 70mt per year with an amount of 205 billion cubic meters (bcm) annually (or 6% of global natural gas consumption).

Coal currently accounts for 23% of global hydrogen production with some 107mt (or 2% of global coal use). In 2018, only 4% of the worldwide hydrogen production was based on renewable energy sources (RES). By 2050, clean hydrogen could meet up to 24% of the global energy demand with annual sales of around €630bn according to analytical estimates.

Hydrogen from biomass is currently considered as the most expensive option due to the complex processing, and most limited due to the lack of inexpensive biomass. But it could theoretically become an option with the application of CCUS, and would offer the prospect for 'negative emissions' in the future. In the short-term perspective, blue and grey hydrogen might remain the most cost-competitive option for many countries with larger coal and gas reserves as well as cheaper production costs. At present, renewable hydrogen is 2-3 times more expensive than fossil-fuel based hydrogen, even though electrolyser costs have already decreased fivefold compared with the costs five years ago. 'Blue Hydrogen' would currently need a carbon price between €55-90 per ton of CO_2 for it to be capable of competing with 'Grey Hydrogen'.

Unlike in the past, with the rapidly declining costs for RES, batteries and electric vehicles as well as other new technologies, hydrogen has now become a real option for solving the electricity storage problem, and also for decarbonising the hard-to-abate sectors of the economy such as the energy-intensive industry. The term 'Power-to-X' is commonly used to describe the conversion of electricity to other energy carriers or chemicals – generally the term refers to hydrogen produced by the electrolysis of water.

Figure 4



Source: GIS 2020

However, despite the worldwide hype around hydrogen, the following four major challenges remain:

- *Energy efficiency:* Producing hydrogen is still very energy-intensive and not energy-efficient – in particular, if using RES which are still too expensive for many countries. But an IEA analysis concluded that the production costs may decrease by around 30% by 2030 thanks to the mass manufacturing of fuel cells, refuelling equipment and electrolysers. As most applications for low-carbon hydrogen are not cost-effective without direct government subsidies, however, technological innovations and reduction of costs, improvements in energy efficiency and other performance factors are needed and demand much more international cooperation in times when economic nationalism is on the rise. Energy efficiency is particularly challenging for converting hydrogen into synthetic fuels and feedstock (such as ammonia - a compound of nitrogen and hydrogen which may be used as a refrigerant and chemical feedstock for nitrogen fertilizers) as 45-60% of the electricity required for the hydrogen production is lost in the process. Likewise, when converting electricity to hydrogen, shipping and storing it, and then converting it back to electricity in a fuel cell, the delivered energy may be below 30% of the initial electricity input. If the entire worldwide hydrogen production were based on electrolysis, it would result in an electricity demand of 3,600TWh – more than the EU's annual electricity generation.
- *Hydrogen with CCUS:* Currently, hydrogen is almost exclusively produced from natural gas and coal. But it causes worldwide around 830mt of CO_2-emissions, which is comparable with the combined emissions of Indonesia and the UK. For climate protection reasons, the production of 'Blue Hydrogen' (from gas) or 'Grey Hydrogen' (from coal) only appears when CCUS may be applied to produce 'clean' hydrogen from fossil fuels. But in Germany and many other EU member states, public and political acceptance of CCUS has been a major challenge despite previous political and government support.
- *Hydrogen Infrastructure:* The development of hydrogen infrastructure such as refuelling stations requires national or regional master plans for planning, cooperation and coordination between industry, local and national governments and investors. Germany and Europe benefit from their pre-existing natural gas networks. The use of existing infrastructure could render the transition easier and cheaper than the construction of new infrastructure. In Germany, for instance, of the planned 1,200km long gas pipeline network for transporting hydrogen, only 100km need to be built from scratch by 2030 and 1,100km of the existing network needs to be modified. For transport beyond 1,500km, shipping is the more cost-efficient option for hydrogen. But at present, no liquefied hydrogen ships are in operation.
- *Hydrogen Regulations:* Current policies and regulations do not support the expansion of a clean hydrogen industry, and often constrain larger investments. The development and harmonisation of international standards for storing large volumes of hydrogen, adequate environmental protection and safe transport of hydrogen needs to be fast-tracked worldwide.

Geopolitical Dimensions

According to various forecasts, green hydrogen from RES could provide up to 24% of the global energy demand by 2050. But the electrolysis of hydrogen conversion requires sufficient water and electricity supply. Green hydrogen is the most expensive option accounting for less than 3% of hydrogen production. As always, a worldwide expansion of, and shift to, hydrogen as a major instrument of decarbonisation in the international energy system will inevitably result in new geopolitical winners and losers as well as new challenges for energy supply security. This, in turn, results in varying geopolitical implications for a "green" or "blue" hydrogen future in Europe and the rest of the world:

- *New Rising Import and Geopolitical Dependencies:* The German Government has already accepted in its new hydrogen strategy that it will not be able to produce sufficient electricity for its green hydrogen economy as it does not have the space to expand its RES-based electricity due to its high population density. While expanded hydrogen production and a hydrogen-based economy will reduce Germany and the EU's gas import dependency in general and on Russia in particular, it might become heavily import dependent on hydrogen from new politically unstable countries and regions. Therefore, Germany also supports the EU hydrogen strategy and projects in Europe. However, EU-27 will also become import dependent so that any German and EU hydrogen strategy must take into account new energy supply security risks and its geopolitical implications by diversifying new partnerships around the world.

Figure 5: Hydrogen Export Champions and Resource Endowment

Export champions with resource endowment

#	Group	Resource endowment		Infrastructure potential	Example countries
		Renewable energy resources	Renewable freshwater resources		
1	Export champions with vast renewable energy and water resources, as well as high infrastructure potential	++	+	+	Australia, United States, Morocco, Norway
2	Renewable-rich, but water-constrained nations with high infrastructure potential	++	−−	+	Saudi Arabia, potentially China
3	Renewable-constrained nations with high infrastructure potential	−	+	+	Parts of the EU, Japan, South Korea
4	Resource-rich nations with high infrastructure potential	+	+	+	Turkey, Spain, Thailand
5	Resource-rich countries with low infrastructure potential	+	+/−	−	Most parts of South America

Legend: Abundant/very high (++); Available/high (+); Poorly available/constrained (−); Scarce/highly constrained (−−)

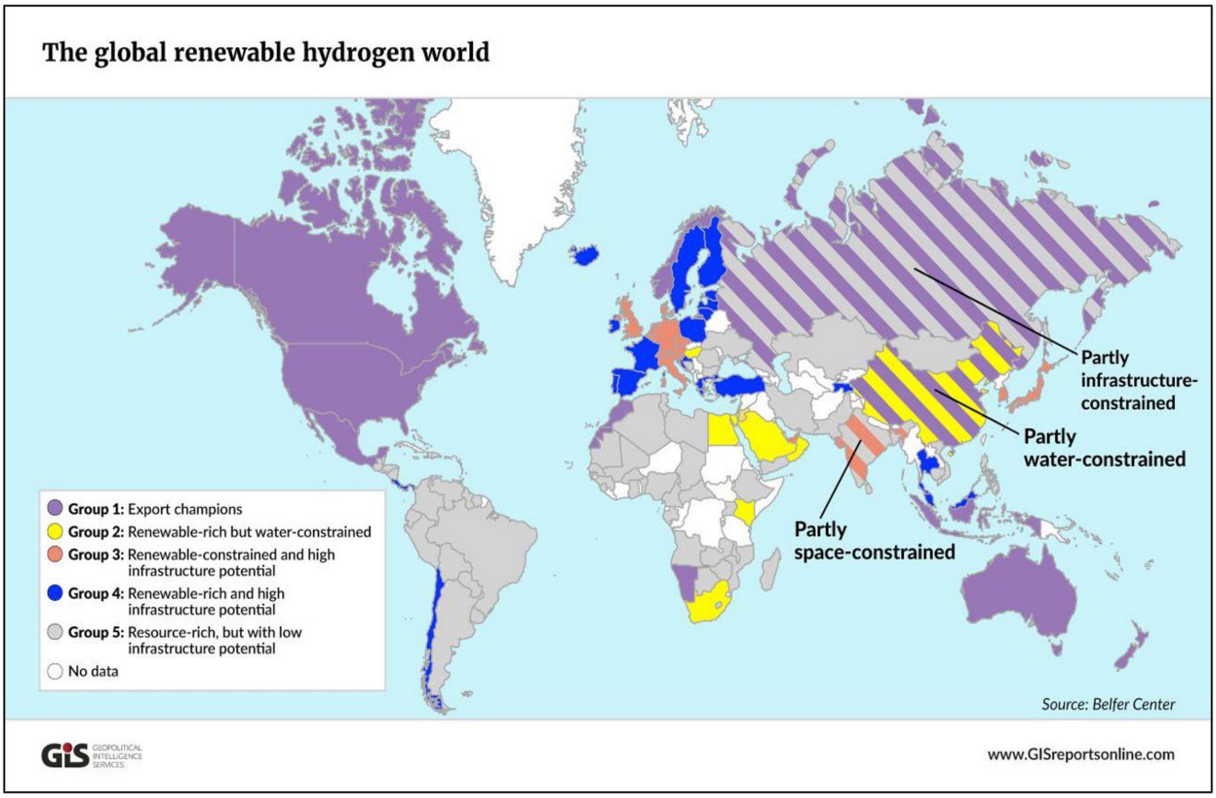
Source: Belfer Center

GIS GEOPOLITICAL INTELLIGENCE SERVICES www.GISreportsonline.com

Source: GIS 2020

- *Coping with a Blue and Grey Hydrogen World*: Currently, fuel costs for hydrogen production, influenced by various technical and economic factors, are the biggest cost factor in all regions. They account for 45-75% of the total production costs. Thus, low gas prices in the Middle East, the Russian Federation, and the US could be winners, whereas Japan, China, India with higher gas (LNG) import prices translates into higher hydrocarbon production costs. But even this perspective depends on a combination of factors such as sharp decline of production costs driven by technology innovation and strong political support for hydrogen projects.

Figure 6: The Global Renewable Hydrogen World



Source: GIS 2020

- *A Renewable Hydrogen Future*: In a 'Green Hydrogen' future, Russia might be a loser of the EU's and global decarbonisation efforts. Unlike Australia, Africa and the Middle East and Northern Africa (MENA) region, Russia, for instance, does not have cheap and abundant solar and wind power capacities. But whether renewable hydrogen will be regionally concentrated (such as today's gas markets) or be more decentralised is largely dependent on technology, the existence of enabling infrastructure and future market structures. Renewable hydrogen is also dependent on, and constrained by, the space available for RES-based electricity generation and the country's population density (e.g. in Germany). Another factor is sufficient water supply, especially in countries where water is a scarce resource (e.g. Africa, the Middle East, South America and Asia, including in many regions in China). Other countries may have access to vast RES, the space to expand electricity generation and sufficient water supply but are unable to build the required infrastructure for the production, transmission and distribution of RES.

> The bigger the country, the more expensive it is to build the infrastructure (such as Russia, India, China and the US). With this in mind, the US, Australia, Morocco and Norway have been identified as potential future export champions and the real geo-economic and geopolitical winners. The EU might be a leading technology supplier with a high infrastructure potential, but will be constrained in its efforts to expand RES due to its limited space and population density as well as the water scarcity faced by some member countries.

Europe and Southeast Asia might become net-importers (as they currently are in regards to their natural gas demand) of renewable hydrogen from new energy export champions such as Australia and Morocco with strong cost positions and access to large import markets. For the EU and other hydrogen import countries, they need to develop hydrogen supply security strategies with long-term diversification objectives.

Strategic Perspectives

The realisation of the German and EU hydrogen strategies, and of their hope to become leading hydrogen technology suppliers, is largely dependent on technology innovation and technology-neutral pathways which should not exclude upfront any technology option. A 'technology-neutral' position is not just contested in Germany and the EU, but also in other Western democracies such as in the US, Australia, New Zealand and other countries, as a myth to 'underwrite fossil-fuel-projects with public funds', creating long-term path dependencies and a means to subsidise the old 'dying' oil and gas industries. 'Turquoise Hydrogen' with gas pyrolysis, for instance, is a dry process without any water requirement and produces carbon black as a by-product. It might prove to be a cost-effective option. It may be transported by rail or truck, promises comparable advantages as it does not require CCUS (as does 'Blue Hydrogen') and might prove to be cost-competitive. But the technology is still in the early stages.

While Germany and the EU prefer still prohibitively expensive 'Renewable Hydrogen', many other countries (i.e. China, India, Japan, South Korea and others) will not only pursue the more expensive options in the next decade, as their large fossil fuel reserves provide for cheaper hydrogen production at least in the short-term and mid-term perspective - and offer profitable industry options and benefits for the transition period. Although production costs are declining, large-scale demand through upscaling and mass production will still be required to render clean hydrogen cost effective and affordable. Giving the rising hydrogen industry rivalry with China and worldwide tendencies of economic nationalism, the EU, Australia and the US must also protect their industry stakeholders from unfair competition and foreign takeovers.

Furthermore, the future of hydrogen will not just have energy and economic dimensions but as a cross-cutting topic, it will have wide-ranging foreign and security policy implications. Global competition for technologies, control of supply chains and critical raw materials (CRMS)[4] as well as supply security concerns will increase on the pathway to a hydrogen world and determine the future geo-economic cooperation as well as geopolitical rivalries during the next decades.

–

4 See also F. Umbach, 'The New 'Rare Metal Age''. New Challenges and Implications of Critical Raw Materials' Supply Security in the 21st Century", Working Paper No. 329, S. Rajaratnam School of International Studies (RSIS)/ Nanyan Technological University NTU, Singapore, 27 April 2020 (https://www.rsis.edu.sg/wp-content/uploads/2020/04/WP329_V2.pdf), and idem, "Energy Security in a Digitalized World and its Geostrategic Implications", Study of the Konrad Adenauer Foundation (KAS)/ Regional Project: Energy Security and Climate change Asia-Pacific (RECAP), Hongkong, September 2018, 171 pp. (www.kas.de/wf/doc/kas_53447-1522-2-30.pdf)

The rising global demand for renewables for the generation of the worldwide 'green hydrogen' demand will also have enormous implications for an already rapidly rising consumption of CRMs, which have not yet been analysed and included to date in any forecasts of the future global demand of CRMs. This implication alone might result in game-changing geopolitical shift with wide-ranging foreign policy impacts.

Germany, the EU and Australia might not only benefit economically from a strategic bi-or trilateral cooperation (as nucleus of a wider democratic alliance) in regards to hydrogen technology innovation and investments into RES in Australia (also for the purposes of greening the mining industry and other industries). A strategic cooperation may also help to address the wider geo-economic and geopolitical challenges of a hydrogen future in the light of China's economic, technological and geopolitical rise as well as its own hydrogen ambitions.

About the Authors

Dr Frank Umbach is Research Director of the *European Centre for Climate, Energy and Resource Security (EUCERS)*, King's College, London; Adjunct Senior Fellow at the *S. Rajaratnam School of International Studies (RSIS)* at the *Nanyan Technological University (NTU)* in Singapore; Executive Advisor of *Proventis Partners GmbH,* Munich (a M&A company); Visiting Professor on EU and global energy (external) policies at the *College of Europe* in Natolin/Warsaw (Poland); Senior Lecturer at the University of Bonn & Consultant for governments, international organisation s (e.g. NATO), energy, consulting and investment companies (via *Gerson Lehrman Group/GLG*) on international energy security, policies and markets, geopolitical risks, cyber security and critical (energy) infrastructure protection/CEIP, as well as (maritime) security policies in Asia-Pacific.

Consultancy projects for: German Ministries of Foreign Affairs and Defence Policies; European Commission and European Parliament, US-State and Energy Departments, U.S.-China Economic and Security Review Commission (US-Congress), the Lithuanian Government, the House of Lords (British Parliament), the Polish Foreign and Economic Ministries, Hungarian Foreign Ministry, South Korean Foreign Ministry, NATO, OSCE, World Energy Council (WEC), UN Industrial Development Organization (UNIDO), Federation of the German Industries (BDI), the Singaporean government, Wikistrat.com, and national/international energy and consulting companies. *Moreover:* author of more than 500 publications in more than 30 countries worldwide; contract author of the *Geopolitical Intelligence Service (GIS)*, Liechtenstein since 2011.

Dr Joachim Pfeiffer MP is the economic & energy policy spokesman for the CDU/CSU parliamentary group. He was born in Mutlangen (Germany) and studied business economics with a technical orientation at the University of Stuttgart. He held a scholarship from the Konrad Adenauer Foundation during his studies. His political career he began in 1990, whilst he was studying toward his doctorate. From 1992 to 1997 Dr. Pfeiffer was employed by the electric supply company Energie Versorgung Schwaben AG (EVS). Here he gained particular experience in mergers & acquisitions. Soon after obtaining his doctorate in 1997 he was the head of economic and employment promotion activities for Stuttgart, provincial capital of Baden-Württemberg. Since 2002 Dr Pfeiffer is a member of the German Parliament. In 2009 Dr Pfeiffer became the economic & energy policy spokesman of the CDU/CSU parliamentary group, a role he holds until today. He is also a lecturer at the Institute of energy economics & the rational use of energy at the University of Stuttgart, works as a freelance consultant and is chair of the CDU for the county of Rems-Murr.

About the Periscope Series

Periscope is KAS Australia's Occasional Analysis Paper/Brief Series. Just like the real-world sighting instrument, Periscope is meant to broaden our insights, taking in views from different angles. It seeks to bring together perspectives from Germany, Europe, Australia and the Pacific region in order to augment our understanding of contemporary issues in the area of foreign and security policy, rule of law, energy, economic, social and development policy matters.

KONRAD ADENAUER STIFTUNG
REGIONAL PROGRAMME AUSTRALIA AND THE PACIFIC

Konrad Adenauer Stiftung (Australia) Ltd
Regional Programme Australia and the Pacific
www.kas.de/australia

Periscope – Occasional Analysis Brief Series #1 (August 2020).
ISSN: 2652-7332 (Online)