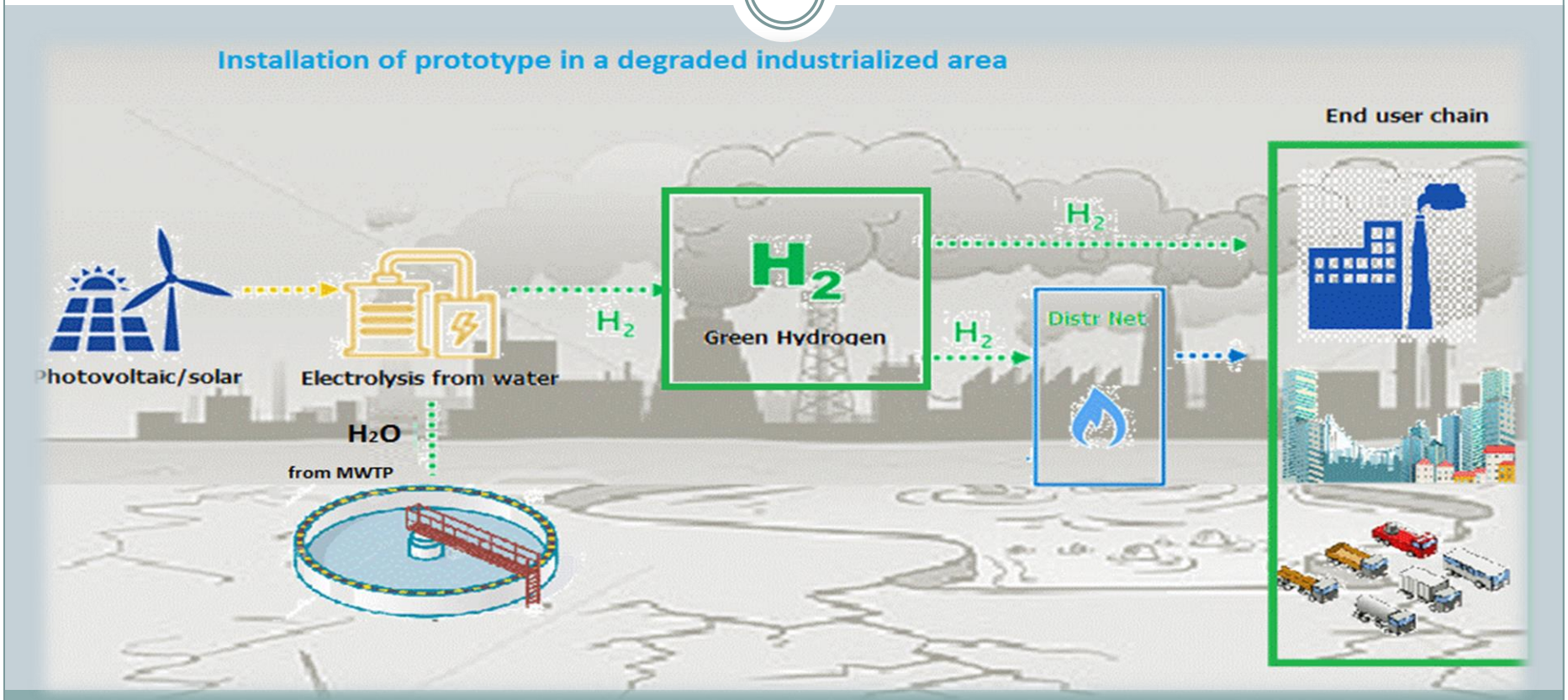
# “Hydrogen” Project

by

Energie Salentine




Outline of project idea

# The company

**Energie Salentine (ES) is an Italian company active in sustainable and renewable energy sector for many years**. It has a long-term strategy of sustainability development and expansion in the global renewable energy market.

The company **is** constituted by **Ferazzoli SpA and En.IT Group**, and operates in different countries such as Senegal, Gabon, Congo, Tunisia, Egypt, India, Chile, Dominican Republic and Australia, having appropriate and suitable local facilities in each Country for in-progress project management.

The others **minor partners of ES, are Maire Tecnimont, Tersan Puglia** .

ES **collaborates** with private and public entities: such **as Aciaierie D'Italia** (former ILVA) that is also **an end-user** of the H2 produced. Other partners are **ENEA**, **Polytechnic of Bari, Puglia Region**, **ASI Brindisi** (a Managing Public Entity for Brindisi Industrial Area), **ASI Taranto**, and **Port Authority of Taranto, Port Authority of Brindisi.**

Currently are ongoing negotiations with other partners, **A2A Group,** (plan of bio combustible producer) and **SNAM** for distribution network.

## PROJECTS

- A Biorefinery Project in Senegal by growing corn across more than 10.000 ha of grounds. Investment: EUR 250 million

- A Photovoltaic Project in Congo: Electrification programme of agricultural country processes using from renewable energy **sources**. Investment: EUR 65 million

- A Photovoltaic Project in Gabon: a first large-scale renewable energy power plant in the country. Investment: EUR 50 million

- Solar plant "The First - Cellino San Marco" 43 MW

# The Project

## MAIN GOAL : DECARBONISATION

Construction of a large-scale green hydrogen production plants through innovative technologies based on integrated solar and oxyhydrogen systems

**«Taranto Hydrogen Project»** which will be developed to serve the former ILVA steel plant with the aim

**of industrial and environmental redevelopment of the area**

250 MWp plat will power 85 MW of electrolysers producing 10.000 tons/year of H2 releasing 65.00 of O2

**«Brindisi Hydrogen Project»** which will be applied in the **Site of National Interest for soil remediation purposis** - 44 MWp of PV plant will power around 15 MW of electrolysers producing 2.000 tons/year of H2 and 10.000 tons of O2

**«Sardinia Hydrogen Project»** focused on **verifying the autonomy of energy supply**. - 500 MWp will power 170MW producing 25.000 t/year H2 and 130.000 t/year O2

"Hydrogen"

Installation of three plants **contextualizing** the technology in three industrial applications

**In addition**, the project will work for the distribution of hydrogen also in other sector, i.e. transport and civil sectors, after requalification of the networks, and Waste management.

The **main objective of the IPCEI proposal** is the construction of a large-scale green hydrogen production plant through innovative technologies based on integrated solar and oxyhydrogen systems.

The initiative is part of the **roadmap for decarbonisation**, towards a complete transition to renewable energy sources, where this initiative could represent an interesting pilot among European regions.

The "Hydrogen" project aims to install 3 plants for the production of green hydrogen by contextualizing the technology in various industrial applications: the "**Taranto Hydrogen Project**" which will be developed to serve the former ILVA steel plant with the aim of industrial and environmental redevelopment of the area, the "**Brindisi Hydrogen Project**" which will be applied in the Site of National Interest for soil remediation and the "**Sardinia Hydrogen Project**" focused on verifying the autonomy of energy supply. In addition, the project provides for the distribution of hydrogen also **in the transport and civil sectors, after requalification of the networks**.

## 1. Methods

The methodology used for the realization of the prototype is based on technical, environmental, social and economic criteria that also concern the study of the life cycle of the integrated offshore system. The plant will be obtained by assembling various existing and tested technologies:

- **Photovoltaic / wind power plant**: produces all the electricity necessary for the operation of the "user" production plant;
- **Filtration and Ultrafiltration plant**: filters the quantity of water arriving at the plant
- **Reverse Osmosis Plant**: further refines the quantity of water treated upstream from the Filtration and Ultrafiltration Plant;
- **Electrolysers**: through the physical principle of water electrolysis.
- **Pipes for water collection**: pipes and collectors with which the electrolysis system is fed;
- **Oxygen supply pipe**: pipes and manifolds with which it is possible to convey the production of pure oxygen to interested third parties;
- **Hydrogen supply line**: the entire hydrogen production will be fed into a methane pipeline and transported to its destination in order to allow the end user to release less harmful and polluting emissions into the atmosphere.

## Discussion/Conclusion

The transition to a new hydrogen market is facing significant risks with regard to the overall technical and scientific knowledge of this rather new field. The project is a development phase in a period in which the current scenario of the hydrogen market is still in its infancy and the project can be considered a pioneer of the new renewable energy source. Several obstacles and risks can be defined as follows.

**Economic barriers** can be considered as those barriers that interfere with market penetration due to their negative impact on economic growth due to the high investment costs (CAPEX), operating costs (OPEX) and final cost of hydrogen production, which includes the generation, storage and transport of hydrogen.

Furthermore, the enormous uncertainty caused by the lack of general information on **hydrogen technology** is the main barrier to accessing the financial market and the consequent implementation of financial instruments. Technical barriers are those risks related to each component and / or the process as a whole that limit the efficiency, effectiveness, reliability and safety of hydrogen. The problems are the limits to the injection of hydrogen into natural gas networks. The current permitted percentage of **hydrogen blending** in the natural gas network can vary from 1% to 6% in different European countries. In addition, very strict requirements must be met in terms of safety, fuel quality control and possible negative impacts on existing network components, such as turbines, compressors or end-user equipment.

## Discussion/Conclusion

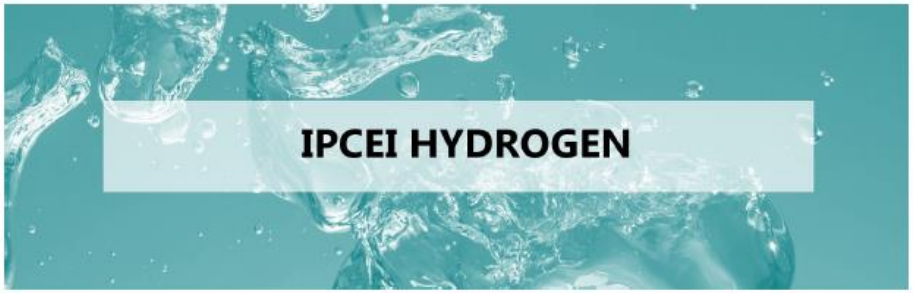
**Regulatory and operational barriers** are those barriers resulting from an inadequate legislative and regulatory framework or lack of it that prevents, seriously hinders or extends the duration of the implementation of hydrogen projects such as classification and authorization procedures.

In fact, **administrative simplification is needed**, in terms of minimizing regulatory and authorization uncertainty, of the energy framework to push stakeholder investments, maturing a clear responsibility for the implementation of energy solutions.

**Social barriers** are considered to be risks related to the lack of awareness, familiarity and general acceptance of hydrogen by citizens and end users. However, many aspects have evolved in recent years, but policies and public support are still needed to strengthen hydrogen development, including dedicated strategies to ensure social acceptance by end users.

## Discussion/Conclusion

*The availability of adequate incentive strategies and the application of tax breaks, subsidies or sanctions on conventional alternatives to encourage market uptake of green hydrogen are of the utmost importance for further relevant economic growth in the green hydrogen market.*




**Project Fact Sheet**
**IPCEI for Hydrogen**

**Company information**

* **Country**

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|---|---|---|---|
| ○ AT - Austria | ○ EE - Estonia | ◉ IT - Italy | ○ PT - Portugal |
| ○ BE - Belgium | ○ FI - Finland | ○ LV - Latvia | ○ RO - Romania |
| ○ BG - Bulgaria | ○ FR - France | ○ LT - Lithuania | ○ SK - Slovak Republic |
| ○ HR - Croatia | ○ DE - Germany | ○ LU - Luxembourg | ○ SI - Slovenia |
| ○ CY - Cyprus | ○ EL - Greece | ○ MT - Malta | ○ ES - Spain |
| ○ CZ - Czechia | ○ HU - Hungary | ○ NL - Netherlands | ○ SE - Sweden |
| ○ DK - Denmark | ○ IE - Ireland | ○ PL - Poland | ○ NO - Norway |

* **Company name**

Energie Salentine Srl

*Ing.* ***Barbara Valenzano****,* ***Civil*** **Engineer** with specialization in hydraulics and fluid dynamics systems, **PhD in Engineering** for the protection of ecosystems, **ING / IND25 Chemical Processes**. University Masters in sustainable development of the territory and biodiversity, numerous publications at international conferences and journals (IF> 1). She has directed the department of security technologies and emergency management of the Regional Agency for the Protection of the Environment (**ARPA PUGLIA**) for over 10 years where she has dealt with AIA (Integrated Environmental Authorization), RIR (Major Accident Risks) procedures, monitoring and control of the process industry. Currently manages the innovation policies of the Puglia Region and collaborates with the Polytechnic of Bari for research and development activities related to the production of hydrogen.

**Energie Salentine S.r.l. group**, an Italian company belonging to **Ferazzoli SpA** and **EN.IT SpA,** has been active in the renewable and sustainable energy sector for many years, has a long-term strategy of developing sustainability and expanding the global renewable energy market, playing a role important in mitigating climate change and establishing itself as a leading provider of clean energy. The company is strongly committed to investing responsibly and towards a sustainable corporate management code, based on the idea that companies that invest in sustainability and renewable energy must look to a future and broader horizon. Energie Salentine S.r.l. is fully aware of its responsibility towards protecting the environment, towards present and future generations, towards ourselves and our economic actions. Every single action has a significant impact on our planet and on our coexistence. In this context, all the holding companies of the Group are taking action to improve and certainly not damage the quality of our environment.

# For any information

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THANK YOU FOR ATTENTION