Financing the Uptake of Green Hydrogen Technologies

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Green hydrogen financing landscape

Challenges to financing green hydrogen projects

GCF’s instruments to support financing
Financing Landscape for Green Hydrogen

- Hydrogen market potential to achieve climate neutrality by 2050
  - 170 million tons (MtH2eq) in 2030
  - 600 million tons (MtH2eq) in 2050

- Unprecedented challenge:
  - Creating a new major industry in less than three decades
  - Operating on a still-nascent value chain

- Cost of green hydrogen:
  - Conventional hydrogen does not sufficiently reflect its climate impact
  - Government support required until clean and green hydrogen becomes cost-competitive—leveraging economies of scale and tightening CO2 pricing
Financing Landscape for Green Hydrogen

Existing projects depend on public support to break even, and demand creation. The first major government programs include:

- the United States Inflation Reduction Act,
- the Australian Clean Energy Finance Corp.,
- the European Union Fit-for-55 package, and Important Projects of Common European Interest (IPCEI) funding program, and
- Japanese demand-side research and development (R&D) support programs.
Financing Landscape for Green Hydrogen

Bankability and cost-effectiveness will drive the market.

• Initial demand:
  • Decarbonization of existing industrial uses:
    • Fertilizer production
    • Refining
  • These industries have a bankable offtake.

• Subsequent sectors with predictable demand:
  • Public transport:
    • Buses and trains
    • Fixed schedule transport
  • Clean energy generation:
    • To manage variable renewable energy

• Other potential demand drivers:
  • Mandates and global demand for green products
  • Transport sectors:
    • Aviation
    • Shipping
    • Heavy road transport

Example: India Market Assessment for Green Hydrogen
Unique challenges to financing Green Hydrogen

Challenges:
• Lack of visibility on demand
• Unclear regulation
• Supply chain constraints

Financial Considerations:
• Varying risk appetites across financial institutions
• Clean hydrogen projects often entail significant pre-construction and offtake risks, causing concern for private investors and financial institutions

The financing of the green hydrogen value chain is expected to include the
• manufacturing of upstream and downstream equipment,
• renewable energy generation (70% of cost)
• hydrogen production,
• storage,
• transportation,
• and infrastructure to deliver hydrogen (and, in some cases ammonia as a means of storage of hydrogen) to market / end-users.
Project bankability remains a key concern for the sector to access financing

### Project Completion Risk

Green hydrogen projects are exposed to a higher completion risk due to the nascent stage of the technology market. Thus, developers experience higher risks during the development and construction phases.

<table>
<thead>
<tr>
<th>Potential Mitigants</th>
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<tr>
<td>Divide the project into stages and optimize capital based on the risk profile in each stage.</td>
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- **Development Phase**: there is significant uncertainty around project feasibility.
- **Construction Phase**: Medium to high-risk capital from DFIs, Commercial banks is required due to limited experience of EPC and OEM providers in the sector.
- **Operations Phase**: Low Risk capital from conservative investors can be employed, as the necessary contracts are already in place, and once operational history is established.

Given that stakeholders are uncertain about production technologies, associated risks and standard solutions for project, they can be supported from the project development stages onwards, through Project Development Facilities or other development support mechanisms.

These facilities can help to develop bankable, investment ready projects by financing high quality upstream work such as feasibility studies, ESIA assessments, permitting, certification and other early-stage development work.

**GCF’s Financing Tools:**
- Readiness Support
- Project Preparation Facility
### Possible Government interventions to drive investments

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<th>Potential Mitigants</th>
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<tr>
<td><strong>Absence of Strong Domestic Consumption Market</strong> - High green premium leading to reduced commercial viability</td>
<td>• <strong>Industry wide mandates to push demand</strong> by setting green hydrogen purchase obligations</td>
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<tr>
<td><strong>Uncertainty around pricing and offtake contracts</strong></td>
<td>• <strong>Incentives such as green contracts for difference /PLIs</strong></td>
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<tr>
<td>Current market is working on a spot price basis, however high-capex and longer project lifetime necessitates long-term offtake contracts</td>
<td>• Pricing could be calculated as a <strong>weighted average of cost of production</strong> (representing the seller’s side), <strong>cost of replacement</strong> (representing the buyers side / cost of grey alternatives) and <strong>a green premium</strong> (for example pricing of emissions)**</td>
</tr>
<tr>
<td><strong>Green hydrogen projects involve integration of multiple technologies for a single project output, which could lead to delays / non-completion</strong></td>
<td>• <strong>Introduce a wrap guarantee</strong> for overall plant operations</td>
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<td>• <strong>Introduce oversized liquidated damages</strong></td>
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<td><strong>Grey and green hydrogen have the same physical characteristics and as such need the latter needs to be supported with clear green certification standards</strong></td>
<td>• <strong>Introduction of frameworks for regulation and green certification that are well-harmonized with global equivalents</strong></td>
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## Details of GCF’s FINANCING INSTRUMENTS
Readiness (RPSP), Project Preparation Facility (PPF), Simplified Approval Process (SAP)

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<th>PPF</th>
<th>SAP</th>
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<tr>
<td><strong>Amount</strong></td>
<td>up to 1m USD/year per country</td>
<td>up to 1.5m USD</td>
<td>up to 25m USD + co-financing</td>
</tr>
<tr>
<td><strong>Product Type</strong></td>
<td>grants</td>
<td>grants, repayable grants, equity</td>
<td>any GCF financial product</td>
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<tr>
<td><strong>Conditions</strong></td>
<td>• CN and NDA NOL ready</td>
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<td>• GCF funding up to 25m USD</td>
</tr>
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<td>• FPs developed with PPF resources to be submitted to Board within 2 years from PPF approval</td>
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<td>• minimal to no E&amp;S impact</td>
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<td><strong>Scope</strong></td>
<td>TA to support institutional capacity building, coordination, policy and planning, programming for investment, strategic frameworks</td>
<td>supports AE in Funding Proposals (FPs) preparation and provides short-term TA</td>
<td>any project in line with GCF paradigm shift and investment criteria</td>
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<td><strong>Notes</strong></td>
<td>• Funding is provided to NDAs, Focal Points (FPs) and Direct Entities • At least 50% goes to LDCs, SIDS and African States</td>
<td>• Simplified approval for requests &lt;=300k USD • GCF handles procurement, AE handles implementation, oversight and reporting</td>
<td>• Simplified CN (optional) and FP • Simplified appraisal, M&amp;R and post-approval procedures • Guided templates for fast tracking and scaling up</td>
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Thank you

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