

# The EU Strategy on Hydrogen Production in North Africa

Future of Energy Seminar  
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# Background and context

- Global decarbonization objectives
- EU (common market) energy policy making and governance
- War in Ukraine and energy security imperatives
- Hydrogen hype





## UN Sustainable Development Goals

- Energy transition
- Reduction of poverty and local empowerment
- Interdependency of SDG objectives
- Embed Human Rights Perspective in SDG discourse

# Hydrogen and its typology

## THE COLORS OF HYDROGEN

### GREEN

Hydrogen produced by electrolysis of water, using electricity from renewable sources like wind or solar. Zero CO<sub>2</sub> emissions are produced.

### BLUE

Hydrogen produced from fossil fuels (i.e., grey, black, or brown hydrogen) where CO<sub>2</sub> is captured and either stored or repurposed.

### GREY

Hydrogen extracted from natural gas using steam-methane reforming. This is the most common form of hydrogen production in the world today.

### PURPLE/PINK

Hydrogen produced by electrolysis using nuclear power.

### TURQUOISE

Hydrogen produced by thermal splitting of methane (methane pyrolysis). Instead of CO<sub>2</sub>, solid carbon is produced.

### BROWN/BLACK

Hydrogen extracted from coal using gasification.

### YELLOW

Hydrogen produced by electrolysis using grid electricity from various sources (i.e., renewables and fossil fuels).

### WHITE

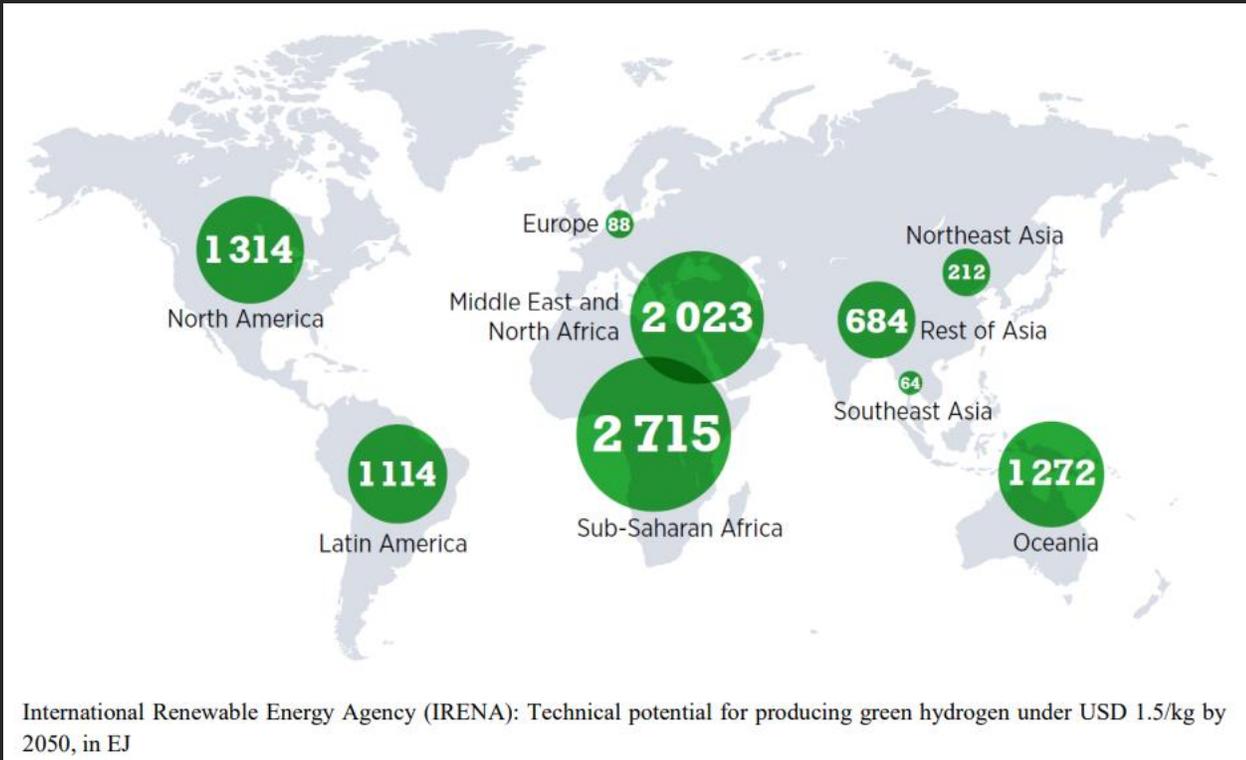
Hydrogen produced as a byproduct of industrial processes. Also refers to hydrogen occurring in its (rare) natural form.



# Blue hydrogen and “low carbon” hydrogen

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- Intermittency of electricity production: Hydrogen plants likely to be plugged into the main electricity grid, which is often powered by fossil fuels.
  - Hydrogen requires much more energy to ship than fossil gas. (Egypt, Morocco)
  - Three times more energy is needed to liquefy this gas
  - The transported hydrogen would only contain 27% of the energy as an equivalent volume of natural gas.
  - Blue hydrogen is not just worse for the climate than green hydrogen; it is also worse than simply using fossil gas.

# North Africa as a Hydrogen Exporter for the EU



# EU Strategy

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- Renewable Energy Directive (2018)
- REPower EU
- The Africa-EU Energy Partnership (AEEP)
- European Hydrogen Bank and 3 Bn EUR investment (State of the union)

**To achieve this, the EU external energy policy will aim to:**

- **strengthen its energy security, resilience and open strategic autonomy by diversifying the EU's energy supply and boosting energy savings and efficiency;**
- **accelerate the global green and just energy transition to ensure sustainable, secure and affordable energy for the EU and the world;**
- **support Ukraine and other countries that are directly or indirectly affected by the Russian aggression;**
- **build long-lasting international partnerships and promote the EU clean energy industries across the globe.**

Joint Communication, 'EU external energy engagement in a changing world' 2022

# REPowerEU and Hydrogen

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- Shortly after the start of the Ukraine war, raised the ambition from 5.6 million MT of renewable hydrogen deployed by 2030 to 10 million MT of renewable hydrogen produced domestically and another 10 MT of imported clean hydrogen.
- Top-up Horizon Europe investments on the Hydrogen Joint Undertaking (EUR 200 million)
- Two Delegated Acts on the definition and production of renewable hydrogen

# Commission Delegated Act

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- EU Renewable Energy Directive obliges the European Commission to define the term “renewable” hydrogen through a Commission “Delegated Act”
  - Act applies “regardless of whether the liquid and gaseous transport fuel of non-biological origin is produced inside or outside the territory of the Union”
  - Current proposal submitted for public feedback in 2022 and parliamentary debates ongoing
  - Final version expected in the course of 2023

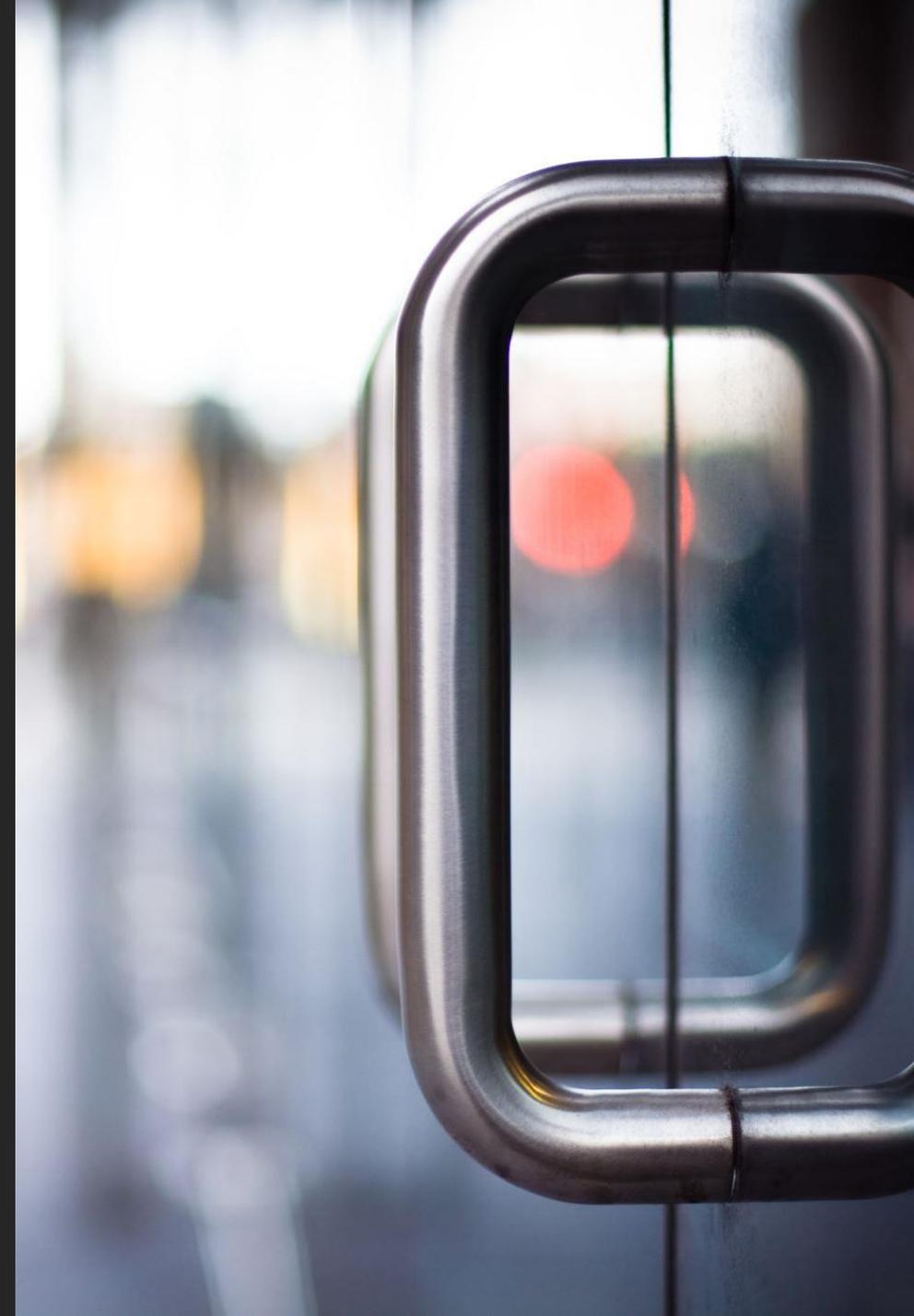
# Commission Delegated Act

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- Additionality requirement:
  - The EC's proposal and consultation on the Delegated Act in May was met with widespread industry criticism, warning that the strict additionality and temporal correlation rules would deter investment.
  - The European Parliament in September passed an amendment to the proposed Renewable Energy Directive, effectively overruling the Delegating Act and scrapping the additionality criteria.
- Temporal correlation:
  - The hydrogen industry demands to only require a monthly correlation between renewable electricity generation and the production of hydrogen via electrolysis.
  - Requiring an hourly correlation between renewable electricity production and hydrogen production from grid-drawn electricity will keep related carbon emissions in check

# Regulatory capture

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- Revolving door with EU institutions
  - Hydrogen Europe and Hydrogen Council as drivers of private regulation
  - Industry advisory group
  - Direct Lobbying efforts



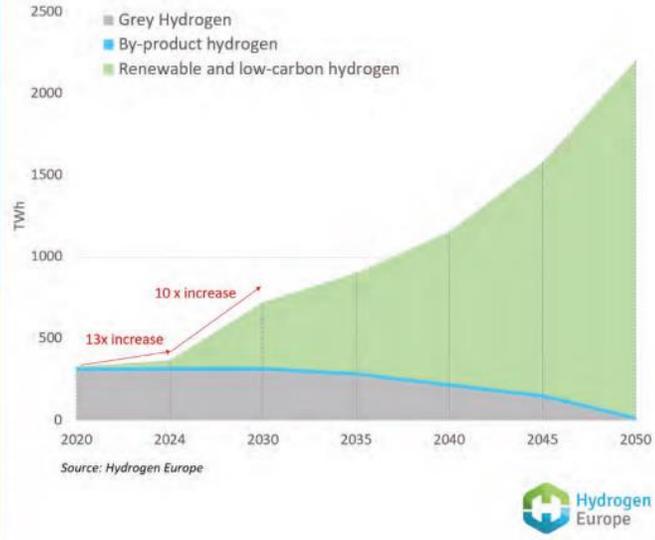
# 2x40 GW Green Hydrogen Initiative

## What we want

Enable clean hydrogen to:

- replace all unabated fossil hydrogen consumption,
- replace fossil fuels and feedstocks in other sectors where hydrogen can play a role.

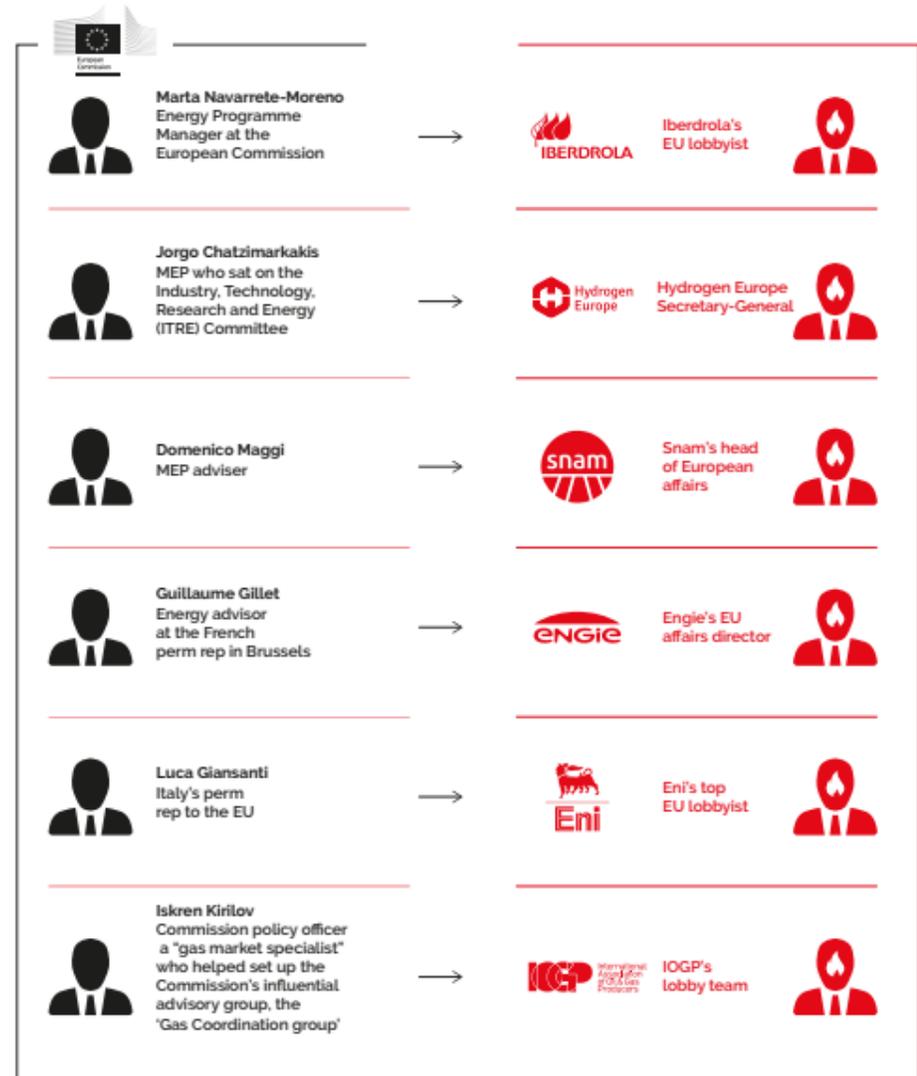
By 2024 Clean Hydrogen Production should be 13x times that of today and by 2030, it should be 130 times larger.



## REVOLVING DOOR CASES

Graphic 5

Groups that represent fossil fuel companies and lobby groups at EU level have also been actively lobbying on the recovery in Brussels.



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NEWS ARTICLE | 19 October 2022 | Brussels | Directorate-General for Energy

## Commission establishes Industry Advisory Group to support the EU Energy Platform



# Corporate incentives

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- To stay involved in the global production of energy and profit from the ambitious EU import objectives
- Be the first to “save” the hydrogen project where it fails to be green and supply the fossil hydrogen to keep up with the targets
- Preservation of the political status quo in African countries to keep benefitting from relations with corrupt elites and authoritarian leaders
- Labour exploitation, environmental degradation, violence against local communities, etc with impunity

# Risks emerging from regulatory capture

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- Hydrogen used as a trojan horse for gas and oil production in the global south
  - Usage of local electricity and local grid and diverting key resources away from local people
  - Usage of scarce reserves of local water supply
  - Blue Hydrogen certification displacing environmental costs to the global south
  - Continuation of post colonial logics of production and resource extraction
  - High investments required by the producing state would further entrench the economic dependency of the region

# Case study: Morocco

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- Many potential green hydrogen projects with Germany, but low electrolyzer utilization rates mean likely reliance on grid electricity
- Morocco is considering blending hydrogen with natural gas in the pipeline, however this makes neither energetic nor economic sense
- Shipping hydrogen (IRENA): Shipping hydrogen requires liquifying it by chilling it to  $-249^{\circ}$  Celsius. It takes three times the energy to liquify hydrogen as it does to liquify natural gas (LNG)
- Renewables could instead replace 27 TWh of coal and meet local energy needs; interconnectors with North Africa and the Middle East, and eventually the EU

# Case study: Algeria

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- Algeria is a long-time oil and gas producer, and a trusted provider of natural gas through pipelines and LNG shipping to the EU
- Domestic energy transition plan also calls for 25 GW of power generation from green and blue hydrogen by 2050
- Italian multinational oil and gas company Eni has extensive holdings in Algeria and has already signed several memorandums of understanding with Sonatrach on hydrogen manufacturing (also in Egypt)
- Natural gas prices have shot up following Russia's invasion of Ukraine, meaning so have Algeria's profits. That means Algeria and Sonatrach have billions in hand to pay for the wind and solar deployment and related infrastructure

# Further resources

- Commission Delegated Regulation supplementing Directive (EU) 2018/2001 of the European Parliament and of the Council by establishing a Union methodology setting out detailed rules for the production of renewable liquid and gaseous transport fuels of non-biological origin (2022).
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