

EIB Perspective and solutions for the development of hydrogen

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About the European Investment Bank

General facts



- World's largest multilateral lender and the biggest provider of climate finance
- 90% of lending is within the EU
- Governed by EU Member States

€ 76.8 billion

Financing in 2020

Our investment priorities



INNOVATION € 14.4 billion



ENVIRONMENT

€ **16.**8 billion



INFRASTRUCTURE

€ 15.0 billion



SMEs

€ 30.6 billion

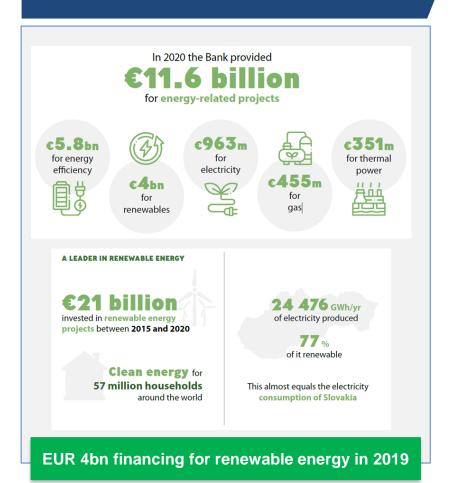
EU Climate Bank objectives

- €1 trillion of investments in climate action and environmental sustainability in the critical decade from 2021 to 2030
- Increase the share of financing dedicated to climate action and environmental sustainability to reach 50% by 2025
- Align all financing activities with the principles and goals of the Paris agreement by the end of 2020



EIB has been a key player supporting the development of renewables and has financed EUR 2bn in hydrogen

EIB is a leader in renewable energy



EIB in hydrogen

EIB financing activity in hydrogen

EUR 2bn

financed 2010-2018 for:

- Development and demonstration of hydrogen-related technologies
- H2 mobility infrastructure deployment

EUR ~1bn

hydrogen project investment pipeline

New Energy Lending Policy featuring hydrogen



ELP in a nutshell

- Driven by Paris Agreement and Clean Energy for All Package
- Focus on areas where EIB can provide added value
- Phasing-out fossil fuels
- Focusing on energy efficiency and decarbonisation
- Engagement with Member States and clients



Hydrogen: unprecedented political **momentum**; hundreds of billions in investment anticipated

Strong EU and MS momentum for Hydrogen in the context of Climate Action

European Green Deal

European Clean Hydrogen Alliance A Hydrogen Strategy for a climate neutral Europe #EUGreenDeal



Stratégie nationale GOUVERNEMENT pour le développement de l'hydrogène décarboné

"We are accelerating our investments in hydrogen with EUR 7 billion by 2030. The objective is to combine technological development and ecological transition" Barbara Pompili, Minister for Ecological Transition Bruno Le Maire, Minister of Economy



Government Strategy on Hydrogen



EUR 9bn commitment

"Green hydrogen is the energy source of the future"

Peter Altmaier - Economic Affairs Minister 10/2020



Significant investment needs to develop Hydrogen with a clear cross-MS dimension

Several hundreds EUR billions

in investment needed by 2030



Building the hydrogen system	Investments
Investments and Support	up to 2030
Hydrogen Production	220 billion Eur
Among which renewables	160 Billion Eur
Hydrogen Infrastructure & Storage	120 billion Eur
Hydrogen Applications	90 billion Eur
TOTAL	430 billion Eur

Large infrastructure projects across multiple regions or MS

Green Hydrogen for a European Green Deal A 2x40 GW Initiative



>>>> Importance of mobilizing private investors and understanding investment constraints



EIB Advisory in Hydrogen: advising projects, mobilising investors and engaging with hydrogen ecosystem

EIB Advisory



Advising specific investment projects



New funding model for H2 refueling station network (DE)

HyDeal

Giga-factory and integrated hydrogen project (FR and ES)



Cleaner steel demo projects (DE)



Retro-fit of bus fleet to FCEV (LV)



RE-powered electrolyser developer (FR)

Mobilising investors

- On-going dialogue with key industrial and financial players in the hydrogen space
 - Key industry segments
 - o VC/CVC
 - PE / Infrastructure funds
 - Public and impact investors
 - o Banks



Bringing insights to EC for investment agenda definition

Engaging with the Hydrogen eco-system

On-going framework advisory collaboration

Hydrogen Council

New contacts established with key H2 associations

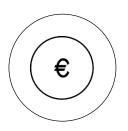


Building a pipeline of investment projects for the EIB

Mobilising other investors + Informing the development of future financing instruments



What industrial and financial investors in hydrogen say... Insights from IFA investor consultation



The lack of economic viability of projects due to lack of cost competitiveness, underpins multiple barriers across the value chain



Supply

Barriers to large-scale hydrogen supply, e.g.:

Lack of renewables availability, lack of equipment production scale-up, lack of standards



Midstream

Barriers to midstream infrastructure (i.e. pipelines and flexibility) for hydrogen transport:

Lack of pipelines in the mid-term, required for hydrogen scale-up



Demand

Barriers to large-scale hydrogen demand:

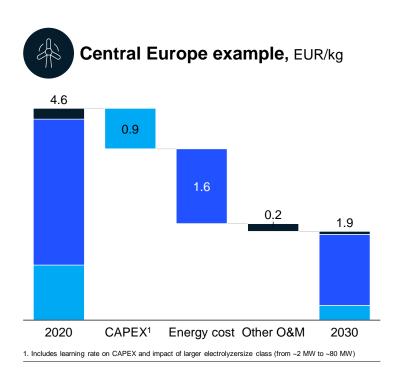
Lack of applications ready for hydrogen use (excl. petrochemicals and ammonia)

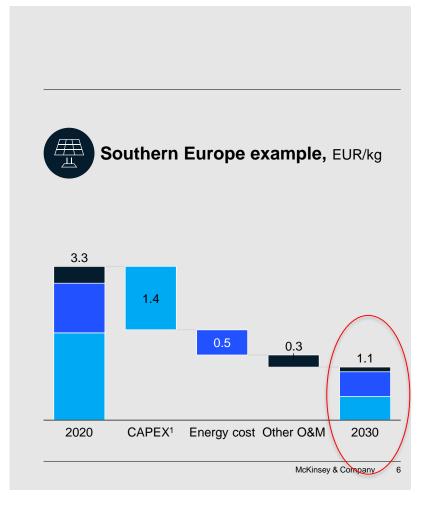
Source: EIB IFA hydrogen investor consultation 2021



What industrial and financial investors in hydrogen say... Green hydrogen declining costs driving momentum

Breakdown of renewable hydrogen production cost trajectories in central and southern Europe





Source: Hydrogen Council, McKinsey analysis



Developing green hydrogen projects – **potential solutions** *Insights from IFA investor consultation*

PRELIMINARY NOT EXHAUSTIVE

The problem

Potential solutions

Issue 1

Economic viability and regulatory clarity

- "Green premium" i.e., green hydrogen more expensive vs. fossil-based or vs. alternative legacy technologies
- Regulatory clarity on which types of hydrogen will be supported and where, how it can be transported and stored, etc.
- Demand and production stimulation mechanisms e.g., CCFD, GOO
- Policy harmonization / Hydrogen Act to clarify hydrogen support eligibility as well as transport and energy system integration aspects across the EU

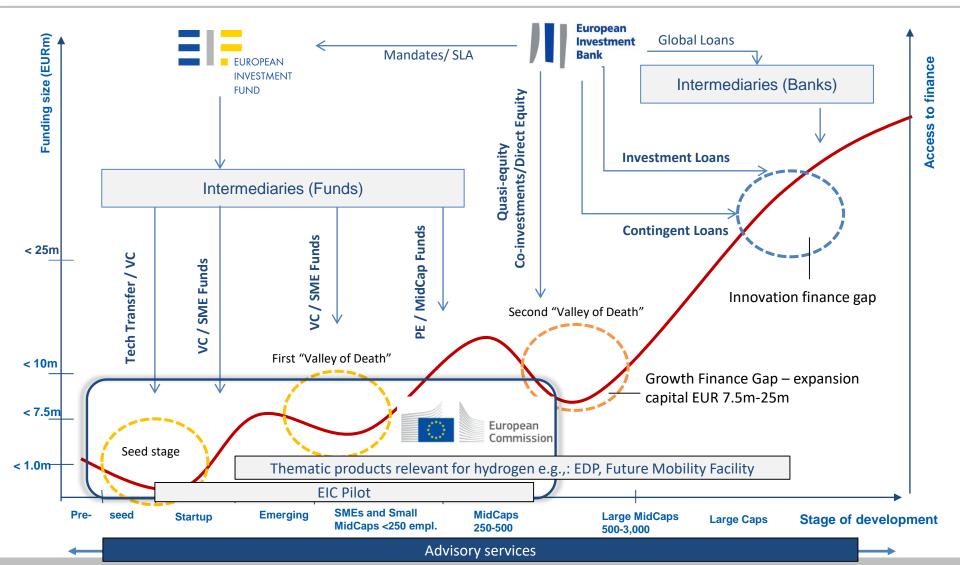
Issue 2

Residual project risks

- "Deployment risks" including:
 - Offtake risk: duration, price, volume
 - Counterparty risk: EPC/offtaker credit
 - Technology & operational risks: EPC costs, economic life, load factor and efficiency, intermittent production vs. demand assumptions, storage and transport assumptions
- Risk mitigation mechanisms to facilitate private market financing of projects; these may include:
 - Public guarantees for certain types of risks or for financing provided
 - Risk-bearing financing instruments to provide cushion for senior lenders
 - Insurance solutions, etc.



EIB Group support to energy innovation: equity, debt and advisory





EIB already has relevant tools to support hydrogen and new MFF is bringing clear focus on this sector















Advisory tools

PDA programs in RES and CCS





For innovators



Hub support



New MFF and EU Hydrogen Strategy Hydrogen is listed a priority of the new EUR 15bn Strategic European Investment Window under Invest EU

Clean Hydrogen Alliance launched to build pipeline for hydrogen development

In the **Green Deal Recovery Package**, hydrogen alongside renewable energy production is expected to be singled out as one of the key themes in the program

EU Hydrogen Strategy launched in July 2020

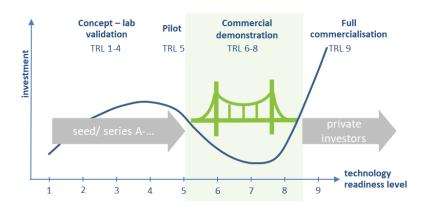


EIB Impact Finance solutions for hydrogen

Inno√Fin Energy Demo Projects



"Commercial demonstration of innovative energy projects"



Indicative terms

Instrument	Loans / guarantees / quasi- equity
Loan size	EUR 7.5m – EUR 75m
Covenants & security	Transaction-specific
Jurisdiction	Transaction-specific





"Deployment of alternative mobility assets"

Projects must contribute to (at least) one of the following objectives :

- Cleaner mobility
- Smarter and more efficient mobility
- Safer mobility

Indicative terms

Instrument	Loans / guarantees / quasi-equity
Loan size	> EUR 7.5m
Covenants & security	Transaction-specific

For Hydrogen project promoters: EIB Advisory can help accelerate project preparation and financing



Examples of projects which can benefit

Innovative technology-driven projects



RE-powered electrolyser developer (FR)

Large, complex, value chain projects

HvDeal

Giga-factory and integrated hydrogen project (FR and ES)

Upstream market development projects





New funding model for H2 refueling station network (DE)

Potential EIB Advisory contribution

Multiple ways of supporting projects through Advisory

Upstream project preparation

Downstream financing advice

- Providing strategic or technical/methodological support to project preparation
- Advice toward financial structuring, business planning, financial modelling, investor materials, etc.

Key advisory mandates



InnovFin Advisory

& NER 300

>>> Accelerate project preparation, enhance visibility, improve probability of financing



Concluding Remarks



EIB as the EU Climate Bank has set itself very ambitious Climate objectives and Hydrogen fits within this strategy



EIB has a number of financing tools already available to address key challenges of hydrogen projects



EIB Advisory Services can play a key role in preparing projects for relevant financing solutions, and engaging with hydrogen promoters across Europe



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