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Sustainable Infrastructure Programme in Asia

INFRASTRUCTURE CONSIDERATIONS FOR ENERGY

2 July 2025

Supported by:

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CLEAN ENERGY FINANCE AND INVESTMENT(CEFI) TRAINING

Objectives

- To build capacity and **fill the knowledge gap** of the three core stakeholders (government, project developers, and financial institutions (FIs)) that will be instrumental in achieving Indonesia's clean energy transition.
- To provides **a unique platform** to facilitate the development of partnerships, share experiences and development of new ideas to support innovative financing solutions for

CEFI Training Structure

Objective: Breakdown silos across finance and energy to develop financing solutions that can scale private finance for clean energy

- For project developers and policy makers
  - Increase financial awareness to improve project bankability and policies

Energy Efficiency Finance Course

Clean Energy Finance and Investment Course

- For financial institutions
  - Enhance capacity to undertake project due diligence
  - Develop new innovative financing mechanisms

- For project developers and policy makers
  - Increase financial awareness to improve project bankability and policies

Renewable Energy Finance Course

Sept 2022

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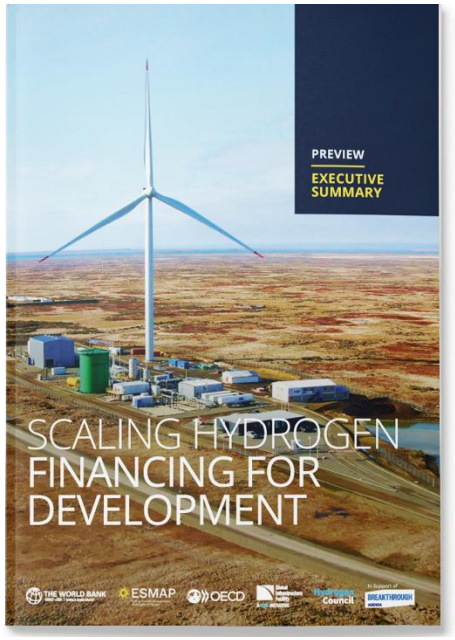
LEVERAGING DE-RISKING INSTRUMENTS AND INTERNATIONAL CO-ORDINATION TO CATALYSE INVESTMENT IN CLEAN HYDROGEN

Joint efforts to ramp-up clean hydrogen financing

2022

- **World Bank-led** initiative
- **44 partners**, including OECD
- **OECD co-chair**
  workstream 3 on
  Investment, financing, business models and procurements.

2023



Joint WB/OECD report
Scaling Hydrogen Financing for Development

2024

- **10 GW initiative** announced at WB/OECD report launch.
  - **Streamline Multilateral Development Banks financing** and unite support
  - **Target >10 projects**, from 100 MW to 1 GW size (enable ~ USD 30 billion investment)
- **OECD/WB new report** informing the 10 GW initiative and the Breakthrough Agenda

Leveraging De-Risking Instruments and International Co-ordination to Catalyse Investment in Clean Hydrogen

Moving Forward: 10 GW Lighthouse Initiative

Coordinate among participating institutions

Identify a viable pipeline of large-scale clean hydrogen projects

Identify and propose financial and non-financial solutions to manage risks and barriers

Deploy policy, regulatory, and financing de-risking mechanisms

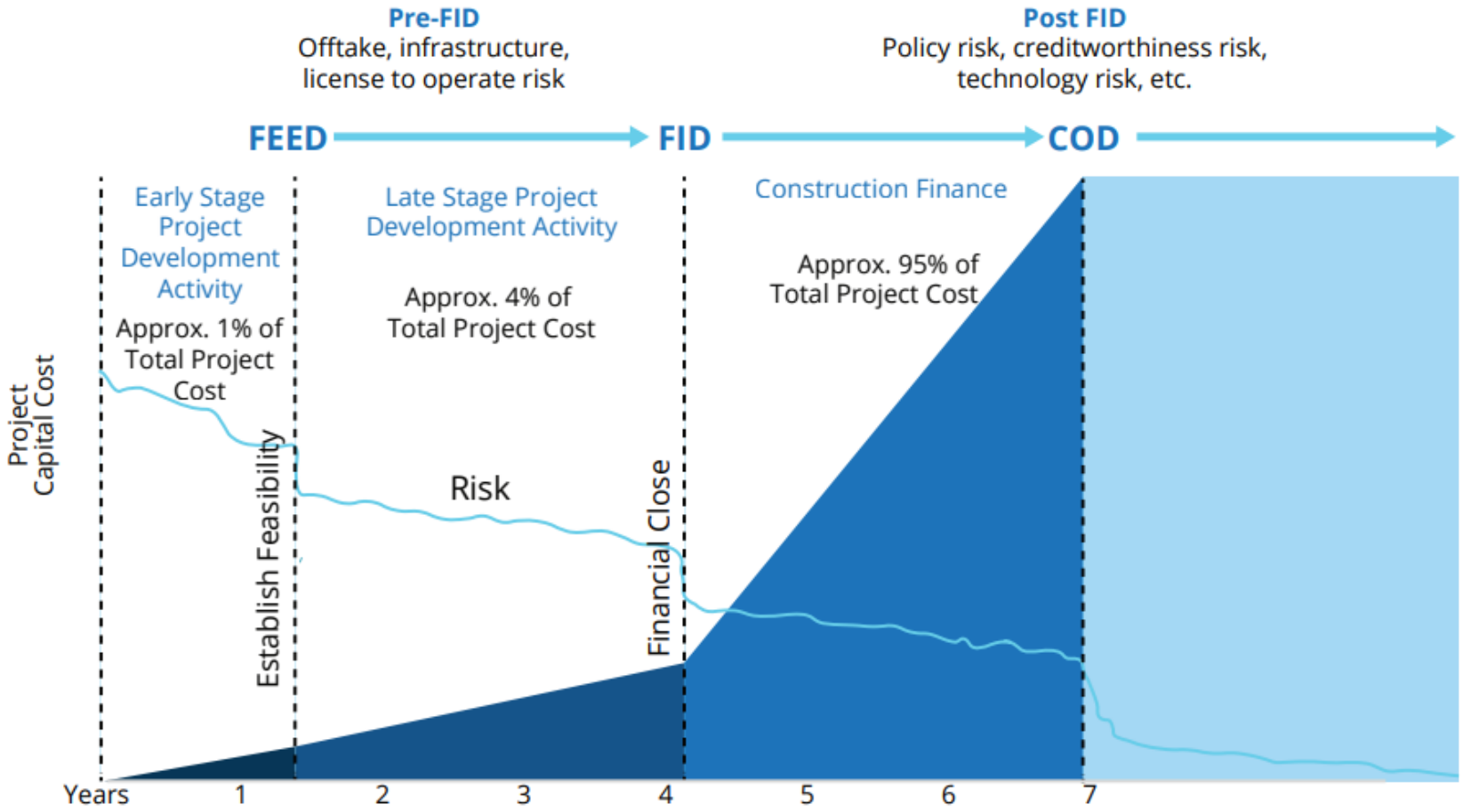
Apply concessional and climate financing

Develop a knowledge hub

Key messages

- The key findings of the report directly **inform key international initiatives**
  - Support Breakthrough Agenda's priority action to enhance finance and support mechanisms (with WB & UNIDO)
  - Identify key priorities for World Bank's 10 GW Lighthouse Initiative
- **Effective de-risking strategies require a combination of instruments**
  - From the investor survey carried out for this report, the most relevant instruments to attract investment are: ***Contracts for Difference; Offtake guarantees; Political risk insurances; Foreign currency guarantees; Technology performance guarantees***
  - Yet, there is no one-size-fits-all solution: instruments must be packaged to (i) balance the project's risk-return profile; and (ii) avoid overlaps that could make instruments redundant and increase the overall cost.
- **The risk mitigation strategies must come with enabling conditions that create a conducive environment for investors** (e.g. access to infrastructure, demand creation mechanism)
- **International partnerships and co-ordination mechanisms are essential to scale clean hydrogen financing**

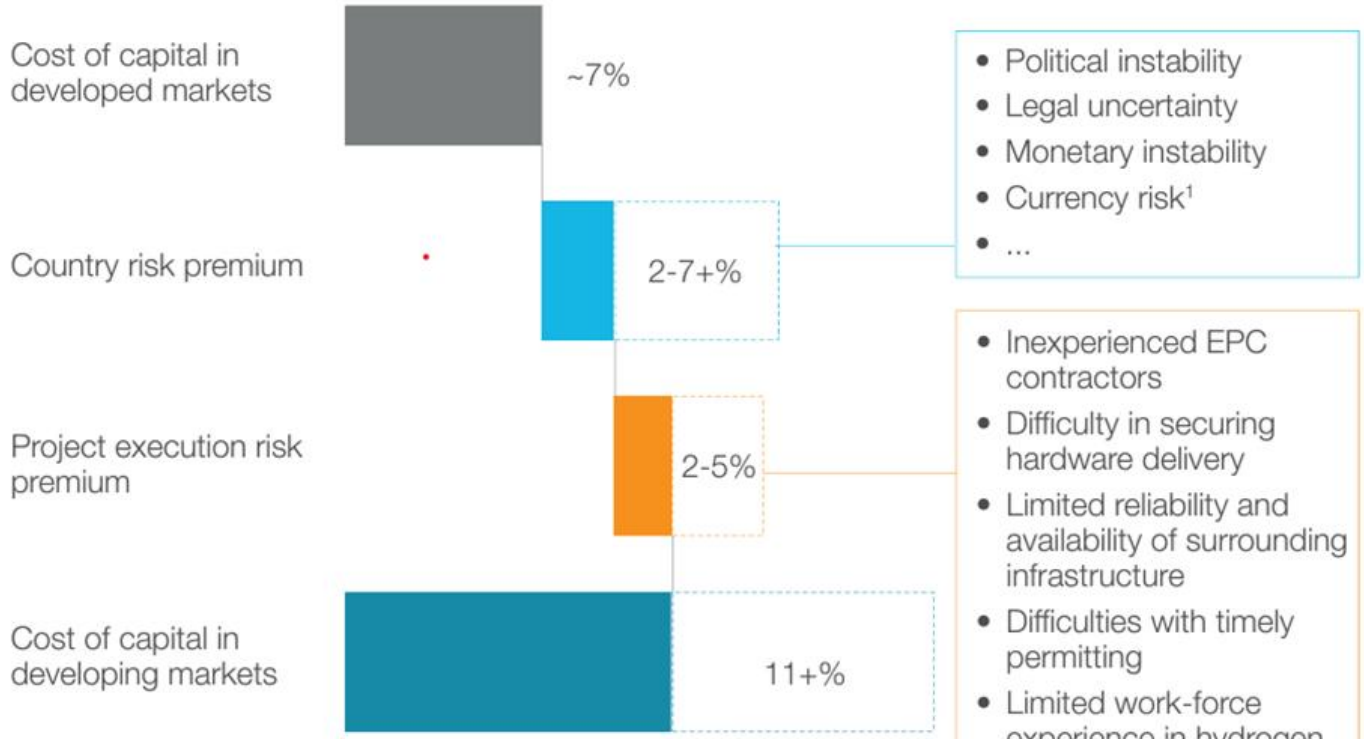
Clean Hydrogen Project Life Cycle



- Risks change over the project lifecycle, calling for different mitigation instruments at each stage.
- Concessional finance in the early stages of project preparation is crucial to attract debt investor
- Clean hydrogen projects keep critical post-FID risks centered on EPC overruns, offtake default, technology nonperformance, withdrawal of regulatory incentives, and exchange risks.

FEED: Front-End Engineering Design; **FID**: Final Investment Decision; **COD**: Commercial Operations Date; **EPC**: Engineering, procurement, and construction

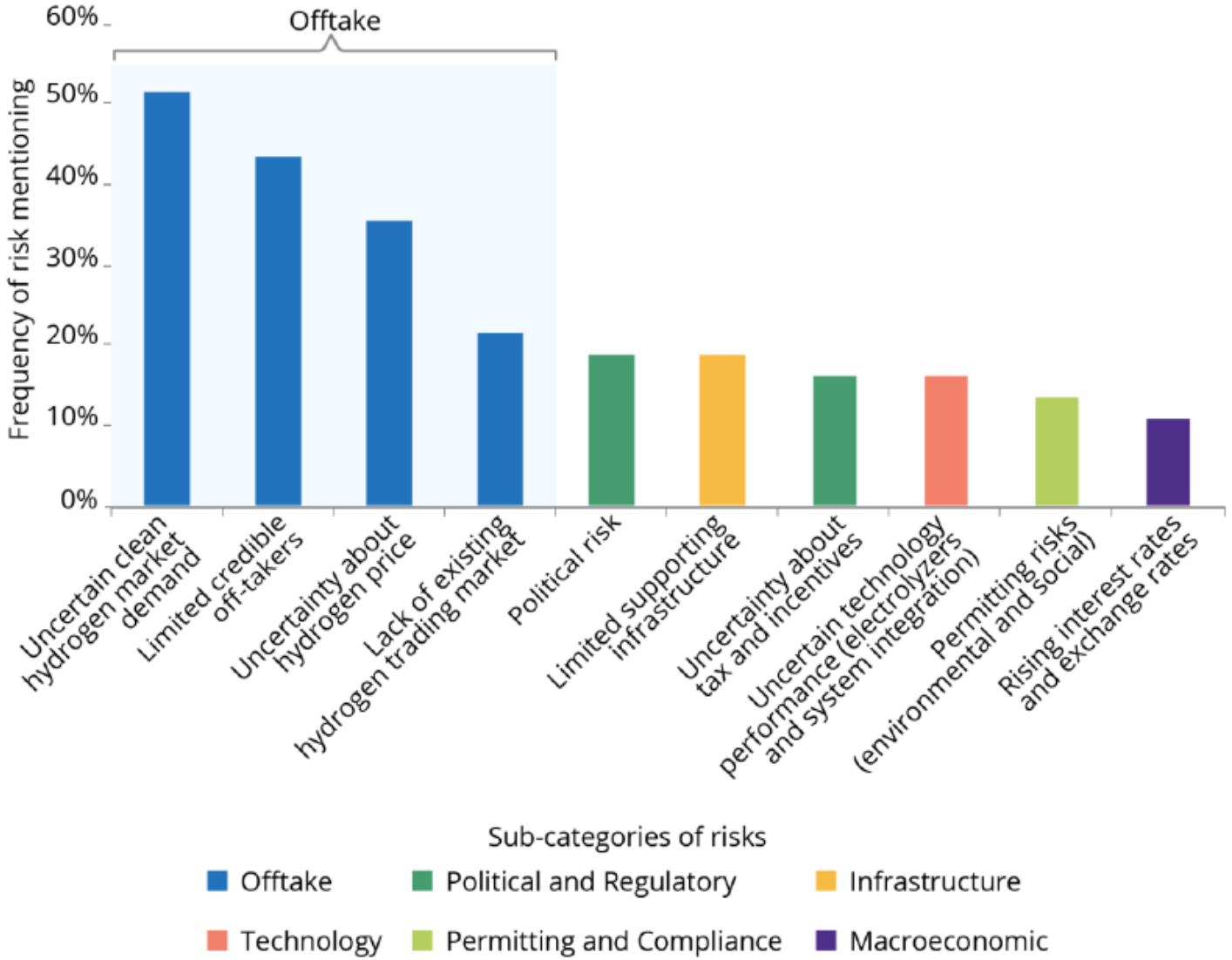
Drivers for the cost of capital for hydrogen projects in developed vs developing countries



6pp increase in **WACC** can lead to **50+%** increase of **LCOH**

Source: Hydrogen Council and McKinsey (2024)

Identified key risks based on OECD/World Bank investor survey (2023)



Why Tailored Derisking instruments are needed: Comparison of assets' risk profile

	Clean Hydrogen	LNG	Thermal	Offshore wind	Grey Hydrogen
Capital-intensity	High	High	Moderate	High	Moderate
Project Complexity	High	Moderate	Moderate	High	Moderate
Price risk	Yes	No, commodity price or indexed price (floating)	Moderate	Yes	Moderate or No
Significant capital costs reduction for new projects	Yes	No	No	Yes	No
Market Maturity	Low	Advanced	Advanced	Advanced	Advanced
Profitability	Low or negative	Moderate to High	Moderate to High	Low to moderate	Moderate to high
Operation risk	High	Moderate	High	Low to Moderate	Low
Revenue risk	High	Moderate	High	Moderate, depends on price contract terms/structure	Low to Moderate depends on price formula
Supply risk	High	High	Moderate	Moderate	Low to Moderate
Counterparty risk	Yes	No	No	Moderate	Low/No

Mapping of de-risking instruments: Results of investor survey

← *Highest risk for investors*

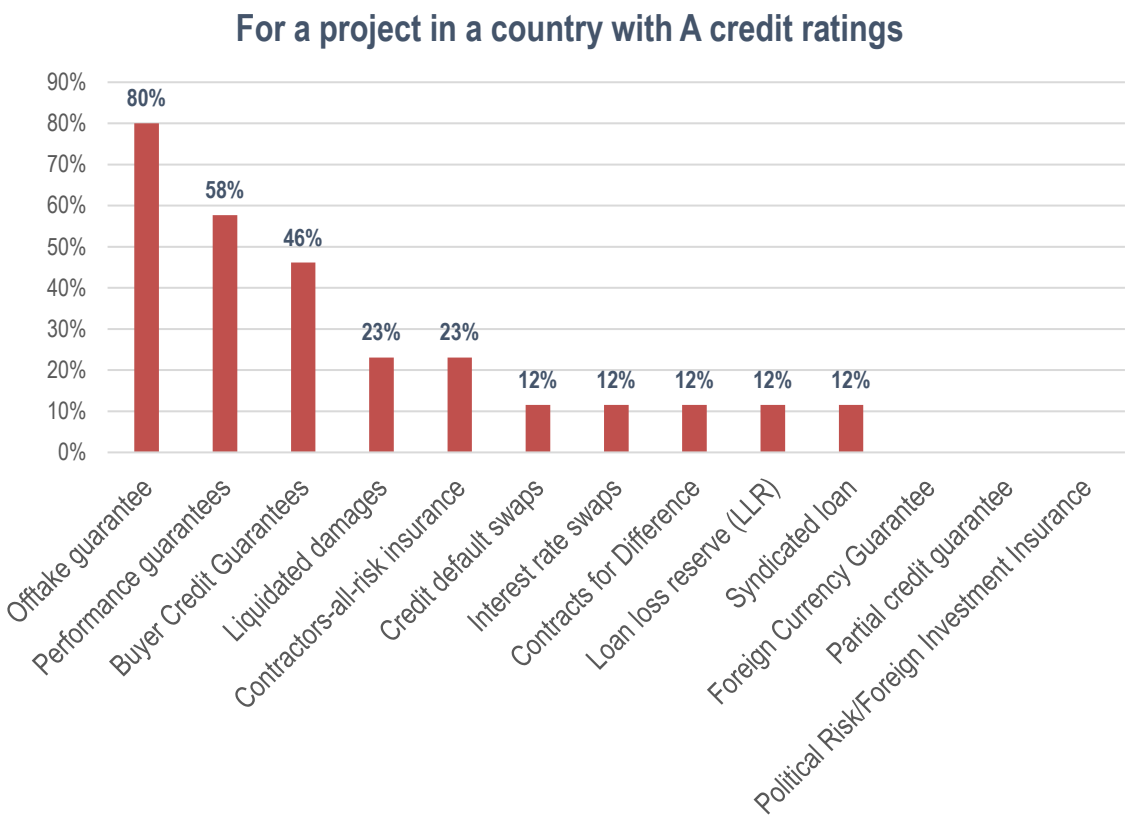
	Uncertain clean hydrogen demand	Uncertainty about hydrogen price	Country risk	Uncertainty about tech. performance	Licensing, permitting, completion risks	Interest and exchange rates
Buyer credit guarantees						
Contractors-all-risk insurance						
Contracts for Difference						
Credit default swaps						
Foreign currency guarantee						
Interest rate swaps						
Liquidated damages						
Loan loss reserve						
Offtake guarantee						
Partial credit guarantee						
Performance guarantees						
Political risk investment/foreign investment insurance						
Syndicated loan						

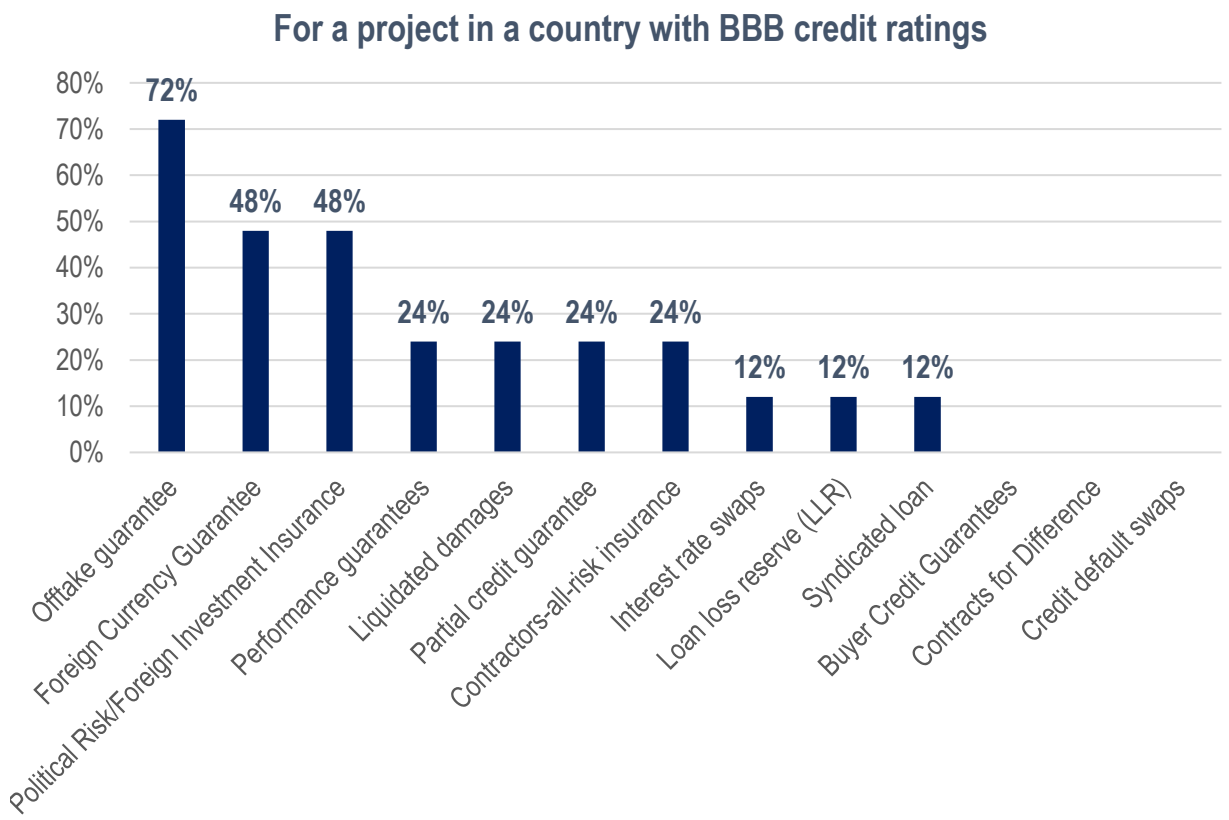
Not relevant — **Very relevant**

- Offtake guarantees and Contracts for Difference are well-placed to address offtake risk (both market demand and clean hydrogen price).
- Political risk investment insurance is key to address country risk
- Several instruments exist to address interest and exchange rates

Survey conducted in June/July 2024, with 41 respondents.

Prioritisation of de-risking instruments for project financing, depending on a country's credit rating





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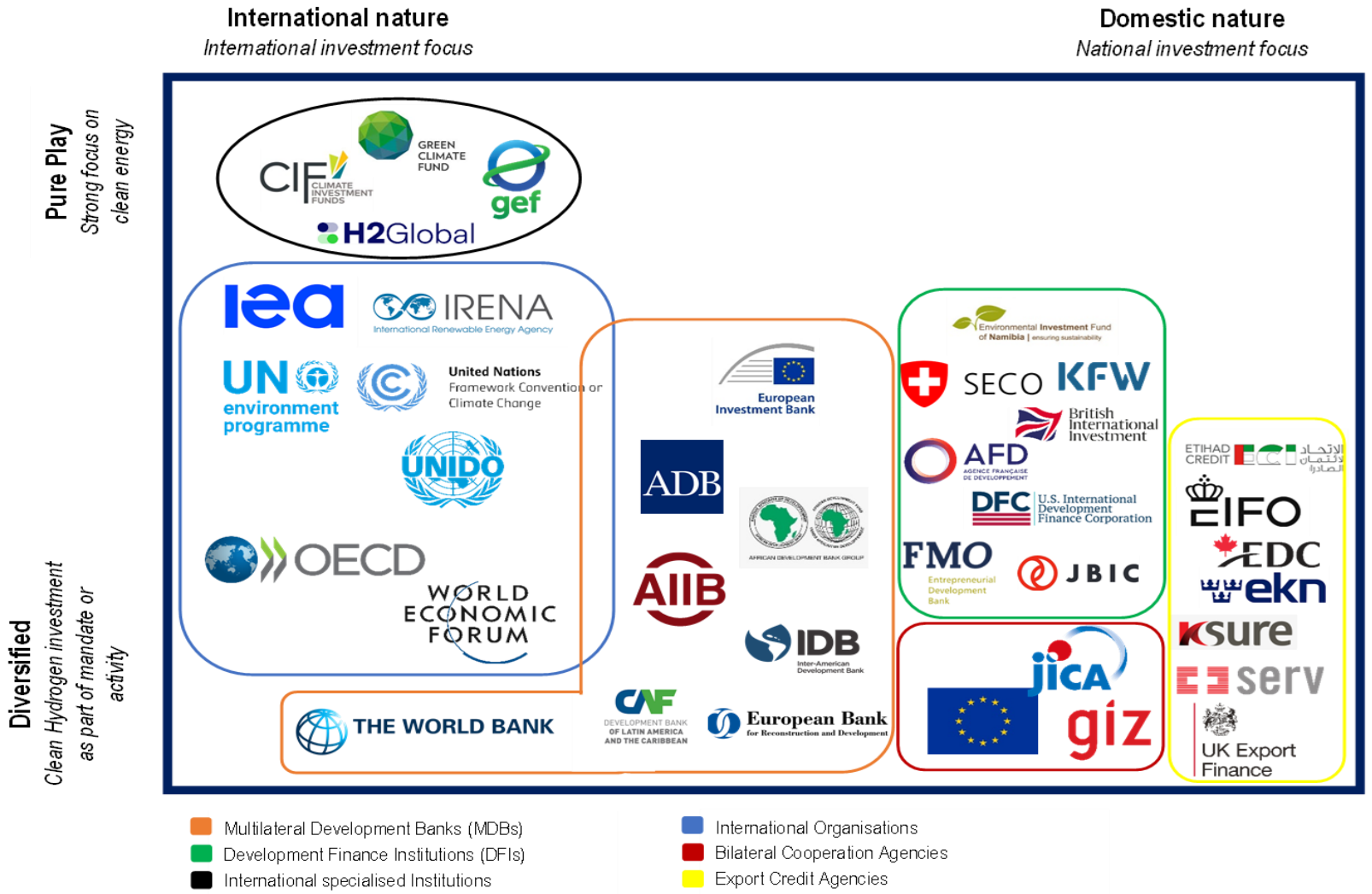
How can international co-ordination scale clean hydrogen financing?

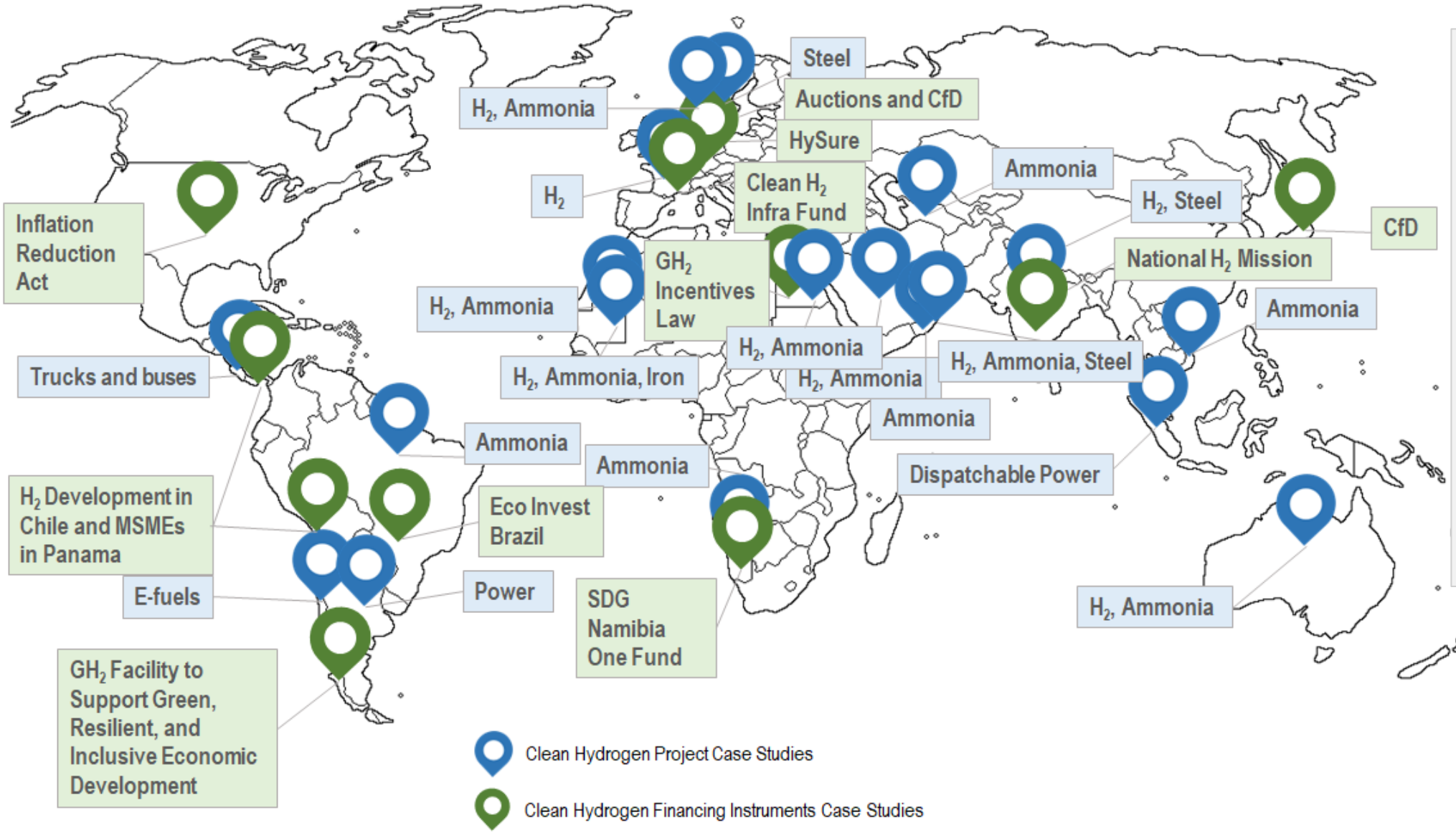


Priority areas

- Joint financing of IFIs for clean hydrogen projects
- International platform creation to channel capital flows towards viable clean hydrogen projects
- Harmonising appraisal and procurement processes for large-scale projects
- Knowledge-exchange and capacity-building on clean hydrogen financing in EMDEs

EMDEs: Emerging Markets and Developing Economies
IFIs: International financial institutions

Map of Clean Hydrogen Case Studies (2022-2024)



21 case studies on clean hydrogen projects, covering **>35 GW electrolyser** capacity in **20 countries**

11 case studies on economic, de-risking and financing instruments

Key lessons from case studies

Enabling conditions	*Risk sharing*	*Financing*
Alignment of national and regional strategies and policies	Well-structured economic instruments *(e.g. tax rebates, capex and opex subsidies)*	Blended finance *(e.g. concessional loans)*
Thorough feasibility study at development stage, benefitting from hydrogen sector expertise	Public and private partnerships for effective risk allocation	

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17-18 Oct 2024 Third meeting of the WPFIEG

WORLD BANK GROUP

ESMAP
Energy Sector Management Assistance Program

Building Investor Confidence: De-risking and Financing Clean Hydrogen Projects

- Considering the inherent risks in clean hydrogen projects, are there de-risking tools detailed in the report that you would prioritise as particularly crucial?
- Beyond the tools mentioned in the report, what de-risking strategies from other sectors have proven highly effective? How could these be adapted or applied to the unique challenges of clean hydrogen projects?
- Have you seen successful examples of emerging economies attracting international finance for clean hydrogen initiatives? What specific policies or strategies did they implement to build investor confidence and secure funding? What lessons can other emerging markets learn from their experience?
- How can we foster effective collaboration among financial institutions in the clean hydrogen sector while maintaining momentum on current projects? What are some best practices for balancing these competing priorities?

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