ENGIE is a global leader in low-carbon energy and services

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees globally</td>
<td>160,000</td>
</tr>
<tr>
<td>Countries</td>
<td>70</td>
</tr>
<tr>
<td>Revenues</td>
<td>€61Bn</td>
</tr>
<tr>
<td>Investments in energy transition</td>
<td>€12Bn</td>
</tr>
<tr>
<td>Installed renewable capacity</td>
<td>24.8GW</td>
</tr>
<tr>
<td>R&amp;D spend</td>
<td>€182M</td>
</tr>
<tr>
<td>Researchers &amp; Experts in R&amp;D centers</td>
<td>+1,000</td>
</tr>
<tr>
<td>Investment in innovative start-ups</td>
<td>€166M</td>
</tr>
<tr>
<td>University partners</td>
<td>+100</td>
</tr>
</tbody>
</table>

- **1st**: Independent power producer in the world
- **1st**: Globally in microgrids
- **2nd**: Globally in electric vehicle charging stations
- **2nd**: Global supplier of technical installation services
- **4th**: Globally in heating distribution network
ENGIE is a global green hydrogen leader

**Commercial Leadership**

Dedicated green hydrogen business unit established in early 2018 that currently has a global team of 50+ resources

Founding member of the Hydrogen Council in 2017 – a global CEO-led initiative of 92 companies with a vision to develop the hydrogen economy

**Deep Technical Expertise**

Over 20 years of hydrogen research with individual thematic labs focused on green hydrogen, green mobility, and green thermal/fuels

Proprietary software ("Prosumer") used for hydrogen strategic assessments and pre-feasibility studies – optimizes RE + H2 asset sizes for various use cases while minimizing TCO

Comprehensive H2 engineering studies on pipeline injection and safety/operational risks across hydrogen supply chain

**Global Experience**

Portfolio of 20+ hydrogen projects spread across 10+ countries and 5 continents

Network of 50+ partnerships with leading global players including utilities, electrolyzer/power gen/chemical/specialty gas manufacturers, storage/transport providers, research institutions, and investment banks/financiers

Holistic project development and execution capabilities – Strategy/master plan, feasibility study, permitting, commercial deal (HPA/PPA), financing, EPC, O&M
ENGIE’s Hydrogen Business Strategy

to develop industrial-scale renewable hydrogen solutions for regional and global markets, with a focus on H2 hubs that bring together multiple applications for maximum decarbonization impact

- To **design, invest in, build and operate** industrial-scale hydrogen solutions
- To provide **turnkey customer solutions** across the value chain

1. Renewable H₂, mass production through affordable renewable energy sources (RES)
2. Energy-intensive industries such as mining, ammonia, steel...
3. Local multi-usage business: electricity, heating, cooling, process, transport, storage,…
4. Transport of green energy to regions with limited RES potential
5. Multi-usage green offer
ENGIE is an H2 integrator, working across the entire value chain depicted below
ENGIE is developing H2 projects globally

A selection of ENGIE references along the renewable hydrogen value chain at various stages of development

**FRANCE – HyGreen**
Project that aims to produce, store, and distribute green hydrogen.

**FRANCE – HyFlexPower**
H2 turbine for electricity generation in paper plant

**FRANCE – Zero Emission Valley**
20 H2 charging stations by 2022 with 1.5 tons of capacity per day

**CHILE – Enaex**
Engie performed a pre-feasibility study of the 1st Green Explosives production plant

**CHILE – Hydra**
H2 roadmap for private companies in Chile

**SOUTH AFRICA – Anglo American**
AA and Engie developing world’s first Hydrogen mining truck

**AUSTRALIA – Yara**
Engie performed a pre-feasibility study of the 1st ammonia production plant

**FRANCE – Jupiter1000**
Industrial gas blending platform in gas infrastructure network

**FRANCE – HyGreen**
Project that aims to produce, store, and distribute green hydrogen.

**FRANCE – HyFlexPower**
H2 turbine for electricity generation in paper plant

**FRANCE – Zero Emission Valley**
20 H2 charging stations by 2022 with 1.5 tons of capacity per day

**CHILE – Enaex**
Engie performed a pre-feasibility study of the 1st Green Explosives production plant

**CHILE – Hydra**
H2 roadmap for private companies in Chile

**SOUTH AFRICA – Anglo American**
AA and Engie developing world’s first Hydrogen mining truck

**AUSTRALIA – Yara**
Engie performed a pre-feasibility study of the 1st ammonia production plant

Other references

- Project to co-fire H2 with gas on existing SGT-600 (25 MW) gas turbine (10% vol H2 co-combustión in Jan ’21, 20-25% in Q2 ‘21), testing challenges across the H2 chain from production to storage to co-combustión
- GRHYD project – injection of hydrogen produced from RE into the natural gas distribution network
- MethyCentre Project – production and storage of H2, biomethane and synthetic methane from RE and ag waste, for mobility and network injection
- EPCM and sales engineering for a green H2 plants as feedstock for chemical plant.
- Coradia iLint – world’s first renewable H2 passenger train; developed with Alstom and Arriva in Holland

In operation today

**FRANCE – Zero Emission Valley**
20 H2 charging stations by 2022 with 1.5 tons of capacity per day

**FRANCE – Jupiter1000**
Industrial gas blending platform in gas infrastructure network

**FRANCE – HyFlexPower**
H2 turbine for electricity generation in paper plant

**FRANCE – Zero Emission Valley**
20 H2 charging stations by 2022 with 1.5 tons of capacity per day
Zero Emission Valley project
20 H2 charging stations by 2023 with 1.5 tons production capacity per day

Regional, National and European funding received

Partners  Region AURA, Michelin, Bank of Territories and Crédit Agricole
Location  Auverge-Rhone Alpe, France
Period  Ongoing since 2019; First HRS in operation since February 2020
Scope  Business Modelling
• 20 H2 charging stations by 2023 with 1.5 tons production capacity per day,
• Renewable H2 production via 15 onsite electrolyzers, and distribution for mobility.

Proof of concept
• ENGIE and partners plan to put 1000 hydrogen vehicles into circulation. The project also involves the experimentation of 2 hydrogen buses for the Greater Chambery, 50 light vehicles and 148 vans of more than 2.5 tons.
Yuri project
Co-creation of the 1st Green Ammonia production plant

Client: YARA
Location: Pilbara region, Australia
Period: Ongoing since 2019

Scope:
- **Preliminary Business Modelling**
  - Definition, sizing and optimization of the entire hydrogen supply chain (LCOH),
  - Support to the client on the scale-up project financial valuation.

- **Proof of Concept**
  - Development and implementation of renewable H2 supply chain,
  - Integration with industrial project (flexibilisation),
  - Proof of concept of Green Ammonia production plant.

Rhyno project
Co-creation of the 1st hydrogen powered Mining Truck solution

Client
Anglo American

Location
Mogalakwena, South Africa

Period

Services provided

Preliminary Business Modelling
• Definition, sizing and optimization of the entire hydrogen supply chain (LCOH),
• Support to the client on the scale-up project financial valuation.

Proof of Concept
• Protocols and optimization strategy for heavy duty refueling,
• Development and implementation of renewable H2 supply chain,
• Proof of concept of H2 Mining Truck.