



## EUROPEAN COMMISSION

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### INTRODUCTION AND BACKGROUND

The European Commission (EC) is the executive arm of the European Union (EU), a unique treaty-based, economic, and political partnership between currently twenty-eight member states, covering a territory of 4,324,782 km<sup>2</sup>, with an estimated population of over 508 million. The nominal GDP of the EC in 2013 was 12,972 billion Euros and an average GDP growth rate of 0.1%. The most recent data on the EU and of the individual member states' primary energy structure and electricity production and consumption can be found in the EC issued statistical pocketbook at <https://ec.europa.eu/energy/en/statistics/energy-statistical-pocketbook>. Similar data on transport is available at [http://ec.europa.eu/transport/facts-fundings/statistics/pocketbook-2015\\_en.htm](http://ec.europa.eu/transport/facts-fundings/statistics/pocketbook-2015_en.htm).

The EC is responsible for proposing policy and legislation, implementing decisions, ensuring that all members abide with the European treaties and laws and for managing the general day-to-day running of the EU affairs. Therefore, it handles a number of policy areas and portfolios, including science and research. Policy areas most relevant to IEA HIA that the Commission Directorates-General are responsible for include DG Energy (ENER), DG Transport and Mobility (MOVE) and DG Research and Innovation (R&I). Additionally, the Directorate-General Joint Research Centre (JRC) provides independent scientific and technological support for EU policy-making. The JRC Institute for Energy and Transport, located in Petten (the Netherlands) and in Ispra (Italy), focuses on energy and transport issues and represents the EC within the IEA HIA. Seven JRC Institutes, as well as close cooperation and networking at European and global levels, provide sources for this update.

### HISTORY OF JOINT RESEARCH CENTRE (JRC)

The JRC was set up in 1957. As the EC's in-house science service, its current mission is to provide EU policy makers with independent, evidence-based scientific and technical support throughout the whole policy cycle. Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new methods, tools and standards and sharing its know-how with the Member States, the scientific community and international partners. (<https://ec.europa.eu/jrc/en/about/jrc-in-brief>).

### HYDROGEN STRATEGY

The European Union is committed to transforming its transport and energy systems as part of a future low-carbon economy. Fuel cells, as an efficient conversion technology, and hydrogen, as a clean energy carrier, have great potential to contribute to addressing energy, transport, environmental and economic challenges facing Europe. Hydrogen technologies will allow renewable energy technology to be applied to the power, transport, industrial and residential sectors, facilitate distributed power generation and help Europe cope with increasing amounts of intermittent renewable electricity in the overall generation mix.

## VITAL STATISTICS

### Executive Arm of EU-28

28 Euro States in 2014

### Estimated Total Population

495,578 million

### Territory

4,323,000 km<sup>2</sup>

### Nominal GDP

€14.3 trillion (2014)

### GDP Growth

-0.4%



They will also contribute to enhanced energy supply security through higher efficiency and reliance on indigenous primary energy sources. Finally, technology innovation, such as that in hydrogen and fuel cells, will contribute to enhancing EU competitiveness and employment.

The EU strategy on hydrogen and fuel cells is reflected in a number of legislative and non-legislative documents, the most important of which are summarised in the table below.

REFERENCE	TITLE
COM(2011) 112	2050 Low-Carbon Roadmap
COM(2011) 885	Energy 2050 Roadmap
COM(2011) 144	White Paper on Transport
COM(2013) 17	Clean Power for Transport: A European Alternative Fuels Strategy
COM(2014) 15	A Policy Framework for Climate and Energy in the Period from 2020 to 2030
Directive 2014/94/EU	Deployment of Alternative Fuel Infrastructure
Council Regulation (EU) No 559/2014	Establishing the Fuel Cells and Hydrogen 2 Joint Undertaking

## HYDROGEN R,D&D

### PROGRAMS, PROJECTS, INITIATIVES IN BRIEF

#### Status and Accomplishments

Since 2008, R,D&D on hydrogen and fuel cells at EU level is organized in the frame of the European Fuel Cells and Hydrogen Joint Undertaking (FCH JU), a unique public private partnership which aims to accelerate the market introduction of these technologies. In 2014, the second phase of the JU (FCH 2 JU) was launched for a period lasting until end 2024. FCH 2 JU will reinforce the commitment to a real, strong, reliable European platform on fuel cells and hydrogen in which industry, research, and local, national and European governmental actors work together to address major socio-economic and environmental challenges through the technology. The projects under FCH 2 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 (cars, buses and refueling infrastructure) and energy (hydrogen production and distribution, energy storage and stationary power generation).

In support of and complementary to the project-based activities of FCH 2 JU, the JRC Institute for Energy and Transport performs pre-normative research focused on performance in terms of safety, sustainability, security, and life-cycle assessment of FCH technologies and applications.

#### Participation

FCH JU is an industry-led public-private partnership between the Commission, European industry and research organizations. FCH 2 JU brings public and private interests together in a new, industry-led implementation structure ensuring that the jointly defined research program better matches industry's needs and expectations, while focusing on the objective of accelerating the commercialization of fuel cell and hydrogen technologies.





## Funding

European Framework Programs (FP) have provided increasing levels of funding to fuel cell and hydrogen technologies, from €8M in FP2 to €315M in FP6. There are also national programs with substantial funding, not to mention significant investments by industry and research institutions in these technologies. Better coordination of all these funding sources brings gains both in efficiency and economic value. Under the FP7 program, a pre-defined budget of sufficient critical mass—nearly € 1 billion jointly contributed by the members—raised confidence among public and private investors and allowed the industry to make long-term investment plans and manage cash flows. FCH 2 JU has a higher ring-fenced total budget of 1.33 billion euros, provided on a matched basis between the EU represented by the Commission, industry, and research. Member States and regions are also expected to align their efforts with the agenda of the JU, adding a leverage effect.

## MEMBER WEBSITES

<http://ec.europa.eu/energy/>

[http://ec.europa.eu/transport/index\\_en.htm](http://ec.europa.eu/transport/index_en.htm)

<http://ec.europa.eu/research/index.cfm>

<https://ec.europa.eu/jrc/>

<https://setis.ec.europa.eu/publications/setis-magazine/fuel-cells-and-hydrogen>

## OTHER IMPORTANT WEBSITES

<http://www.fch.europa.eu>

## CONTACT INFORMATION

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