

The Industrial Policy and the IPCEI on hydrogen

Hydrogen represents a win-win opportunity for all Member States and through the IPCEI instrument they can provide the necessary public contributions to develop new hydrogen-related markets and products, creating new jobs opportunities and improving industrial competitiveness notwithstanding aid of State regulations. The IPCEIs play an essential role in ensuring that European industry progresses along this dual path of green and digital growth and transformation: EU Member States and companies are therefore now called upon to be the protagonists of the technological revolutions.

L'idrogeno rappresenta un'opportunità win-win per tutti gli Stati UE che, attraverso lo strumento dell'IPCEI, possono rendere disponibili i finanziamenti pubblici per sviluppare nuovi mercati e prodotti in questo settore, creare nuove opportunità di lavoro e rafforzare la competitività superando la problematica degli aiuti di stato. L'IPCEI svolge un ruolo essenziale affinché l'industria europea possa proseguire nella duplice direzione di crescita e trasformazione green e digitale, con un ruolo da protagonista nelle rivoluzioni tecnologiche che abbiamo davanti.

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Industry plays a crucial role in creating prosperity and sustaining a social model. Industrial policy is therefore an essential tool for the Authorities of each Country in ensuring welfare and shaping the citizens' lives. European industry, more than ever, is called upon to face challenging structural transformations linked to climate change, environmental degradation, accelerating pace of technological change as well as the unprecedented global health crisis that requires a re-thinking of economic and employment models.

To address these challenges and seize the opportunities of the transformation, the European Commission developed in 2017 a **new industrial strategy for Europe, with industrial policy initiatives directed to-**

wards innovation, digitisation and decarbonisation of our industry.

The Strategic Forum for Major Projects of Common European Interest (IPCEI Forum)[1] - a high-level expert group, from representatives of the Commission, Member States, the world of Academic and Industry - developed in 2018 an important contribution to the EU's industrial future. The Forum focused on identifying value chains of strategic importance for the EU with the aim of strengthening Europe's competitive advantage and industrial leadership.

The Strategic Value Chains

The rationale of industrial policy interventions based on national markets and

instruments is not sufficient as they are too small and fragmented to exert a significant impact at global level; the new approach is therefore based on strategic value chains, which involve markets in a logic of interdependence, sharing resources and cooperation, intra-EU but also in its international dimension.

These strategic value chains are interconnected and integrated industrial activities with great potential to contribute to Europe's green and digital transformation and to improve Europe's industrial competitiveness.

The Forum analysed several European industrial value chains and selected six strategic value chains where further joint and coordinated efforts are needed:

- Connected, clean and autonomous

- vehicles
- Hydrogen technologies and systems
- Smart health
- Industrial Internet of Things
- Low-CO₂ emission industry
- Cybersecurity

These six strategic value chains are in addition to of the ones focused on "batteries" and "high-performance computing and microelectronics" already identified to disclose the way forward the IPCEIs.

In the identified strategic value chains, the European Union aims to stimulate the launch of major integrated projects on a European scale, to develop new and disruptive industrial processes, technologies and products; these integrated projects will create a European leadership on new products and technologies that will at the same time make it possible to address the industrial challenges linked to climate change, decarbonisation and digital development.

With the adoption of the new 2020 industrial policy strategy, the European Commission has set an ambitious and unprecedented goal of climate neutrality by 2050 for the European Union. In order to achieve this goal, which goes far beyond the already ambitious targets already fixed in the 2030 Agenda, the European Union has set itself the goal of embarking on a dual path of radical transformation: the green and digital transition.

In this context, **the IPCEIs play an essential role in ensuring that European industry progresses along this dual path of green and digital growth and transformation: EU Member States and companies are therefore now called upon to be the protagonists of the technological revolutions that will drive our competitiveness and economic development.**

The potential of the Strategic Hydrogen Value Chain

Hydrogen is an environmentally and climate friendly (zero emission) energy carrier. Produced from renewable energy sources, e.g. photovoltaic and wind power, or with low CO₂ technology, it has the

potential to essentially replace fossil energy. As underlined by the European Commission, hydrogen is currently the only alternative to fossil fuels capable of sustaining certain energy-intensive industrial applications (steel industry, building construction, chemicals, etc.).

Therefore, developing the strategic hydrogen value chain becomes essential for our green transition process: EU Member States are making huge efforts to meet the agreed emission reduction targets in sectors that could be decarbonised by the introduction of hydrogen.

Hydrogen therefore represents a win-win opportunity for all Member States: it is a challenge for stimulating new innovative and disruptive projects to develop new hydrogen-related technologies: through the IPCEI instrument each Member State can provide the necessary public contributions to develop new hydrogen-related markets and products, creating new jobs opportunities and improving industrial competitiveness notwithstanding aid of State regulations.

The whole hydrogen value chain will have to be invested in new innovative projects: production of hydrogen from renewable electricity with electrolyzers; technologies to convert hydrogen into gases, liquids or chemicals with the aim of enabling the use of hydrogen-based or hydrogen-derived fuels on an industrial scale; adaptation of the natural gas network or construction of a hydrogen one and end-use applications, such as industrial processes, transport solutions (e.g. trains, heavy duty vehicles, maritime, aeroplanes), household appliances, etc. Some hydrogen systems and technologies are technologically mature for large-scale implementation but are not cost-competitive yet, mainly due to lack of economies of scale.

EU-level support in coordinating and structuring large-scale initiatives could accelerate the deployment of massive hydrogen production and its usage beyond the RDI (Research, Development, Innovation).

In addition, the hydrogen value chain includes actors and industries from a wide range of sectors, Member States and re-

gions: **coordination by the European Commission in cooperation with Member States, through the creation of a large Integrated Project of Common European Interest (IPCEI) could therefore be the most effective way for developing the potential of this strategic value chain.**

Why the IPCEI Instrument?

There are situations in which some investments cannot be feasibly sustained by the current market, in terms of risks and return of investment: this is the case of certain ambitious and complex projects characterised by a high degree of innovation, even more so if they require the involvement of several companies or Countries. Such investments involve a high degree of technological, financial or market risk, require coordination and cooperation efforts between several players in a value chain, but will generate spillovers beyond the investors, thus producing "positive externalities" for the community.

In these cases, the private investor is not available to take the full burden of the investment risk, and the credit market itself may not finance the project because it is considered too risky (or the risk compensation would be too high and make the investment cost prohibitive). In these cases, in order to **resolve these "market failures"**, it would be desirable to have public intervention by means of State aids from the various Countries involved in the project of common interest, as in the case of the IPCEIs.

In the case of the IPCEIs, state intervention produces a leverage effect of further private investment along the same value chain involved, triggering a virtuous effect of further projects that could not be carried out without the initial push of the large integrated project. Of course, given the single market and the competition on international markets regulated by the rules of the World Trade Organisation, any State subsidy/aid will be subject to a control of compliance with competition rules, in order to verify that the public intervention does not produce market

distorting effects or that such effects are limited and more than compensated by a prevailing public interest.

The IPCEI's instrument is therefore regulated by the following legal basis:

A) Article 107(3)(b) TFEU (Treaty on the Functioning of the European Union), which provides that "aid to promote the execution of an important project of common European interest" may be considered compatible with the internal market.

B) The European Commission's IPCEI Communication (2014/C 188/02) which sets out the criteria for assessing public funding of IPCEIs.

As a general principle, in order for a project to be eligible for an IPCEI, it should meet the following requirements:

- make a concrete and clear contribution to one or more EU's objectives and lead to a significant impact on the EU's competitiveness and sustainable growth;
- involve several Member States working together to develop a major integrated project;
- the public contribution should be also accompanied by forms of in-kind investment by the beneficiaries themselves;
- the benefits should extend beyond the financing Member States and the sectors concerned, reverberating across the whole the European economy through positive spill-over effects;
- RDI projects should be highly innovative, going well beyond the state of the art;
- Projects involving "First Industrial Deployment" (FID) should allow the development of a new products or services with a high research and innovation content and/or the development of a highly innovative technological process;
- projects in the field of environment, energy or transport should be of major importance for the Union's environmental, energy or transport strategy or contribute significantly to the internal market (a possible hydrogen IPCEI is undoubtedly of major value in this respect).

Broad cooperation between Member States, the EU Commission and companies

The European Commission, when giving positive approval to an IPCEI, will verify that the positive effects of innovation, spill-overs and the achievement of key EU public policies prevail over the distortions that the aid granted may create in the each market sectors.

The IPCEI Communication allows public support up to 100% of the funding gap based on an extensive list of eligible costs, which are incurred during the RDI and FID stage, a phase during which the R&D content for product development before mass commercialisation is still very significant. Public incentives to cover costs during the mass production phase are never allowed.

In the preparation of a new IPCEI project, as in the case of Hydrogen, a broad cooperation between Member States, the European Commission and companies in the sector is necessary for discussing, coordinating and match-making; this approach will enhance the establishment of general mosaic/framework of the integrated project on a European scale around which individual companies will be able to apply for their own well aligned projects to complete the European mosaic.

Forms of contribution through European programs and financial resources, to be added to those of each Member State, to balance the different countries' funding capacities, would represent the maximum expression of the European action's efficiency.

The Industrial Policy Direction of the Ministry of Economic Development is strictly endorsed in the IPCEI's establishment processes, having released this year the "EuBatIn" IPCEI (the second IPCEI on batteries) after the "Summer Battery" IPCEI and the IPCEI on "Microelectronics" during the last years,

relying on this instrument as a great opportunity to develop our Industry, boost research and reach important innovation goals in the direction of the Twin Transition of the European Industrial Strategy.

Italian approach towards the IPCEI on Hydrogen

In the assessment of the panorama of industrial stakeholders in hydrogen technologies and systems, with the scope of outlining an European value proposition, France-Italy and Germany-Italy matchmaking events, and meetings with Member States, DG GROW and DG COMP of European Commission were organized to build a common program with shared objectives and based on a systemic approach to achieve the relevant European goals.

Additionally, in order to define the Italian value proposition for an IPCEI on hydrogen, expressions of interest including a first description of the specific project proposed by each player were called and round-table discussions organized among the Italian stakeholders. During these events, a more focused exchange of information took place around the proposed projects portfolios, defining the core innovative aspects and the possible interfaces with other (Italian or European) stakeholders in the attempt to place projects and players in consistent European hydrogen value chain that could be supported by an IPCEI.

A comprehensive database has been obtained connecting more than 150 national project proposals qualifying the maturity of the projects proposed by each stakeholder, a preliminary mapping was built around what are considered to be key players for short-term deployment within the Italian economic system. The described approach is aimed to build coherent and substantiated Italian position in the brokerage with the other Member States participating in the IPCEI on hydrogen initiative.

REFERENCES

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