



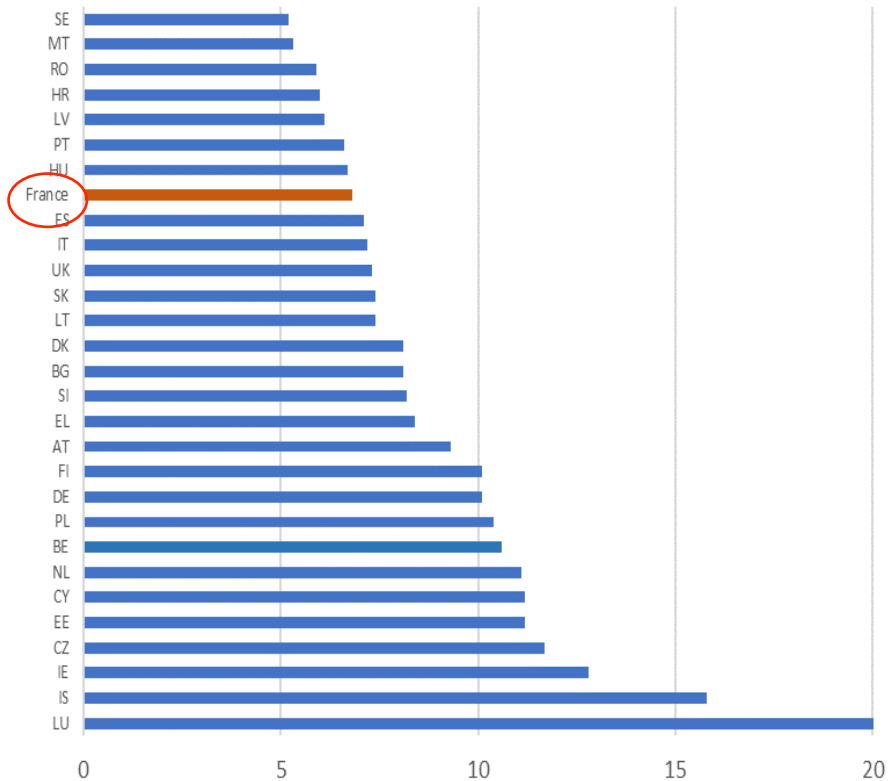
# EDF Group

International  
decarbonisation strategy  
and GH<sub>2</sub> plans for Chile



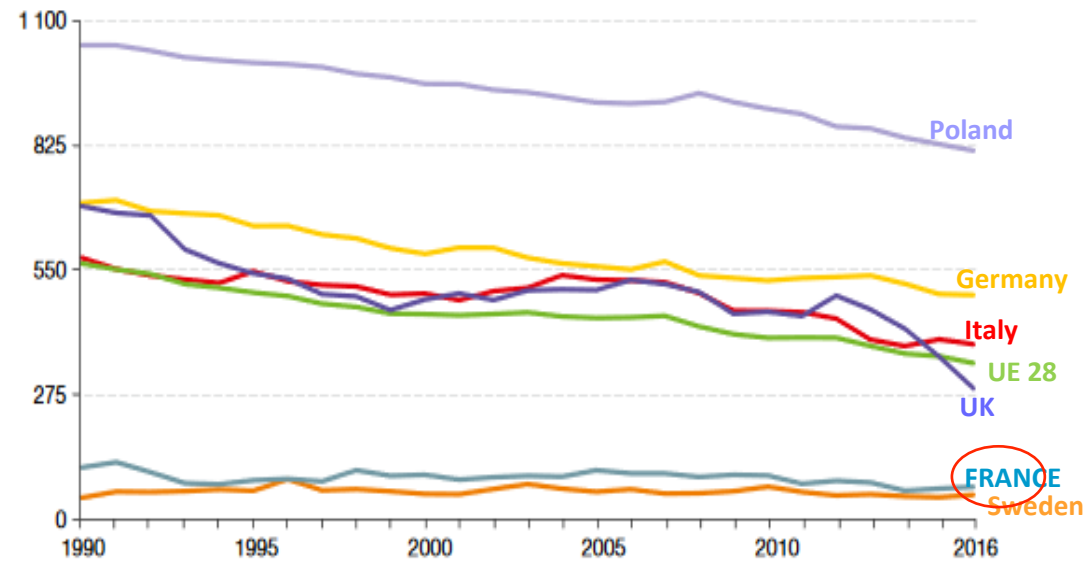
# FRANCE CO2 EMISSIONS AMONG THE LOWEST THANKS TO ITS POWER SECTOR

Greenhouse Gas Emissions per capita in Europe (Ton eq. CO<sub>2</sub>)



Source: Eurostat, 2016.

CO<sub>2</sub> Emissions to produce electricity in the EU (GCO<sub>2</sub> / kWh)

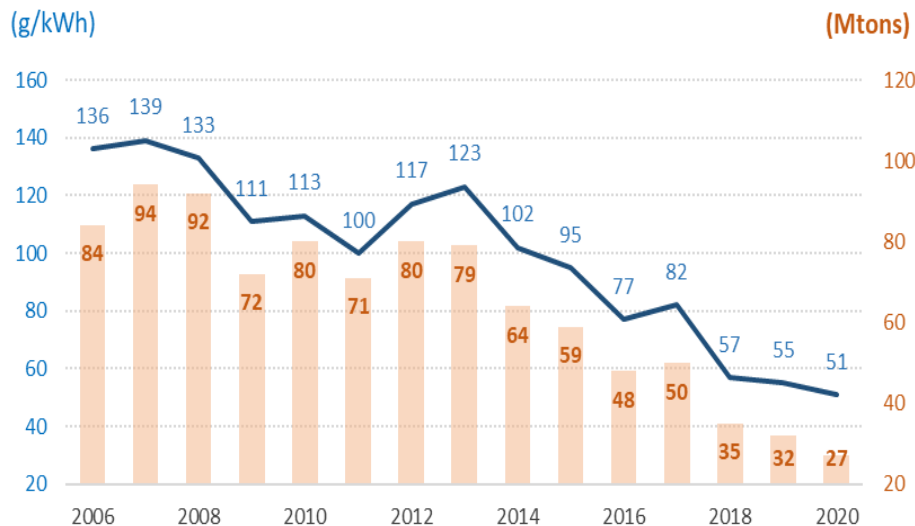


Source: Commissariat général au développement durable  
Ed. 2020

## Our raison

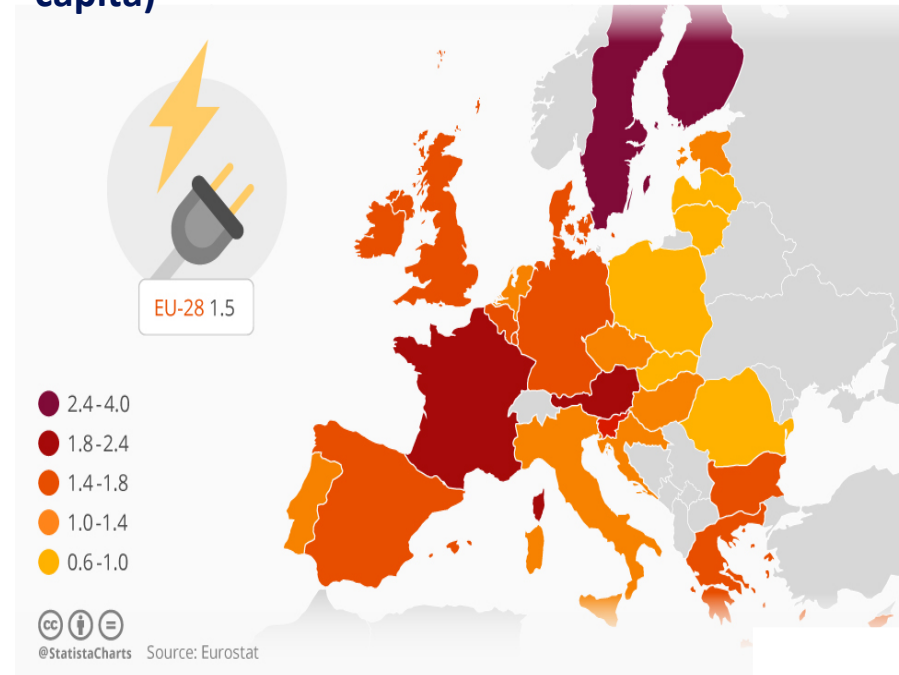
*d'être*  
**Build a net-zero energy future with electricity and innovative solutions and services, to help save the planet and drive wellbeing and economic development.**

### Reduction of direct CO<sub>2</sub> emissions from EDF group



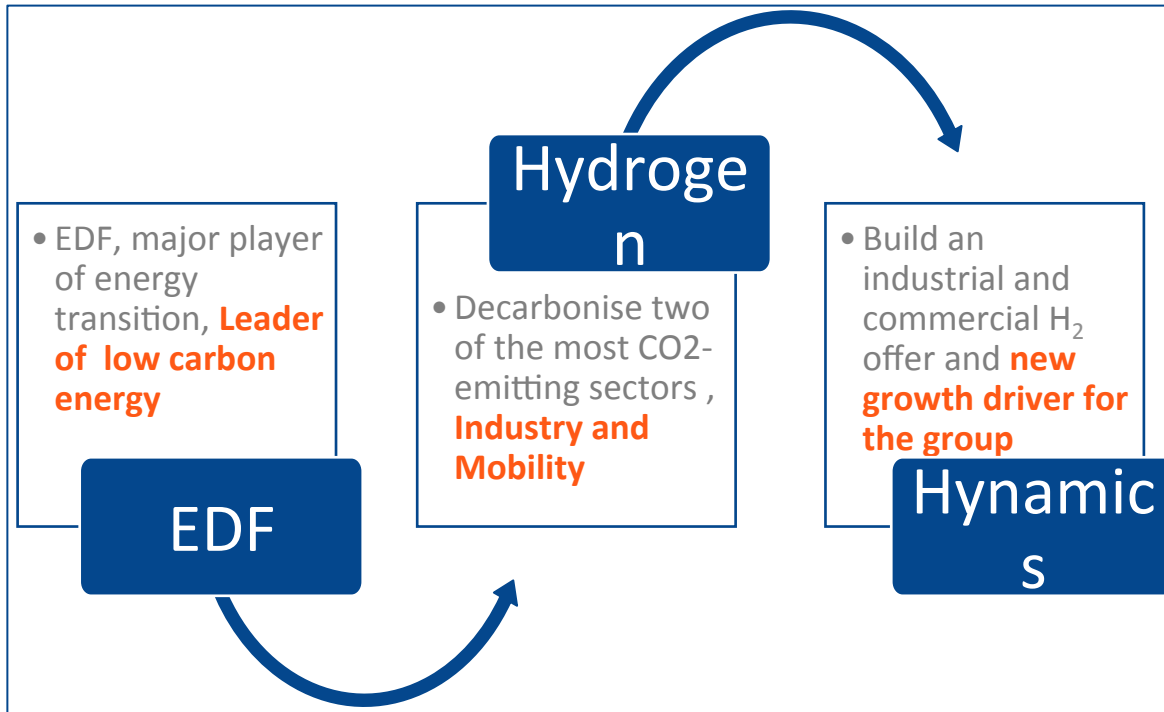
Source: EDF Carbon Footprint 2020

### European Electricity Consumption (MWh per capita)



**EDF has led France to become a leading low-carbon economy providing clean electricity to replace the use of fossil fuels.**

# INVEST IN HYDROGEN TO REDUCE CARBON EMISSIONS



**McPhy** | Driving clean energy Forward

- Created in 2008
- **A key player** in the hydrogen sector
- **A complete range** of solutions :
  - Electrolyzers
  - Hydrogen refueling station
- Agile **along the entire value chain**



**Wesküste 100, Hemmingstedt, Germany.**

## EDF GROUP IN CHILE SINCE 2013



**Cabo Leones I  
(115 MW),  
Freirina - Chile.**

- 750 MW of thermal installed capacity
- 376 MW of renewable installed capacity
- Developing renewable projects for more than 2.000 MW
  - Solar PV and Pumped Hydro Storage
  - **Hydrogen: Green Hydrogen projects & Energy Storage**



# CHILE'S POTENTIAL AS A GREEN HYDROGEN HUB

⇒ ***The government launched an ambitious national strategy.***

- Public funds from CORFO are available for US\$50 million

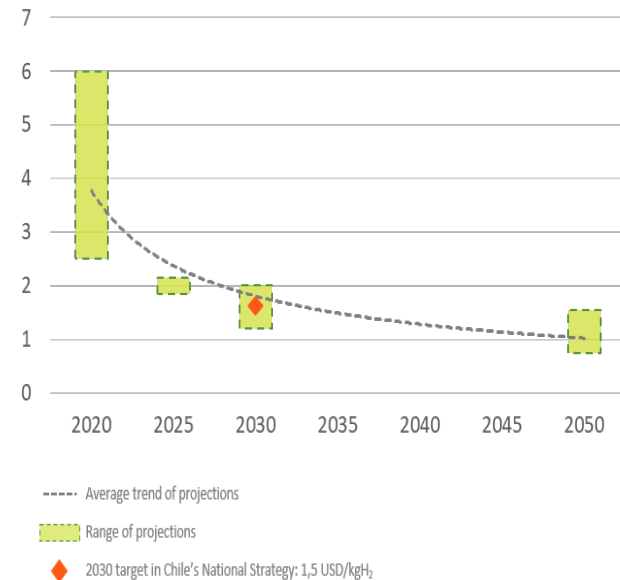
⇒ ***Chile has big renewables potential and can benefit from a decreasing cost of electricity from wind and solar.***

⇒ ***Competitive Levelized Cost Of Hydrogen (LCOH) depends on multiple variables:***

- Decrease in LCOE and electrolyzers' cost
- Improvement in electrolyzer efficiency and load factor
- Formulation of regulatory framework
- Increase in carbon tax to alternative fuels

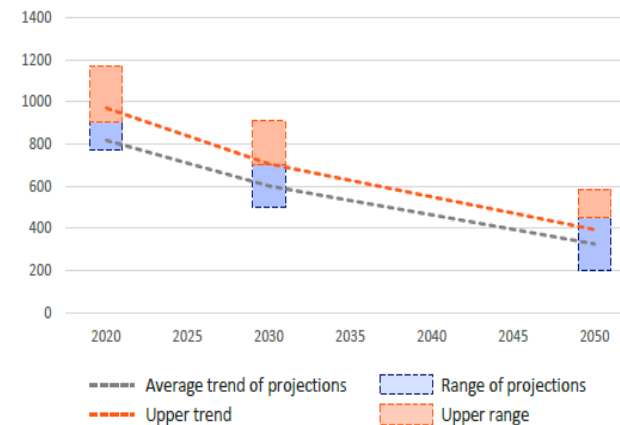


LCOH projections for green H<sub>2</sub> (USD/kgH<sub>2</sub>)



Source: LCOH benchmark based on Irena, Hydrogen Council, IHS Markit, academic papers.

Electrolyzer CAPEX (USD/kW)

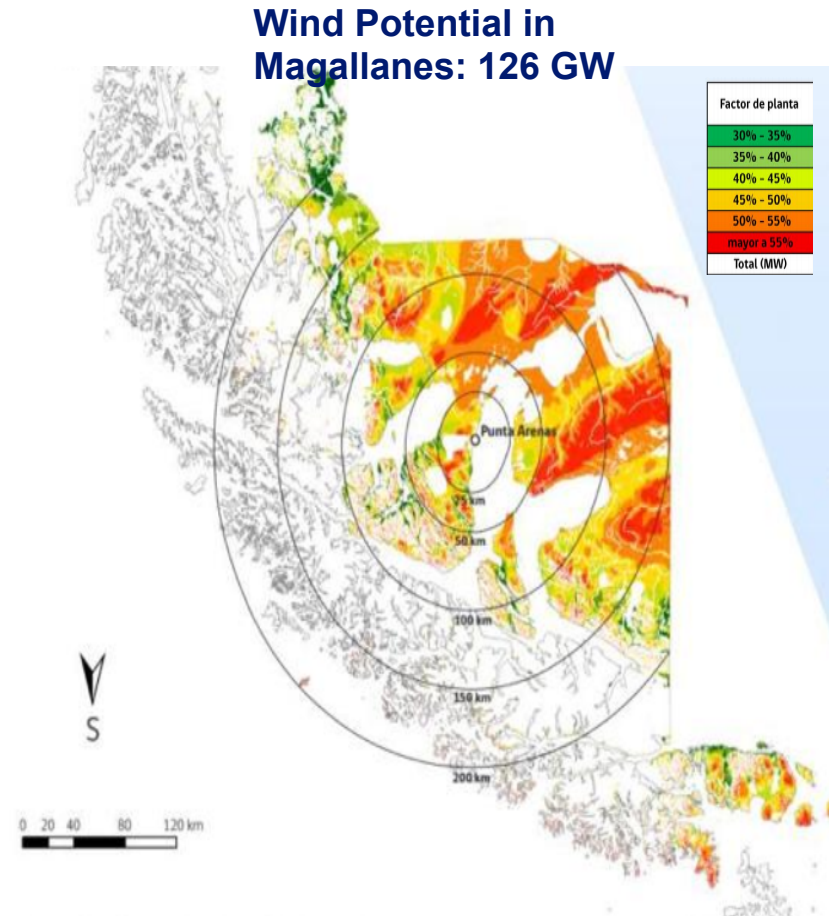


Source: INGEUM

# CHILE'S POTENTIAL AS A GREEN HYDROGEN HUB: CHALLENGES

≡ *The ambitious GH<sub>2</sub> strategy announced by the Chilean government presents a massive opportunity for international investors and faces several challenges.*

- 40 GW of renewable generation capacity and 25 GW of electrolyzers are required in 2030 to produce 1 million tons of H<sub>2</sub>; 200 GW of renewable generation capacity and 130 GW of electrolyzers are estimated for 2040.
- Actual demand of 70 ktons of H<sub>2</sub> must diversify to other uses; future offtakers require competitive prices; local and external financing instruments are needed.
- Appropriate regulatory framework, tax incentives, clear and agile permitting rules, are crucial to incentivate project development.



Source: Chilean Ministry of Energy,  
2020

# CONCLUSIONS

- ≡ *The EDF Group has been developing an expertise and a presence on the H<sub>2</sub> European market.*
- ≡ *EDF is determined to become a key player on the Chilean green H<sub>2</sub> market.*
  - Establishing alliances with private and public partners, co-investors and technology providers.
  - Evaluating projects with the best economic perspectives and technological maturity.



**EDF Bolero Solar Plant (146 MW), Sierra Gorda - Chile.**



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