

By adopting the European Green Deal, rolled out in late 2019, the European Commission has declared its intention to have the CO₂ emissions of the European Union reduced by no less than 55% by 2030, and to make the EU climate-neutral by the year 2050. The European Climate Law that was adopted in consequence, coming into effect on July 29th, 2021, has elevated those goals into binding legal obligations for all Member States.

A prominent place in the European decarbonization strategy is allotted to the so-called ‘green (clean) hydrogen’, the hydrogen that is generated through electrolysis using renewable energy, without any carbon dioxide being emitted in the process. Such hydrogen can be used as an input raw material, as fuel or an energy carrier or a form of energy storage; owing to its zero CO₂ emission properties, this makes it an extremely attractive replacement for fossil fuels in industry, transport, power generation and heating.

1. European Union

The first formal document to comprehensively chart the roadmap to building Europe’s hydrogen industry has been the 2020 Hydrogen Strategy for a climate-neutral Europe. The Strategy aims to gradually create, by the year 2050, a European economy based entirely on the generation and use of hydrogen. In pursuit of the goals set in that context, the European Commission has undertaken a number of initiatives.

The “Fit for 55” package, introduced in July 2021, is a set of proposals for revising and updating the EU legislation, while introducing new initiatives to make sure that the EU policies are in line with the climate goals agreed by the Council and the European Parliament. Among the strands in “Fit for 55” is a separate ‘Hydrogen and decarbonized gas market package’, comprised of a regulation and a directive laying down common rules aimed at establishing the regulatory framework for a specialized hydrogen infrastructure and markets and integrated network planning.

The regulation will introduce a set of rules for cross-border hydrogen networks and detailed provisions facilitating the mixing of hydrogen with natural gas and renewable gases. It will promote broader regional collaboration with respect to the quality of the gas while also strengthening cooperation for counteracting cyberattacks against EU’s energy networks. The directive, for its part, will expand the scope of the principles of EU legislation governing gas networks to also encompass those carrying hydrogen. The proposal will lay down strict consumer protection rules that will allow consumers to change suppliers easily and to select

renewable and low-carbon gases over fossil fuels. As of today, these documents are yet to be adopted. In March 2023 the Council of the European Union defined its negotiating position (general approach) with the European Parliament on both proposals.

Another initiative included in the 'Fit for 55' package is expected to be the adoption of an Alternative Fuels Infrastructure Regulation (AFIR), on which the Council and the Parliament reached a preliminary agreement in March 2023. Also expected is the extended implementation of the Trans-European Energy Network Regulation (TEN-E, Regulation (EU) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure, amending Regulations (EC) No 715/2009, (EU) 2019/942 and (EU) 2019/943 and Directives 2009/73/EC and (EU) 2019/944, and repealing Regulation (EU) No 347/2013), enabling the identification of projects for transmission and storage of hydrogen from 2024 onwards, and the EU Emissions Trading System (ETS) Directive.

The goals set by the European Green Deal and the 'Fit for 55' package were augmented in May 2022 by the adoption of the 'REPowerEU' plan. By virtue of this new plan, superimposed on the focus on the decarbonization of Europe is the drive for achieving continent-wide energy independence from fossil fuels, currently imported from Russia. The new set of proposed actions includes energy savings, diversification of supplies, accelerated replacement of fossil fuels by stepping up the transition of Europe to clean energy and a smart combination of investments and reforms.

One of the formulated aspects of the 'REPowerEU' plan is exactly the accelerated introduction of green hydrogen, the so-called 'Hydrogen Accelerator'. The European Commission is of the opinion that hydrogen from renewable sources will be of crucial importance for the replacement of natural gas, coal and oil in hard-to-decarbonize industrial sectors and the transport sector. Therefore, the plan sets the goal of 10 million tons of domestically produced hydrogen from renewable sources and 10 million tons of imported hydrogen from renewable sources by 2030.

Such a change necessitates readjustment of the goals and measures subsistent in the already existing Renewable Energy Directive (Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC. Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December

2018 on the promotion of the use of energy from renewable sources

) , as well as the promulgation of two new delegated acts to that Directive. The first delegated act defines the conditions under which hydrogen, hydrogen-based fuels and other energy carriers can be classified as renewable fuels of non-biological origin (RFNBO). The second delegated act provides the methodology for calculating greenhouse gas emissions for the entire life cycle of RFNBOs. At this point in time, the proposals have already been submitted to the European Parliament and the Council for review, following which they will be either accepted or rejected.

Additional measures as part of the 'REPowerEU' plan are also in the pipeline; these will be focused on promoting the wider use of hydrogen and electricity for the industrial sectors and transport, including the introduction of Carbon Contracts for Difference (CCfD); the promulgation of guidelines for the Member States regarding energy from renewable sources and agreements on the purchase of electric power; adoption of a package of legislation for making cargo transport more environmentally sound and, if possible, a legislative initiative for increasing the share of zero emission vehicles in mass transit and corporate fleets above a certain size.

2. Bulgaria

In Bulgaria, decarbonization through green hydrogen has been included in the National Recovery and Resilience Plan, specifically in Reform C4.R7 'Unleashing the potential of hydrogen technologies and hydrogen production and supply'. In pursuit of said reform, on April 26th, 2023, the Council of Ministers adopted a National Road Map for improving the conditions for unleashing the potential of hydrogen technologies and hydrogen production and supply mechanisms. The purpose of that Road Map is to improve public awareness, to create expectations for the development of the sector and to outline the road to a phased deployment and application of hydrogen-based technologies and the use of hydrogen in Bulgaria. The document, which claims to 'remain open to periodic updating in line with the dynamic in the sector and the need for constant and phased streamlining of the statutory framework, or for the creation of such a statutory framework where one is missing', covers the period 2023-2026.

Proceeding from the foundation of the European policy and legal framework and the programs and strategies for sustainable development and climate neutrality existing at

present in Bulgaria, the Road map proposes measures promoting activities in line with four operational goals:

1. promoting the consistent and effective deployment of technologies for the production, transmission and use of green hydrogen in industry, power generation and transport;
2. intensifying scientific research and innovations;
3. providing enabling conditions for education and vocational training for new professions and jobs and for an informed consumer and administrative environment related to hydrogen technologies;
4. incentivizing European and international cooperation.

Bulgaria still lacks the statutory framework required to promote the attainment of the goals outlined in the Road Map. The Supplementary Provisions to the Energy Act provide the legal definition of green hydrogen as 'hydrogen obtained by hydrolysis or by another method using renewable energy sources. The electric power used in the generation of green hydrogen is guaranteed to come from renewable sources' (§1 subpar. 24e). There is statutory language that deals partly with the matter of green hydrogen in the transport sector, represented by Ordinance No. РД-02-20-2 of 28.09.2020 governing the terms and procedure of design, construction, commissioning and supervision of refueling stations for vehicles powered by hydrogen fuel.

The Road Map also points to the need for further regulatory instruments to be put in place, mostly in relation to the transposition of the Renewable Energy Directive and the delegated acts to it, including on matters related to vertical and horizontal unbundling; connection to the energy infrastructure and blending of hydrogen into the gas transmission networks; the applicable taxes and fees; as well as issues related to the guarantees of origin of green hydrogen. As the process of updating of European level legislation, some of which was referred to herein above, advances, it should be paralleled by a similar and simultaneous process concerning Bulgarian national legislation.