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## “White Dragon” proposal submitted for IPCEI Hydrogen Important Projects of Common European Interest

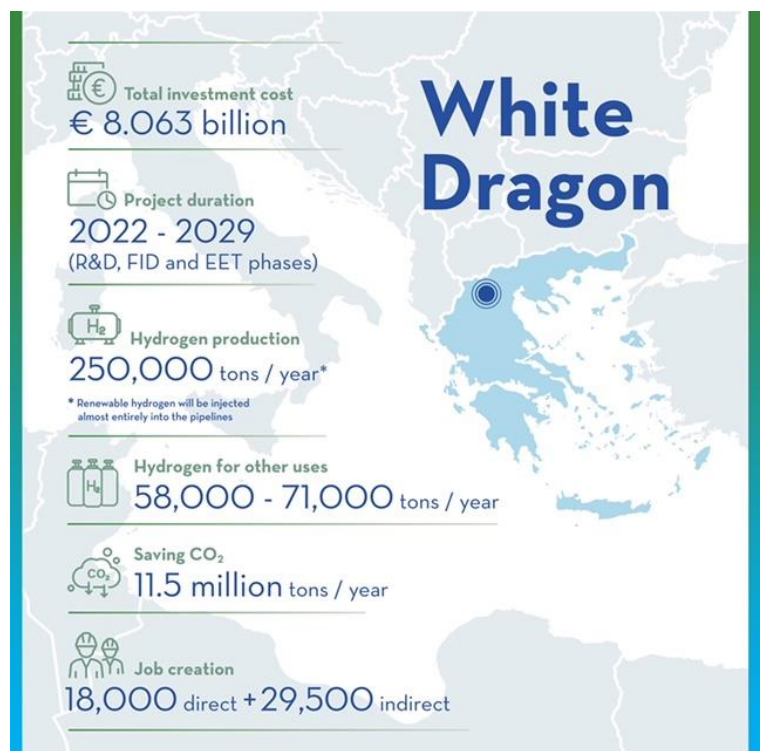
*Marks a milestone for energy transition through hydrogen technologies*

Last week was extremely important for the hydrogen sector and the Greek energy system. On Wednesday, May 5, **the national project proposal “White Dragon”** was submitted to the Greek call for expression of interest regarding Important Hydrogen Projects of Common European Interest (IPCEI). The proposal was submitted by a group of companies, composed of the largest energy groups in the country.

**DEPA Commercial**, as the project coordinator, in collaboration with **ADVENT TECHNOLOGIES**, **DAMCO ENERGY** (Copelouzos Group), **PPC**, **DESFA**, **HELLENIC PETROLEUM**, **MOTOR OIL**, **CORINTH PIPEWORKS**, **TAP** and **TERNA ENERGY**, submitted their investment proposal to the Greek Government and the EU. The total investment costs **for the development of an innovative integrated green hydrogen project** in Greece, which covers the entire hydrogen value chain, **exceed the amount of 8 billion Euro**.

“White Dragon” is fully supported by the Region of Western Macedonia and is the result of the initial expression of interest that was endorsed by the Regional Governor of Western Macedonia, Mr. George Kasapidis, in September 2019 in Brussels. At regional level, the project has also the support of the Cluster of Bioeconomy and Environment of Western Macedonia (CluBE).

The core of the project is based on the **gradual replacement of the lignite power plants of Western Macedonia and the transition to clean energy systems**, having as final goal the decarbonization of the country's energy mix.





The “White Dragon” project will use **large-scale renewable electricity (GW) for the production of green hydrogen** via electrolysis. The green hydrogen will then be stored directly (short-term hydrogen storage) and indirectly (injection to DESFA’s natural gas pipeline). Subsequently, hydrogen will be used in high temperature fuel cells that **will in turn provide electricity to the country's power grid as a base load co-generation unit of green energy and heat**. The generated heat, as a by-product of green electricity production, could initially have a complementary use to the district heating networks of Western Macedonia, as well as in other applications that require heat and / or cooling in the future (industries, data centers, greenhouses, etc.).

Moreover, a main goal of the “White Dragon” project is the development of an integrated Hydrogen Industrial Research Center within the High Technology Hydrogen Node Research & Development & Innovation that will be created in West Macedonia.

The intended upgrade and capitalization of the existing energy infrastructure (electricity grids and natural gas pipelines) is of utmost importance. In particular, natural gas pipelines will be used for the transport of green hydrogen for other uses, as well as for its indirect storage. A necessary precondition is the creation of a regulatory framework for an Energy Net Metering system as a transition option until the full development of the hydrogen economy has been achieved.

To accelerate growth in the framework of “White Dragon”, the National Natural Gas Transmission System will initially be prepared so that it can receive increasing rates of hydrogen, which will reduce the carbon footprint of the fuel and help initiate the hydrogen market. Moreover, the study and construction of an exclusive hydrogen backbone pipeline will be implemented in Greece, along with the first hydrogen projects in the transport sector (garbage trucks, trucks, trains, cars), the appropriate infrastructure for hydrogen refueling stations (HRS) and its road transportation and distribution.

The exclusive hydrogen backbone pipeline will enable the interconnection between remote green hydrogen production units with large end consumers (refineries, industrial units, etc.) to help them “green” their production processes, but also the interconnection with the respective systems of neighboring countries.

Finally, through the integrated “White Dragon” project, the transport and export potential of hydrogen through the TAP Pipeline, connecting Greece to other European markets, could be increased.



The key elements of the completed “White Dragon” project are:

Total investment cost:	<b>€ 8.063 billion</b>
Project duration:	<b>2022 - 2029 (R&amp;D, FID and EET phases)</b>
Hydrogen production:	<b>250,000 tons / year *</b>
Hydrogen for other uses:	<b>58,000 to 71,000 tons / year</b>
Saving CO <sub>2</sub> :	<b>11.5 million tons / year</b>
Job creation:	<b>18,000 direct jobs and 29,500 indirect</b>

*\*Renewable hydrogen will be supplied almost entirely into the pipelines*

On behalf of all the partners participating in “White Dragon”, Mr. Konstantinos Xifaras, CEO of DEPA Commercial, noted: *“The “White Dragon” project, coordinated by DEPA Commercial, is a decisive step for the realization and development of hydrogen technologies in Greece. The project has the potential to become a lighthouse project for Europe by having a significant positive environmental and socio-economic footprint. It is estimated to attract major investments in the green technologies’ sector, create a great amount of sustainable jobs, make Greece a pioneer in Southeast Europe in terms of hydrogen technologies and make West Macedonia an exemplar for fair transition to clean technologies”*