

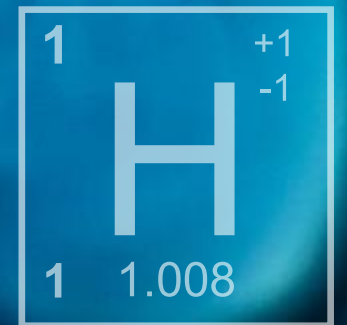


# Water Use for Hydrogen Production

Water Law Committee



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Hinicio at a glance

# ABOUT HINICIO

## TECHNICAL AND STRATEGY CONSULTANTS IN ENERGY & SUSTAINABLE MOBILITY

Founded in 2006, we are recognized as global leaders in hydrogen and power-to-X.  
Part of the Vulcain group since December 2022

We provide support to key public & private players with the development of **successful strategies and complex projects**, mitigating risks and facilitating investment decisions .

We have offices in **Brussels, Paris, Rotterdam, Washington DC, Bogota, & Santiago**, and commercial representation in **Mexico and China**.

**Our vast experience includes +600 projects delivered in +30 countries.**



BUSINESS &  
STRATEGY



INVESTMENT  
SUPPORT



PUBLIC  
POLICIES



PROJECT DEVELOPMENT  
ASSISTANCE  
(PDA)



# OUR CUSTOMERS | GLOBAL LEADERS

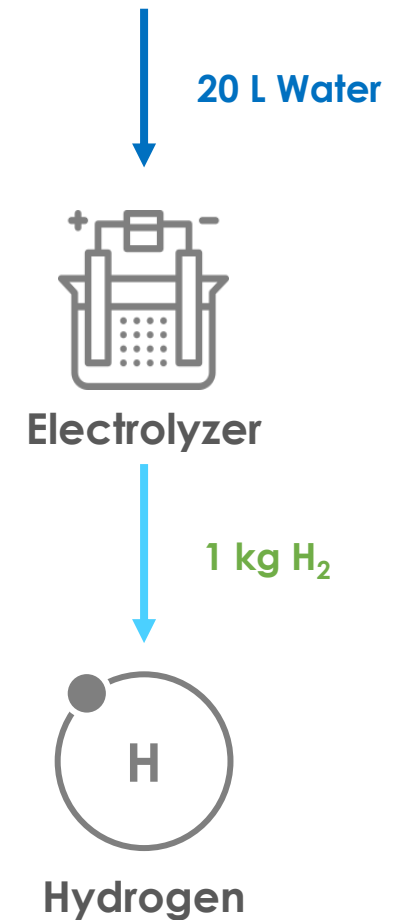


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## Water Use in Hydrogen: A matter of perspective

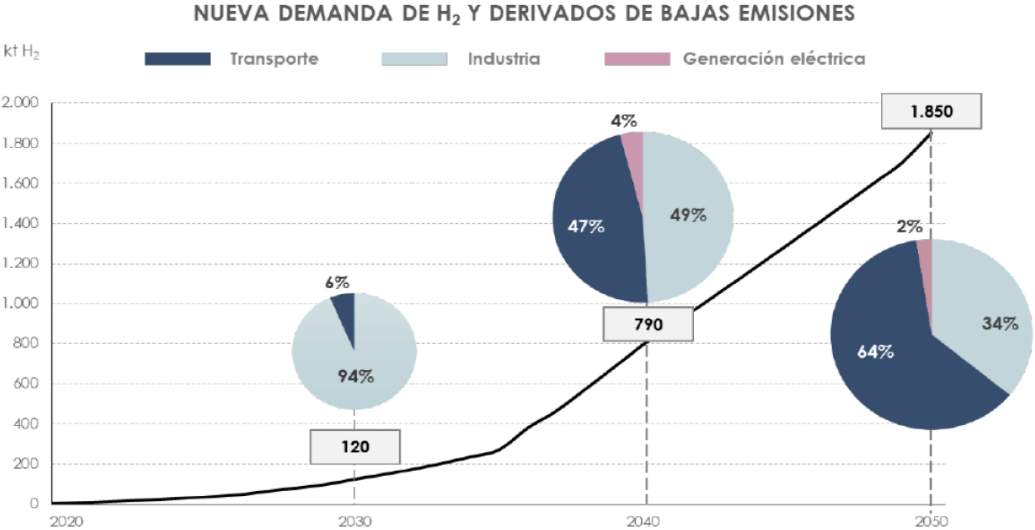
# Hydrogen production: Approximately 20 liters of water per kg of hydrogen (20 m<sup>3</sup> per ton of hydrogen)

- Electrolysis is the process where **water molecules are split into hydrogen and oxygen** using electricity as an energy source. Accordingly, the process consumes significant amounts of water.
- Water is also typically used as part of the **electrolyzer cooling system**.
- An estimate of **20 Liters/kgH<sub>2</sub>** can be assumed, even though **exact consumption will vary** based on **input water quality, technology used, and equipment age, among others**.



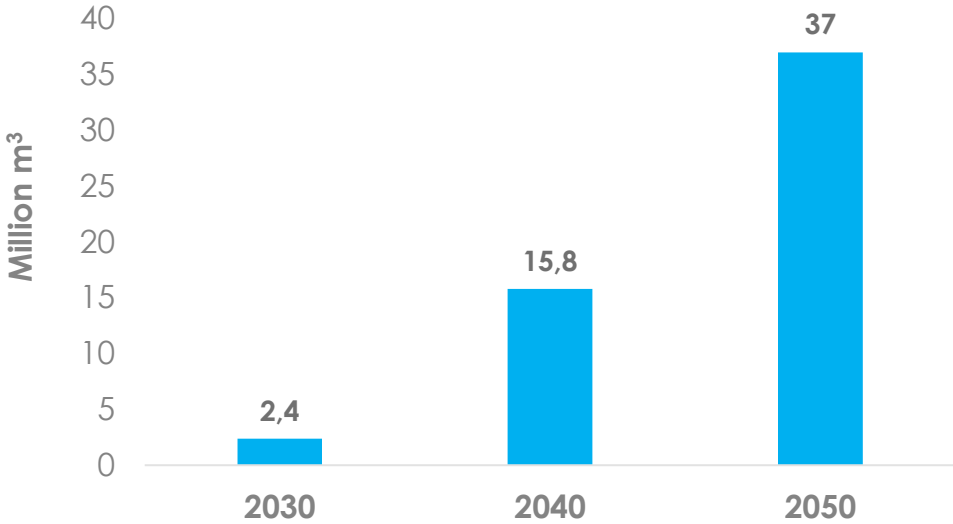
# By 2050, hydrogen production in Colombia is expected to consume a significant volume of water (37 Million m<sup>3</sup>)

## Colombia Hydrogen Roadmap: Demand targets



Source: National Hydrogen Roadmap (2021)

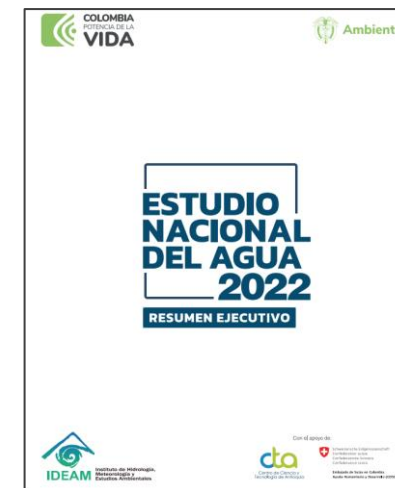
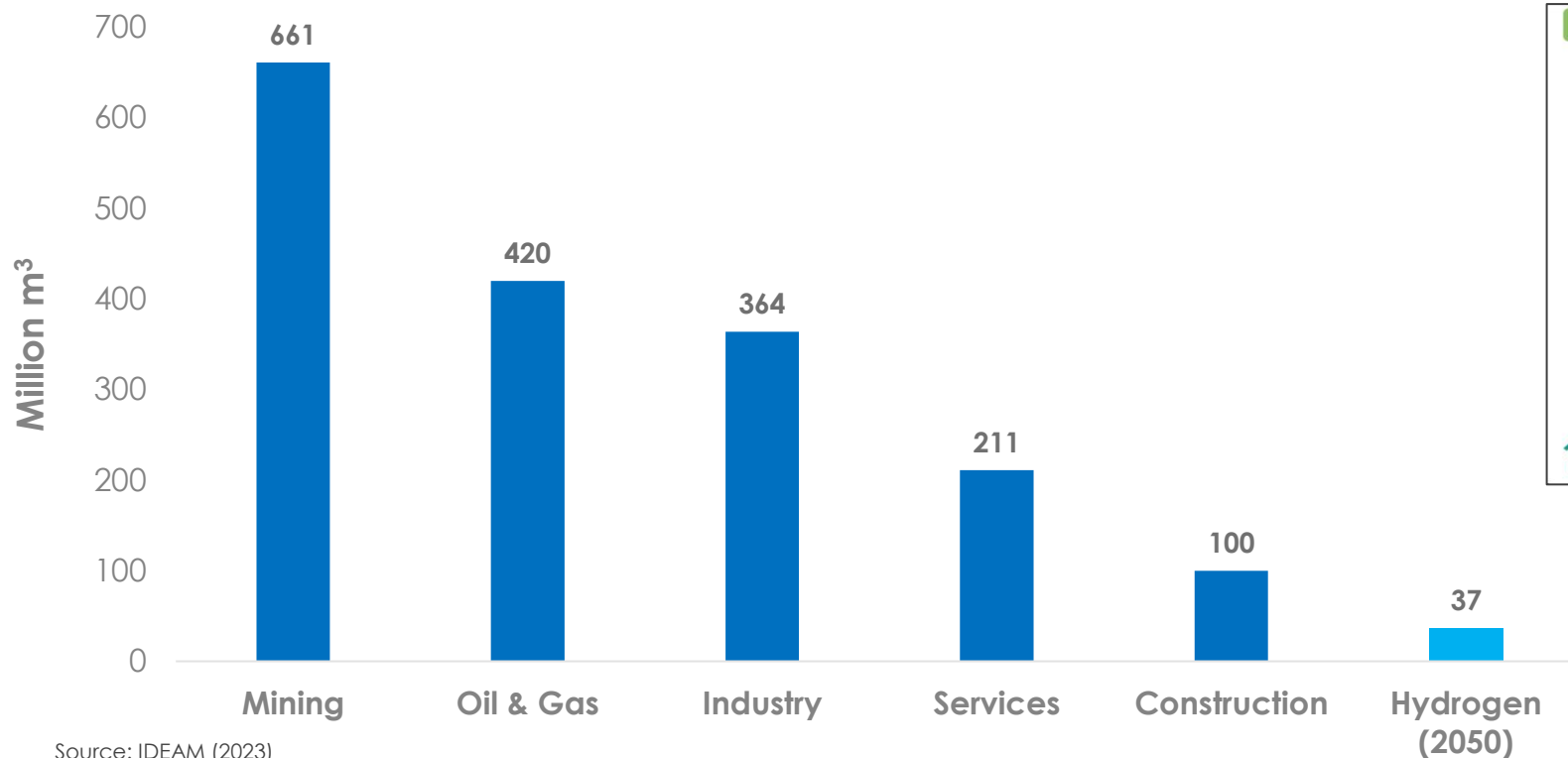
## Colombia Hydrogen Roadmap: Yearly Water Consumption



- According to Colombia's roadmap, **hydrogen demand** is expected to **increase 15X by 2050**.
- This would require the **consumption of very large quantities** of water accounting to **37 million m<sup>3</sup>**, equivalent to the yearly consumption of **220.000 Colombian homes**.

However, water requirements for hydrogen production is **relatively modest** when compared with other economic sectors

Yearly water consumption per sector (2020) in Colombia



- By 2050, **water demand for hydrogen production** would be **10X smaller** than demand for water in **Industry** in 2020, and **18X smaller** than for **mining**.



# If the **national electric demand** was covered by **H<sub>2</sub> fuel cells**, they would still **consume less water** than all other economic sectors!

- Colombia consumed **79.9 TWh of electricity in 2023**.
- If this energy was to be delivered by **hydrogen fuel cells**, we would require:

 **4.4 Million Tons of Hydrogen**

 **89 Million m<sup>3</sup> of water**



Source: La República (2024)



Source: Semana (2023)



# YOUR KNOWLEDGE PARTNERS FOR SUSTAINABLE ENERGY PROJECTS AND STRATEGIES

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## Contact



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A large, stylized blue letter 'H' is partially enclosed by a blue circular arc on its left side. The 'H' is composed of two vertical bars and a horizontal top bar.

# Hinicio

Experts building  
**the hydrogen future**  
**Now**