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The Emergence of New Technologies: Biomethane and Hydrogen



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INTRODUCTION



The new energy system should be Green and Clean, Affordable and Available, Secure and Reliable



Renewable and low-carbon gases have an important role to play in the future EU energy system.



Raising the ambitions of EU climate policy will require significant investment in energy efficiency, renewable energy, new low-carbon technologies, and grid infrastructure.

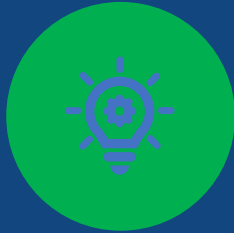


Greening the existing gas infrastructure can help to achieve the transition to a net-zero energy system at the lowest societal costs

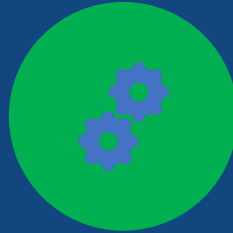
Greening the gas infrastructures



SAFELY DISTRIBUTE
BLENDS OF NATURAL GAS,
BIOMETHANE AND
HYDROGEN (BLUE AND
GREEN) OR BIOMETHANE
AND HYDROGEN ONLY



MINIMIZE ADDITIONAL
COSTS AND DISRUPTION
FOR EXISTING
CUSTOMERS (DOMESTIC,
COMMERCIAL, AND
INDUSTRIAL)



MAXIMIZE THE LIFETIME
OF THE GAS
INFRASTRUCTURES



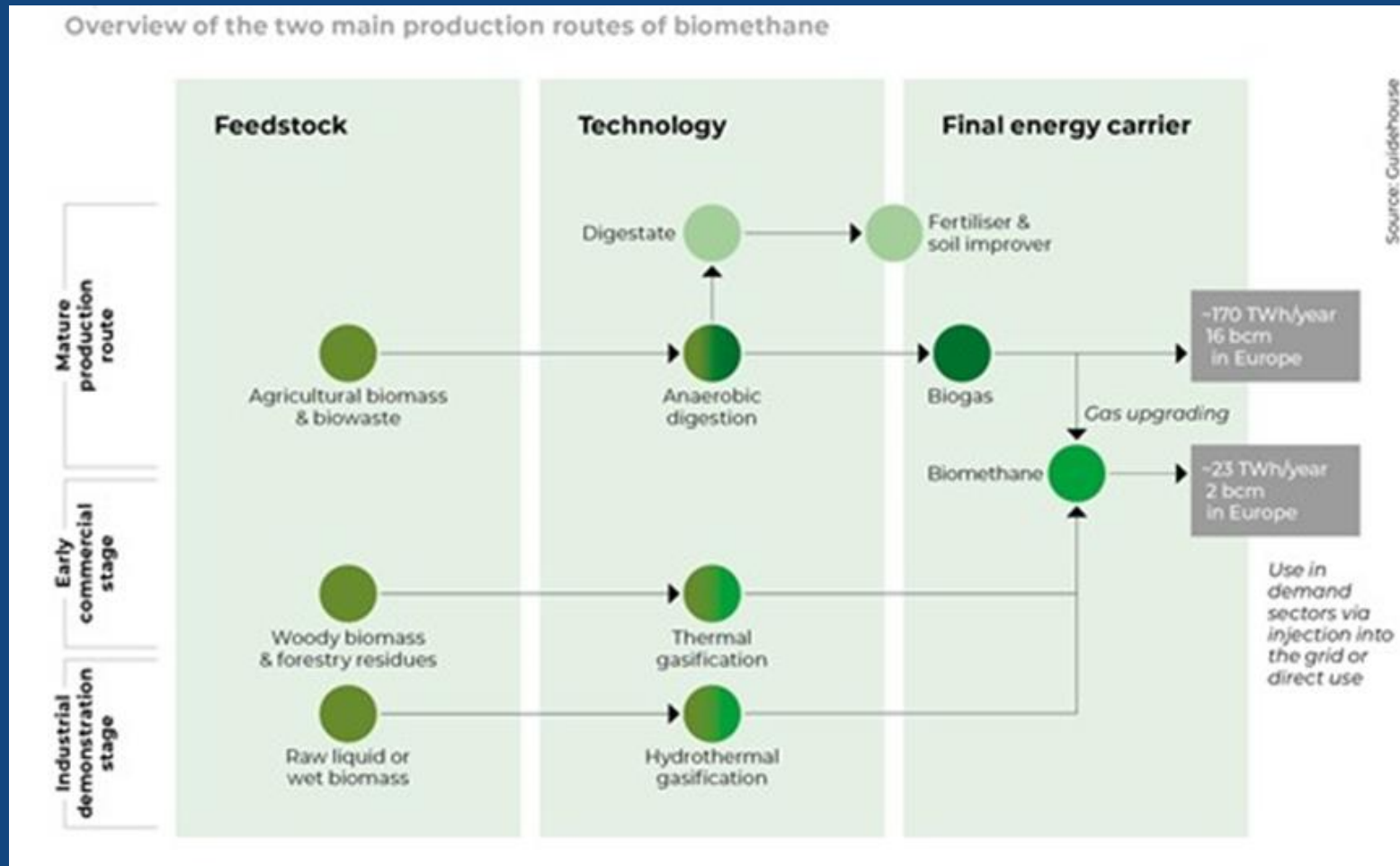
BEST OPTION TO ENABLE
THE 11% SHARE OF
RENEWABLE GAS
(BIOMETHANE AND GREEN
HYDROGEN) IN TOTAL EU
GAS DEMAND BY 2030



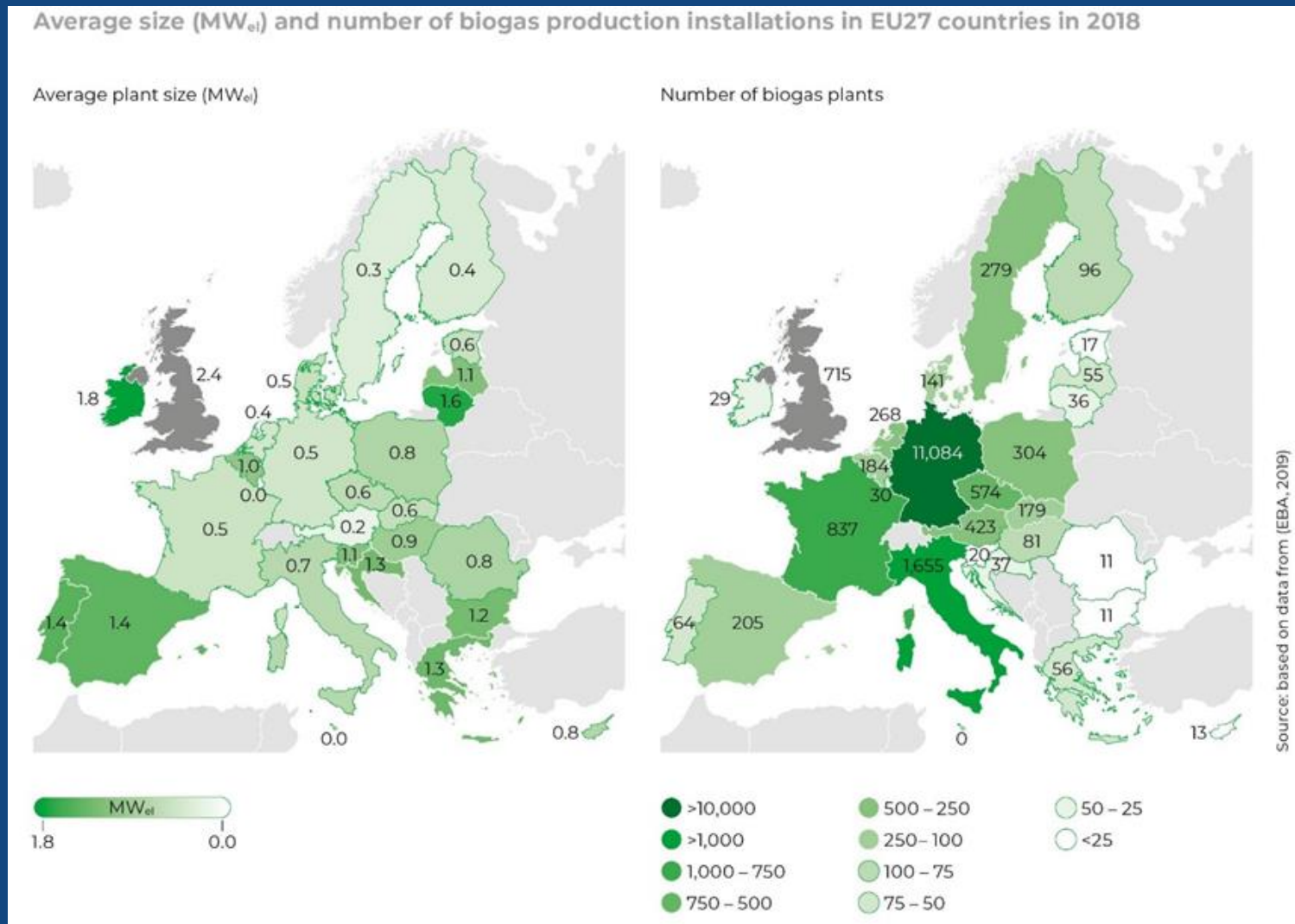
The renewable gases: Biomethane_Definition & Properties

“The largest contributor to low-carbon gas supply in the time horizon of the World Energy Outlook Scenarios”,
with an equally important role to play in the creation of a truly circular economy as it does in the energy transition

The renewable gases: Biomethane_ Production Processes



The renewable gases: Biomethane_ Infrastructure



The renewable gases: Biomethane_ Synopsis of the current situation in Greece_ DEDA acting as Prime Mover

Table 1.

Potential Production of Biomethane from biomass in Eastern Macedonia-Thrace Region

Sources of Biomass	Exploitable Quantities of Biomass (40% of the registered) (In tn/y)	Biomethane potential production (In MWh/y)
Manure	2.339.165	456.940
Agricultural Wastes	91.220	214.324
Agricultural and livestock industry's Wastes	75.258	11.767
Active Sludges	68.568	11.104
Food wastes	87.979	66.436
Total	2.662.190	760.571

The renewable gases: Biomethane_ Synopsis of the current situation in Greece_DEDA acting as Prime Mover

Table 2:

Biomethane contribution (%) to the medium- and long-term projected gas demand of Evros, Xanthi, Komotini, Drama and Kavala Prefectures, in Eastern Macedonia and Thrace Region

Prefecture	Biomethane potential production (MWh/y)	Projected Energy consumption (year 2025)	Biomethane contribution (%)	Projected Energy consumption (year 2045)	Biomethane contribution (%)
Drama	151.639	427.106	35,5	613.947	24,7
Kavala	63.234	26.439	239	66.179	95,5
Xanthi	141.776	144.944	97,8	304.288	46,6
Rodopi	164.776	172.846	95,3	436.871	37,7
Evros	173.405	236.448	73,3	606.854	25,6

The renewable gases: Biomethane_ Synopsis of the current situation in Greece_DEDA acting as Prime Mover

Drafting a proposal to the Regulator about the Code for the Connection of Biomethane production units to the Natural Gas Networks

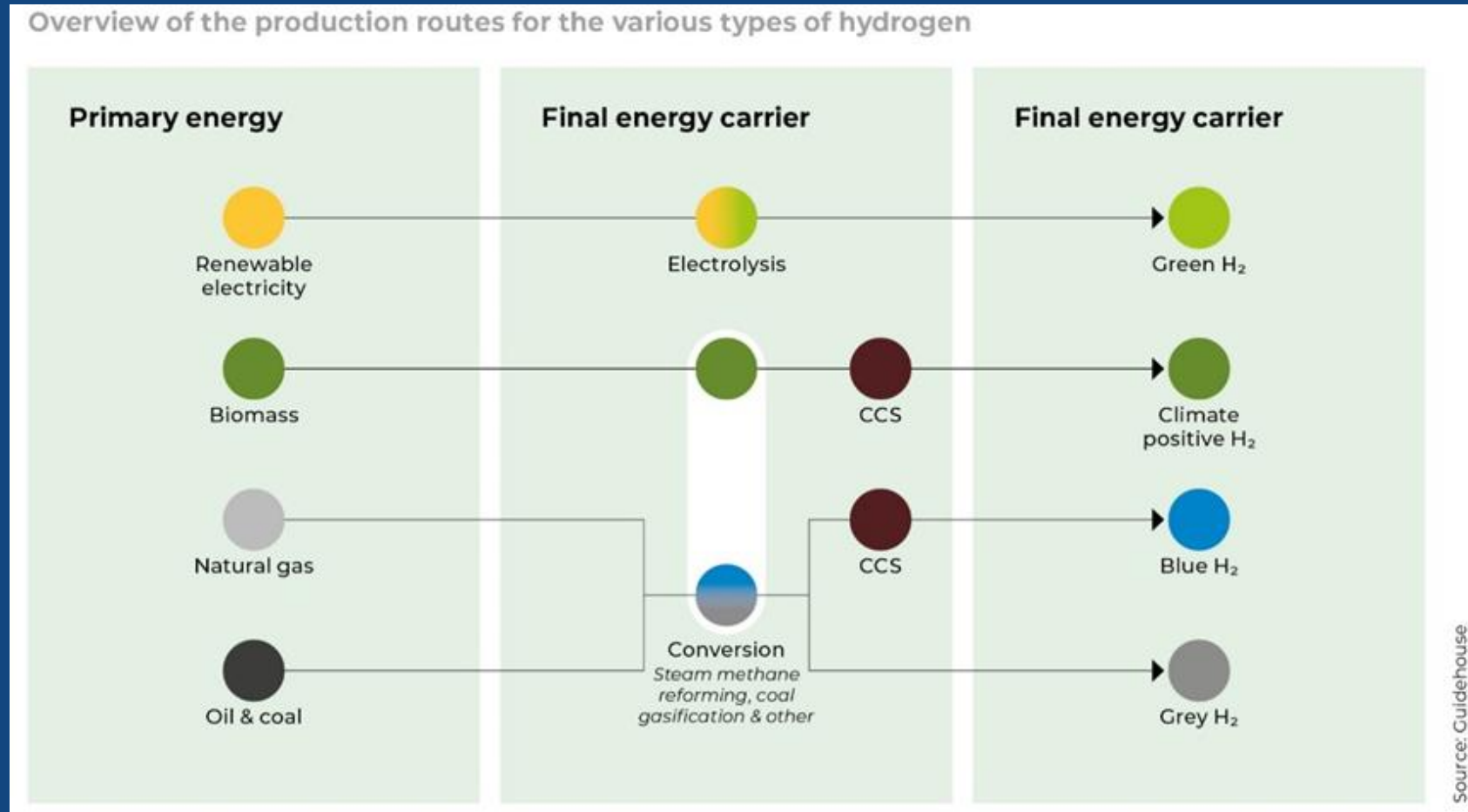
Drafting proposals to the competent authorities related to:

 the guaranteed price mechanism (Feed In Tariffs, FIT),

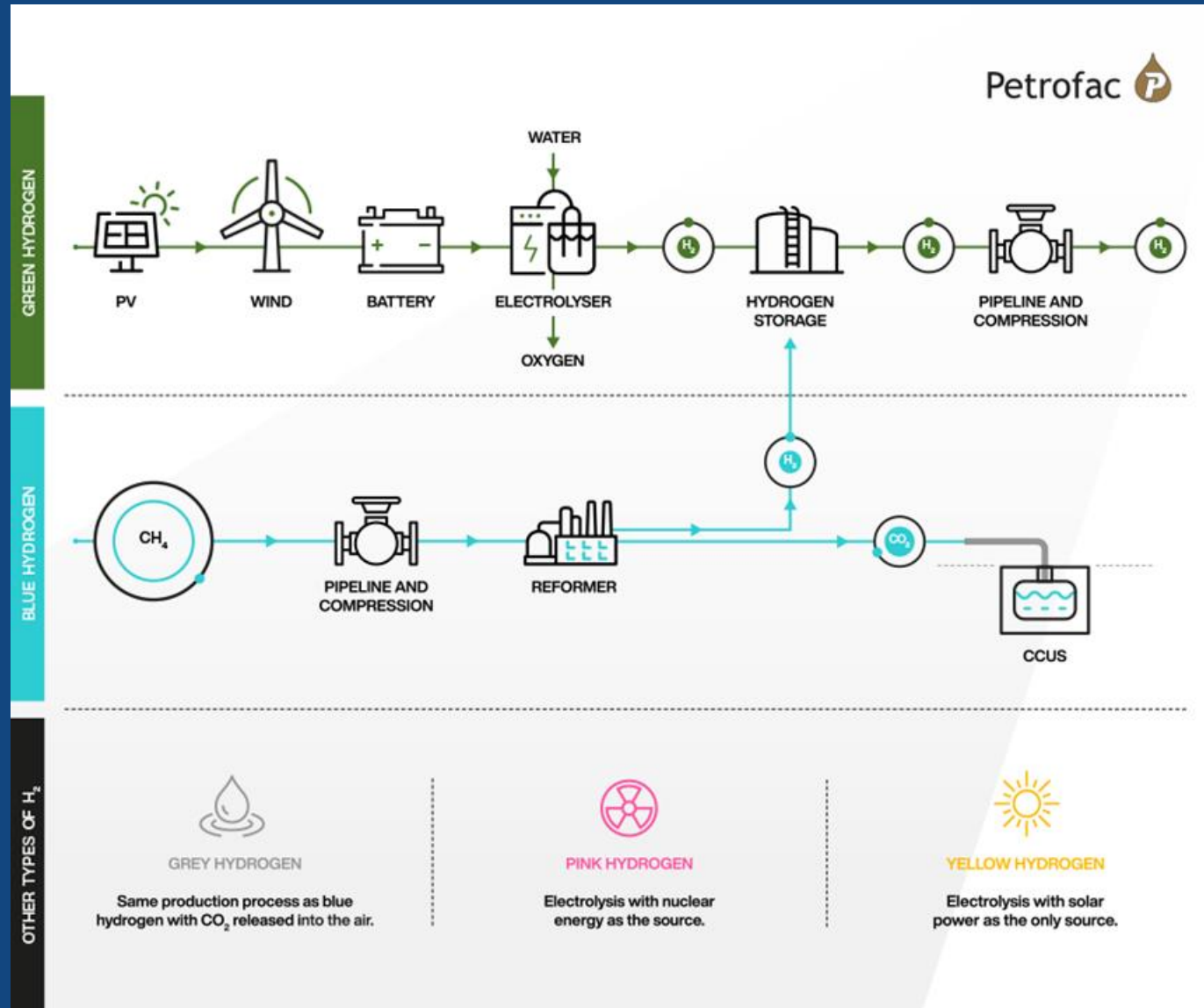
 the methodology for issuing the Certificates of Origin

and other related legislative issues

The renewable gases: Hydrogen



The renewable gases: Hydrogen_ Production Processes



The renewable gases: Hydrogen_ Infrastructure



- burns almost as an explosion. Good for efficient conversion of gas into heat, but it brings safety and engineering challenges.
- wide flammability range (between 4% and 75% in air) odorants cannot be added.
- about three times less energy-dense than methane.
- low density at only $\frac{1}{8}$ the density of methane.

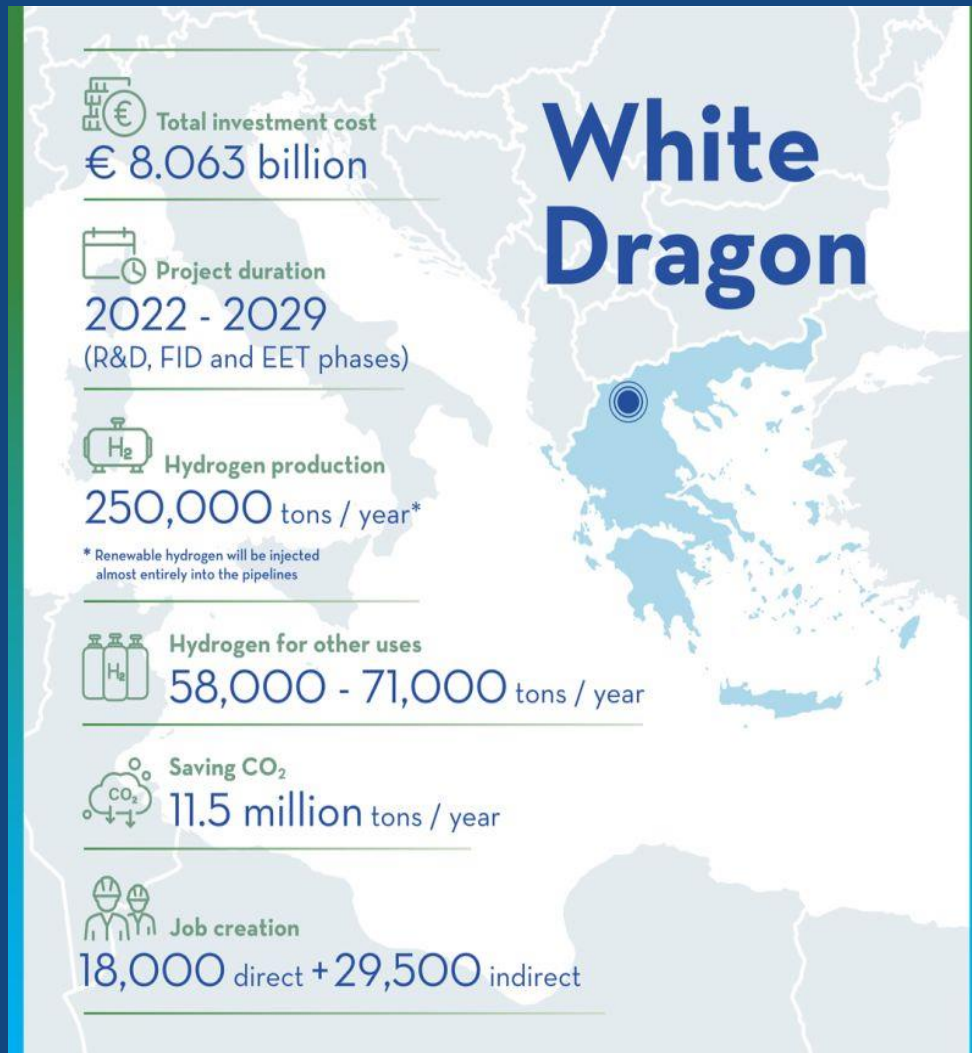
Thus, cannot blend in natural gas in large quantities

The main obstacles to the adoption of hydrogen lie in the distribution infrastructure and end-user equipment.

Many answers still pending, before deciding to include hydrogen in the energy balance of EU MS.

Green hydrogen to replace natural gas for power generation is likely the first cost-effective application.

The renewable gases: Hydrogen_ Synopsis of the current situation in Greece_ DEDA acting as Prime Mover



the "White Dragon" project,

DEDA acts again as Prime Mover:

by the end of June, the results of an inquiry about the ability of its networks to distribute blends of hydrogen and natural gas are expected, while the results on the standards to be followed for the construction of new, pure hydrogen, distribution networks, are expected in September .

submitting proposals to the Regulator and towards the competent authorities in relation to a new Distribution Code for Hydrogen and relative legislative issues.