



**GREEN
CLIMATE
FUND**

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Provisional agenda item 10

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5 October 2026

Consideration of funding proposals – Addendum VII

Funding proposal package for FP314

Summary

This addendum contains the following six parts:

- a) A funding proposal titled "A funding proposal summary titled "Southern African Industrial Decarbonisation Facility (SIDF)";
- b) No-objection letter issued by the national designated authority(ies) or focal point(s);
- c) Environmental and social report(s) disclosure;
- d) Independent Technical Advisory Panel's assessment;
- e) Response from the accredited entity to the independent Technical Advisory Panel's assessment; and
- f) Gender documentation.

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Disclaimer:

The designations and the presentation of the materials used in this document, including their respective citations, maps and references, have been included by the relevant Accredited Entity and do not imply the expression of any opinion whatsoever on the part of the Green Climate Fund concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Also, the boundaries and names shown, and the designations used in this document have been included by the relevant Accredited Entity and do not imply official endorsement or acceptance by the Green Climate Fund.

Funding Proposal

Project/Programme title: Southern African Industrial Decarbonisation Facility (SIDF)

Country(ies): Namibia, South Africa.

Accredited Entity: Development Bank of Southern Africa (DBSA)

Date of first submission: [2026/07/01]

Date of current submission [2026/09/28]

Version number [V.005]



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Note to Accredited Entities on the use of the funding proposal template

- Accredited Entities should provide summary information in the proposal with cross-reference to annexes such as feasibility studies, gender action plan, term sheet, etc.
- Accredited Entities should ensure that annexes provided are consistent with the details provided in the funding proposal. Updates to the funding proposal and/or annexes must be reflected in all relevant documents.
- The total number of pages for the funding proposal (excluding annexes) **should not exceed 60**. Proposals exceeding the prescribed length will not be assessed within the usual service standard time.
- The recommended font is Arial, size 11.
- Under the [GCF Information Disclosure Policy](#), project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Accredited Entities are asked to fill out information on disclosure in section G.4.

Please submit the completed proposal to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

"FP-[Accredited Entity Short Name]-[Country/Region]-[YYYY/MM/DD]"

PROJECT/PROGRAMME SUMMARY				
A.1. Project or programme	Programme	A.2. Public or private sector	Private	
A.3. Request for Proposals (RFP)	If the funding proposal is being submitted in response to a specific GCF Request for Proposals, indicate which RFP it is targeted for. Please note that there is a separate template for the Simplified Approval Process and REDD+. Not applicable			
A.4. Result area(s)	Check the applicable GCF result area(s) that the <u>overall</u> proposed project/programme targets below. For each checked result area(s), indicate the estimated percentage of GCF and Cofinancers' contribution devoted to it. The total of the percentages when summed should be 100% for GCF and Co-financers' contribution respectively.			
		GCF contribution	Co-financers' contribution¹	
	Mitigation total	100%	100%	
	☒ Energy generation and access	50%	50%	
	☐ Low-emission transport	Enter number %	Enter number %	
	☒ Buildings, cities, industries and appliances	50%	50%	
	☐ Forestry and land use	Enter number %	Enter number %	
	Adaptation total	Enter number %	Enter number %	
	☐ Most vulnerable people and communities	Enter number %	Enter number %	
	☐ Health and well-being, and food and water security	Enter number %	Enter number %	
	☐ Infrastructure and built environment	Enter number %	Enter number %	
	☐ Ecosystems and ecosystem services	Enter number %	Enter number %	
A.5. Expected mitigation outcome (Core indicator 1: GHG emissions reduced, avoided or removed / sequestered)	~24.2 MtCO ₂ e ²	A.6. Expected adaptation outcome (Core indicator 2: direct and indirect beneficiaries reached)	Indicate total number of direct and indirect beneficiaries	
			Indicate number of direct beneficiaries	Indicate number of indirect beneficiaries
			Indicate % of direct beneficiaries vis-à-vis total population	Indicate % of indirect beneficiaries vis-à-vis total population
A.7. Total financing (GCF + co-finance³)	1200 million USD	A.9. Project size	Large (Over USD 250 million)	
A.8. Total GCF funding requested	<u>140 million</u> USD			

¹ Co-financer's contribution means the financial resources required, whether Public Finance or Private Finance, in addition to the GCF contribution (i.e. GCF financial resources requested by the Accredited Entity) to implement the project or programme described in the funding proposal.

² The expected mitigation outcome at the end of the total lifespan of the projects is ~49.8 MtCO₂e. The total lifespan of the project/programme is defined as the maximum number of years over which the outcomes of the investment are expected to be effective. This is different from the project/programme implementation period.

³ Refer to the Policy of Co-financing of the GCF.

C

A.10. Financial instrument(s) requested for the GCF funding	Mark all that apply and provide total amounts. The sum of all total amounts should be consistent with A.8. ☐ Grant <u>Enter number</u> ☒ Equity <u>140</u> ☐ Loan <u>Enter number</u> ☐ Results-based payment <u>Enter number</u> ☐ Guarantee <u>Enter number</u>		
A.11. Implementation period	12 ⁴	A.12. Total lifespan	30 ⁵
A.13. Expected date of AE internal approval	TBD	A.14. ESS category	I-1
A.15. Has this FP been submitted as a CN before?	Yes ☒ No ☐		A.16. Has Readiness or PPF support been used to prepare this FP? Yes ☐ No ☒
A.17. Is this FP included in the entity work programme?	Yes ☒ No ☐		A.18. Is this FP included in the country programme? Yes ☐ No ☒
A.19. Complementarity and coherence	Does the project/programme complement other climate finance funding (e.g. GEF, AF, CIF, etc.)? If yes, please elaborate in section B.1. Yes ☒ No ☐		
A.20. Executing Entity information	• Climate Fund Managers B.V. ("CFM" or "Manager"); • CFM EU B.V. ("CI3 Global Fund Statutory Director" or "Statutory Director"); • Coöperatief CI3 Global Fund U.A. ("CI3 Global Fund", "Climate Investor Three" or "CI3"); • SA-H2 Fund ("SA-H2 Fund" or "SA-H2"); • SA-H2 Fund Managers (Pty) Ltd. ("SA-H2 Manager"); • SA-H2 GP (Pty) Ltd ("SA-H2 GP"); • SDG Namibia One Fund Trust ("SDGNO Fund" or "SDGNO"); • Namibia Hydrogen Fund Managers (Pty) Ltd. ("SDGNO Manager")⁶		
A.21. Executive summary (max. 750 words, approximately 1.5 pages)			

⁴ 12 years (after the first close) plus 3 years extensions as approved. With a 7 years investment period plus 2 years extensions as approved

⁵ Represents the maximum number of years over which the outcomes of the investment are expected to be effective which is equal to the largest lifespan across different project types – indicatively 30 years

⁶ A new name of the entity is pending registration with certain authorities; – final/correct name to be reflected in the FAA/Key Fund Documents;

Industrial decarbonisation is essential to achieving global net-zero ambitions. Industries accounts for approximately 25% of global greenhouse gas (GHG) emissions, with hard-to-abate industries such as iron, cement, steel and chemicals responsible for nearly 70% of industrial emissions. Deep decarbonisation of these sectors will require a combination of green hydrogen, energy efficiency improvements and electrification. According to the International Energy Agency's (IEA) Net Zero by 2050 scenario, industrial emissions must decline by approximately 5% annually by 2030, highlighting the scale and urgency of the transition challenge. As around 80% of industrial emissions originate in emerging and developing economies (EMDEs), decarbonising heavy industry in emerging markets is central to achieving global climate goals.

Among emerging markets, South Africa and Namibia are advancing green industrialisation agendas, as reflected in their Nationally Determined Contributions (NDCs). South Africa remains heavily reliant on fossil fuels, is the largest emitter in Africa and among the top 15 globally, despite its modest share of global GDP. Industry is the largest energy user in the country and second largest emitter. To address this, South Africa's latest NDC sets an ambitious 2035 target for annual GHG emissions, alongside a long-term objective of reaching net-zero by 2050. As such, the decarbonisation of the South African economy requires a clear focus on inclusive green industrialisation. On the other hand, Namibia's share of global GHG emissions remains limited, but the country aims to leapfrog towards a green, climate-resilient industrial economy compared to a fossil-fuel based business-as-usual scenario. This transition is centred on leveraging abundant renewable energy resources to develop green hydrogen hubs and low-emission industries.

Both countries are also highly exposed to physical climate risks, including extreme weather events, multi-year droughts and floods. Industrial value chains and outputs are already affected by grid instability and disruptions linked to these events. In parallel, the transition risks of policy and market pressures are starting to materialize. When combined with underlying structural and systemic infrastructure challenges, these factors may impact the sustainability of long-lived climate infrastructure assets in South Africa and Namibia.

Consequently, industrial decarbonisation and infrastructure resilience are central to the climate strategies of South Africa and Namibia. Transforming hard-to-abate sectors into competitive, low-carbon industrial systems is closely linked to large-scale renewable energy deployment, sustainable water management, and resilient regional value chains. Green hydrogen and its derivatives are expected to play an important role in decarbonizing these industries while maintaining technical and economic feasibility.

Yet, these infrastructure projects face significant barriers and 'first-of-a-kind' transition and financial risks across the entire lifecycle. These include long development timelines, construction risks, uncertain offtake markets, limited availability of patient risk capital, and elevated costs of capital. These barriers are preventing investment decisions and private finance participation at scale for industrial decarbonisation projects in South Africa and Namibia despite the urgent need.

The proposed solution, the Southern African Industrial Decarbonisation Facility ("SIDF" or the "Facility"), is a blended finance facility designed to accelerate industrial decarbonisation in South Africa (SA) and Namibia. SIDF's mission is to develop and construct industrial decarbonisation projects that transform hard-to-abate sectors in South Africa and Namibia into competitive, low-carbon industrial economies. SIDF is part of the broader blended finance facility consisting of a group of funds (collectively the 'CI3 Funds' as described below) which aims to enable large-scale industrial decarbonisation through the provision of 'whole-of-lifecycle financing'. This is achieved through a Development Tranche (DT), which provides development loans for early-stage projects, and a Construction Equity Tranche (CET), which provides long-term risk capital during construction and early operations.

With a GCF commitment of USD 140Mn via SIDF, the prospective fund size of the CI3 Funds is estimated at USD 1200Mn, comprising USD 175Mn for the DT and USD 1025Mn for the CET. The GCF commitment would enable the CI3 Funds to scale significantly and provide scarce, highly additional concessional capital to the structure, to crowd in further private sector participation with a mobilisation ratio of 1:4 at the fund level and even higher at the project level. The CI3 Funds comprise of the CI3 (Climate Investor Three or CI3 Global Fund) which acts as a central fund-of-funds based in the Netherlands in addition to the two Underlying Funds that adopt a national-level approach - the SA-H2 Fund ("SA-H2") for South Africa and the SDG Namibia One Fund ("SDGNO") for Namibia. Out of USD 140Mn provided by SIDF to CI3, SA-H2 will receive USD 84Mn for Tier 1 of the CET and SDGNO will receive a total of USD 56Mn - USD 15Mn for the DT and USD 41Mn as Tier 1 of the CET.

SIDF, via its participation in the CI3 Funds, is expected to reduce over 24.2 million tonnes of CO₂ equivalent over its lifespan, contributing directly to GCF Mitigation Core Indicator 1. It will deliver substantial energy savings of 359 GWh per year (Indicator 1.1), deploy energy storage capacity of 117 MW (Indicator 1.2), install 1.52 GW of renewable energy capacity (Indicator 1.3) and generate 53,900 GWh of renewable energy (Indicator 1.4). Overall, 114,300 people are expected to gain improved access to clean energy (Indicator 2) and 3200 jobs are expected to be created. The Facility will contribute to enhanced economic participation and empowerment of women and support expanded employment opportunities across the green industrial value chain. Consequently, it advances multiple UN Sustainable Development Goals (SDGs) through inclusive growth. It also supports the adoption of innovative technologies and practices by building local capacity in emerging green industries (Core Indicator 6 and 8).

PROJECT/PROGRAMME INFORMATION

B.1. Climate context (max. 1000 words, approximately 2 pages)

In order to reach its Nationally Determined Contributions (NDCs), Southern Africa must expand its productive capacity while reducing the emissions intensity and climate vulnerability. Industrialisation is central to the region's objectives for economic diversification, employment creation, value addition and mineral beneficiation. However, industrial expansion creates substantial demand for energy, water, transport and other enabling infrastructure. Where this demand is met through fossil-based power and production technologies, it can embed emissions in capital-intensive assets that operate for several decades. Consequently, the sectors essential for economic growth such as iron, steel, cement, chemicals or heavy-duty transport also become hard-to-abate. The regional challenge is therefore not whether industrialisation should proceed, but how new and existing industrial capacity in hard-to-abate sectors can support economic development without locking in an emissions-intensive and increasingly climate-exposed growth model.

Emissions Profile and Country Selection Rationale:

Among the Southern African countries, South Africa and Namibia provide a complementary context for industrial decarbonisation in hard-to-abate sectors. South Africa is already one of the high-emitting, fossil-fuel based industrial economies globally. The Southern African Industrial Decarbonisation Facility ("SIDF" or the "Facility") can support transition of existing emission-intensive assets while Namibia is establishing itself newly as an industrial power hub where future carbon lock-in can be avoided with early green industrialisation.

South Africa (SA) is the largest greenhouse gas emitter in Africa, responsible for over 34% of Africa's total CO₂ emissions. It ranks among the top 15 emitters globally in absolute terms, despite its modest share of world GDP.⁷ National greenhouse gas emissions were estimated at approximately 478.3 MtCO₂e in 2022, excluding land use, land-use change and forestry.⁸ The energy sector accounted for approximately 78% of this total. Coal remains the dominant fuel in South Africa's overall energy and emissions profile, accounting for 80.1% of the country's CO₂ emissions by fuel in 2023, followed by oil (18.9%) and a negligible share from natural gas (1.0%). This fuel mix has remained broadly stable since 2000, with coal consistently the overwhelming source of emissions. Industry is the largest end-use consumer of energy in South Africa, accounting for 37.8% of total final energy consumption in 2023, ahead of transport (26.4%), residential use (13.0%), non-energy use (10.9%), and commercial and public services (6.6%). Many industrial processes including steelmaking, cement and chemicals, still require fossil fuels as sources of energy (~40% coal and coal products and 7% oil and oil products).⁹ The energy intensity of South Africa's manufacturing sector is among the highest in the world, amounting to 1.72 MJ per 2015 USD of GDP (PPP) in 2018.¹⁰

Accelerating the decarbonisation of its coal-dependent energy and industrial system can therefore make a material contribution to global mitigation and implementation of the Paris Agreement. South Africa must reduce emissions substantially while maintaining productive capacity, employment and industrial competitiveness. Its second NDC establishes an economy-wide emissions target of 320-380 MtCO₂e in 2035 and confirms the longer-term objective of a just transition to net-zero carbon dioxide emissions by 2050.¹¹ Achieving this trajectory will require investment beyond the power sector to reduce emissions from industrial electricity use, process heat, production processes and feedstocks etc.

Compounding South Africa's energy challenges is the issue of reliability of supply. Load-shedding – scheduled routine power outages to manage the grid – has become routine in recent years; in 2022 South Africans experienced 205 days with interrupted power, while in 2023 a record number of 335 days were affected. The situation has partially improved, with only 83 days affected in 2024¹². Households and industry both suffer, with economic stagnation at least partly linked to the prolonged interruptions due to the effect on productivity.

⁷ Energy Council of South Africa. Reducing Carbon Emissions. Available online: <https://energycouncil.org.za/mzansi/emissions/>

⁸ First Biennial Transparency Report (2024). Republic of South Africa. Available online: <https://unfccc.int/sites/default/files/resource/First%20Biennial%20Transparency%20Report%20of%20South%20Africa%20under%20the%20PA%2020%20December%202024.pdf>

⁹ International Energy Agency (IEA) (2023). South Africa: Understanding Energy End Uses. Available online: <https://www.iea.org/countries/south-africa/efficiency-demand>

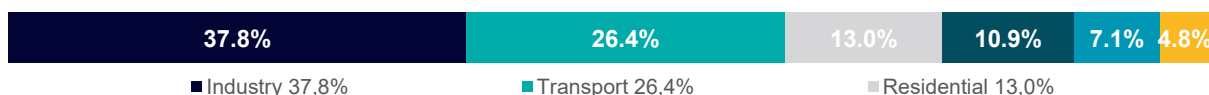
¹⁰ International Energy Agency (IEA) (2023) South Africa: Total CO₂ Emissions from Energy. Available online: <https://www.iea.org/countries/south-africa/emissions>

¹¹ Republic of South Africa, South Africa's Second Nationally Determined Contribution under the Paris Agreement (2025), pp. 18-22. Available online: <https://unfccc.int/sites/default/files/2025-10/South%20Africa%27s%20second%20Nationally%20Determined%20Contribution%202025.pdf>

¹² FTI Consulting (2025) Out of the Darkness: The Lasting Economic Costs of Load-Shedding. Available online: <https://www.fticonsulting.com/insights/articles/out-darkness-lasting-economic-costs-load-shedding>

South Africa's challenge is to transition an established, emissions-intensive industrial economy into one that is less fossil-intensive, and which is supported by a reliable supply of energy. A Paris-aligned industrial pathway therefore requires the progressive decarbonisation of electricity supply, industrial heat and feedstocks, supported by investment in transmission, storage and other enabling infrastructure. This transition must be managed without undermining productive capacity, employment or industrial competitiveness. As set out in South Africa's Just Energy Transition Investment Plan¹³, decarbonisation pathways must be accompanied by inclusive workforce development and appropriate transition measures that extend beyond labour risks to consider broader socioeconomic impacts affected by structural economic change.

Figure 1: Energy Consumption profile of SA, 2023



Source: International Energy Agency (IEA), Energy Statistics. Available at: [iea.org/countries/south-africa/efficiency-demand](https://www.iea.org/countries/south-africa/efficiency-demand)

Namibia, on the other hand, contributes a minor share of global carbon emissions. In 2023, total national emissions amounted to approximately 18.87 MtCO₂e, representing 0.034% of the global total.¹⁴ EDGAR reported that Namibia ranks 140th globally and 30th in Africa in terms of carbon emissions.¹⁵ This places Namibia in the category of countries that contribute minimally to the global challenges of climate change while facing significant exposure to its consequences. The Agriculture and Land Use (AFOLU) sector accounts for 80% emissions in Namibia, followed by Energy and Industrial Processes. The AFOLU emissions are driven primarily by enteric fermentation (methane) from livestock and land-use changes.¹⁶ Within the energy sector, carbon emissions from fuel combustion in Namibia increased by 77% between 2000 and 2023. Fuel emissions from transport (mainly cars) contribute about 60% of energy sector emissions, followed by energy use for industry.¹⁷ Industrial process emissions became the third largest source in 2005, overtaking waste. Over time, emissions from the energy and industrial process sectors have rapidly increased from a low baseline.

Namibia currently imports approximately 60-70% of its electricity, the majority from South Africa, making it vulnerable to external shocks as well as climate risks.¹⁸ Overall electrification stood at 57% in 2023, but only 34% in rural areas¹⁹, with some estimates suggesting fewer than 10% of rural households have reliable access. This results in a reliance on biomass, contributing further to emissions albeit at the local level. While loadshedding is not as grave a problem as in South Africa, Namibia still experiences a substantial amount and duration of outages, that have only increased in the last decade.²⁰

Namibia's climate significance lies in avoiding emissions before a new industrial pathway becomes locked in. Namibia remains a net GHG sink because land-sector removals exceed its gross emissions, while planned growth in green hydrogen and its derivatives, mineral beneficiation and other energy-intensive industries will involve long-lived production and enabling infrastructure.²¹ The energy sources, technologies and infrastructure selected during this formative period will therefore shape Namibia's emissions trajectory for decades. Developing these value chains around renewable energy

¹³ Just Energy Transition Investment Plan (2023-2027), Republic of South Africa Presidential Climate Commission. Available online: <https://www.climatecommission.org.za/south-africas-jet-ip>

¹⁴ Climate Change Knowledge Portal, World Bank Group. Namibia Country Climate and Development Data. Available online: <https://climateknowledgeportal.worldbank.org/country/namibia>

¹⁵ European Commission Joint Research Centre, GHG Emissions of All World Countries: 2023 Report, 2023, p. 7. Available online: https://edgar.jrc.ec.europa.eu/report_2023

¹⁶ Climate Analytics, Current GHG emissions. Available online <https://1p5ndc-pathways.climateanalytics.org/countries/namibia/current-situation>

¹⁷ International Energy Agency (IEA). Namibia: Emissions. Available online: <https://www.iea.org/countries/namibia/emissions>

¹⁸ Mitigation Action Facility. Namibia – Biomass: Encroacher Bush Biomass Power. Available online: <https://mitigation-action.org/projects/namibia-biomass/>

¹⁹ International Trade Administration (2024) Namibia – Energy. Country Commercial Guide. Washington, DC: U.S. Department of Commerce. Available online: [Namibia - Energy](https://www.trade.gov/namibia-energy)

²⁰ While no official data exists on household outages, a proxy metric is the outages experienced by firms, as reported by the World Bank. In 2014, 27% of firms reported experiencing electrical outages, while that number stood at 54% in 2024. For small and medium-sized firms, that varies between 50 and 63% of the firms. World Bank (2025) Firms experiencing electrical outages (% of firms) – Namibia. World Development Indicators. Available at: World Bank (2025) Firms experiencing electrical outages (% of firms) – Namibia. World Development Indicators. Available online: <https://data.worldbank.org/indicator/IC.ELC.OUTG.ZS?locations=NA>

²¹ Namibia's Nationally Determined Contribution, 2023. UNFCCC. Available online: <https://unfccc.int/sites/default/files/NDC/202401/FINAL%20UPDATED%20NAMIBIA%20NDC%202023.pdf>

and low-emissions production processes can support industrialisation and value addition while avoiding the future emissions and transition costs associated with fossil-dependent development.

Namibia has positioned green industrialisation at the center of its socio-economic development to drive economic growth and improved livelihoods for its population. Namibia's updated NDC in 2023 is a comprehensive climate strategy outlining an economy-wide target to reduce greenhouse gas (GHG) emissions by 91% against business-as-usual levels by 2030. This consists of a 14% unconditional reduction and a 77% conditional reduction relying on international support. Namibia's Green Industrialisation Blueprint identifies green hydrogen-enabled industrial decarbonisation to add maximum value and jobs to Namibian economy.²² As per IEA analysis, Namibia possesses world-class renewable energy resources that position it uniquely for the green hydrogen transition,²³ including:

- Solar: Exceptionally high solar irradiance in Namibia means solar PV installations can produce roughly double the electricity output of equivalent systems in Central Europe.
- Wind: Coastal and Southern regions see average wind speeds above 7 m/s, driving capacity factors up to 50% - among the highest recorded globally.
- Land availability: Namibia's low population density and vast land area means the possibility of large-scale project sites.
- Coastal access: Namibian renewable resources sit close to the coast and established port infrastructure providing a strong edge for export logistics of green products.

Transition and Hard-to-Abate Industries:

There are four central pillars of the global net-zero energy transition that are widely recognised: (i) large-scale renewable energy generation, (ii) industrial electrification, decarbonisation and enhanced energy efficiency, (iii) a shift to low-carbon fuels (e.g. green hydrogen), and (iv) Carbon Capture, Utilisation and Storage (CCUS). While global investment in clean energy and supportive policy frameworks continue to strengthen, industrial emissions remain a critical challenge, particularly in regions where economic growth remains closely linked to fossil fuel use to support industrial activity.

Heavy industries such as iron, steel, chemicals and fertilisers, as well as heavy freight transport, are essential for economic development but are also among the highest emitting sectors. Industry accounts for approximately 25% of global greenhouse gas (GHG) emissions, of which around 80% originate in emerging and developing economies (EMDEs) owing to the production of over 75% of the world's steel and more than 85% of its cement.²⁴ Hard-to-abate sectors, including iron, steel, cement and chemicals, contribute nearly 70% of these emissions.²⁵ The industrial value chain currently accounts for around 40% of global electricity consumption, and demand is expected to increase significantly by 2050, driven by rising manufacturing activity, automation, and broader industrial-led economic development.

According to WEF analysis, hard-to-abate sectors continue to depend heavily on fossil fuels for high-heat processes and chemical reactions, with fossil fuels accounting for approximately 90% of the energy mix in these sectors, compared to around 81% of global energy supply overall.²⁶ Industrial emissions have continued to rise between 2019 and 2025, with some sectors, such as chemicals and freight transport, recording annual growth of up to 10%.²⁷ This indicates a slower transition to alternative energy sources within these industries. Unlike the power sector, where decarbonisation can rely on renewable energy and efficiency, industrial emissions arise mainly from on-site fuel combustion and intrinsic process emissions, which require transformational technologies rather than incremental improvements. Evidence underscores the scale of the task, specifically in South Africa. A Boston Consulting Group (BCG) analysis found that 60% of emissions reductions in South Africa's heavy industry will depend on breakthrough solutions, particularly green hydrogen for steel and cement, as demand rises with economic growth.²⁸

²² Government of Namibia (2024). Namibia Green Industrialisation Blueprint. Available online: https://gh2namibia.com/wp-content/uploads/2024/08/Namibia-Green-Industrialisation-Blueprint-FINAL_01-Aug-2024.pdf

²³ IEA (2024), Renewable Energy Opportunities for Namibia. Available online: <https://www.iea.org/reports/renewable-energy-opportunities-for-namibia>

²⁴ OECD/IEA (2025), Support for decarbonising heavy industry in emerging markets and developing economies: Where we stand, where we need to go and how to get there. Available online: <https://doi.org/10.1787/7787cde0-en>.

²⁵ UNIDO. Explainer Brief Decoding Industrial Decarbonization. Available online: <https://decarbonization.unido.org/resources/what-is-the-industry-sectors-share-of-global-greenhouse-gas-emissions/>

²⁶ World Economic Forum (2024). Net-Zero Industry Tracker 2024 Edition. Available online: <https://www.weforum.org/publications/net-zero-industry-tracker-2024/>

²⁷ World Economic Forum (2025). Scaling the industrial transition: Hard-to-abate sectors and net-zero progress in 2025. Available online: <https://www.weforum.org/publications/scaling-the-industrial-transition-hard-to-abate-sectors-and-net-zero-progress-in-2025/>

²⁸ BCG (2023). Decarbonizing South Africa's Heavy Manufacturing Sector. Available online: <https://www.bcg.com/publications/2023/decarbonizing-south-africas-heavy-manufacturing-sector>

Deep decarbonisation of these sectors will require a combination of green hydrogen, energy efficiency improvements and electrification, which could reduce direct emissions from heavy industry by up to approximately 93% by 2050, according to the WEF. According to the IEA Net Zero by 2050 scenario, industrial emissions must decline by approximately 5% annually by 2030, highlighting the scale and urgency of the transition challenge. Specifically in South Africa, a 2025 technical report to the Presidential Climate Commission (PCC) identified industrial decarbonisation as among South Africa's toughest challenges for achieving net zero, warning that residual process emissions in sectors like cement and ferroalloys will necessitate disruptive change, large-scale investment, and potentially carbon capture and storage (CCS).²⁹ Namibia relies on electricity imports to meet the industrial demand, raising concerns related to energy security and affordability. Together, these trends underscore the need for a strong focus on the inclusive transition towards green, resilient industrialisation to mitigate emerging risks.

SIDF, by investing in the CI3 Funds, will generate mitigation benefits by targeting hard-to-abate industrial sectors and enabling the transition to low-carbon production systems and value chains in developing countries, particularly in South Africa and Namibia. These countries have been selected as priority countries for SIDF based on their clear policy commitment and country ownership for industrial decarbonisation via their NDCs and national strategies, as well as their complementary market potential and substantial investment needs in industrial decarbonisation. Both countries have articulated ambitious climate targets that explicitly recognize the role of industrial transformation. This ensures that SIDF interventions are directly contributing to nationally defined climate priorities and long-term transition pathways.

Key Industrial Sectors and Decarbonisation Pathways:

Industrial decarbonisation requires different technological and investment pathways for different production processes. Energy efficiency, material efficiency, recycling, renewable electricity and direct electrification can reduce emissions across a wide range of activities. However, these measures cannot eliminate all emissions from high-temperature heat, industrial feedstocks and process chemistry. Steel, cement and chemicals require different combinations of process changes, low-emissions energy, alternative feedstocks, material efficiency and supporting infrastructure. The appropriate pathway must therefore be determined at sector and project level. More information on these sectors and their decarbonisation potential is provided below:

Iron & Steel: Steel production is one of the largest industrial sources of CO₂ emissions, traditionally relying on coal-based blast furnace processes. South Africa is the second-largest steel producer in Africa. Approximately 60% of steel production in South Africa is based on the conventional Blast Furnace-Basic Oxygen Furnace (BF-BOF) route, which inherently requires higher coal and energy inputs and results in approximately one-fifth higher emissions per tonne of steel compared to the global average.³⁰ The remaining production is carried out using the electric arc furnace (EAF) process.

The South African steel industry has outlined a pathway to carbon neutrality by 2050, with two primary decarbonisation routes. The first involves electrification through scrap-based recycling using EAFs powered by renewable energy, although this approach is constrained by the availability of scrap and quality requirements for certain steel grades. The second route is hydrogen-based direct reduction, where iron ore is reduced using green hydrogen instead of coal-based coke, producing direct reduced iron (DRI) that can subsequently be refined into steel.³¹ This second pathway is considered particularly promising for South Africa's steel sector, as it can support competitiveness in increasingly carbon-constrained export markets.³²

Namibia, for its part, is already piloting the production of green steel, including the production of HBI (hot-briquetted iron), creating the opportunity to relocate the most carbon-intensive stages of steelmaking from overseas mills to Namibia's renewable-powered facilities. Both countries recognize that demand for green steel is expected to increase, particularly as jurisdictions such as the EU implement mechanisms like the Carbon Border Adjustment Mechanism (CBAM) on high-carbon steel imports.

Chemicals and Fertilisers (Ammonia & Others): The chemicals sector is broad however, ammonia production remains a key focus for decarbonisation due to the high CO₂ intensity of conventional (grey) ammonia. In South Africa, ammonia and other chemicals such as methanol are produced using natural gas or coal-derived hydrogen at emissions-intensive

²⁹ Net-Zero CO₂ Emission Pathways for South Africa (2022), Republic of South Africa Presidential Climate Commission. Available online: <https://www.climatecommission.org.za/publications/net-zero-co2-emission-pathways-for-south-africa>

³⁰ South African Iron and Steel Institute (2022). What is steel and how is it made? Available online <https://www.saisi.org/news/what-is-steel-and-how-is-it-made/>

³¹ BCG (2023). Decarbonizing South Africa's Heavy Manufacturing Sector. Available online:

<https://www.bcg.com/publications/2023/decarbonizing-south-africa-s-heavy-manufacturing-sector>

³² Leadership Group for Industry Transition (LeadIT). South Africa's Green Steel Opportunity: Navigating Challenges, Seizing the Future. October 2023. Available online: <https://www.industrytransition.org/content/uploads/2023/10/leadit-steel-decarbonization-workshop-brief.pdf>

facilities.³³ Namibia, in contrast, currently imports or produces only limited quantities of grey ammonia for fertiliser use but aims to become a major producer of green ammonia, particularly within the Southern Hydrogen Valley in the Karas region.³⁴ This represents one of the earliest target markets for Namibia's hydrogen economy, given the established global ammonia trade and its role as a direct substitute for conventional fertiliser production.³⁵

The decarbonisation pathway is well established: replacing fossil-derived hydrogen with green hydrogen in the Haber-Bosch process to produce green ammonia with a minimal CO₂ footprint. Hydrogen can also be converted into transportable derivatives such as ammonia, methanol (via CO₂ + H₂), and synthetic aviation fuels (e.g. SAF via Fischer-Tropsch), enabling the use of existing shipping, storage and receiving infrastructure.

Among these, ammonia is particularly important for Southern African export projects due to its technological maturity, relatively simpler storage at -33°C (compared to -253°C for liquid hydrogen), and established global logistics networks. Its dual role as both a fertiliser feedstock and an energy carrier further supports early market development. Green fertiliser is also key to improving domestic food security. Almost half of the fertiliser imported into the SADC (Southern African Development Community) region relies on 'grey' ammonia which leaves regional food systems highly vulnerable to global fuel price spikes and international shipping disruption.³⁶

Beyond ammonia, the chemicals sector includes synthetic hydrocarbons such as methanol. Green methanol, produced from green hydrogen and a biogenic carbon source, can be used as a low-carbon fuel for shipping or as a chemical feedstock. Namibia's Green Industrialisation Blueprint identifies e-methanol and e-kerosene (for aviation) as longer-term opportunities, particularly as the global shipping and aviation sectors transition towards low-carbon fuels. Overall, green hydrogen is central to decarbonizing chemical feedstocks, with the potential to eliminate emissions from ammonia production while enabling the development of low-carbon synthetic fuels and chemicals.

Heavy-Duty Transport and Green Logistics: Freight transport, encompassing trucks, buses, locomotives, and ships, is a significant source of emissions targeted in both South Africa and Namibia. In South Africa, transport contributes approximately 12% of energy related CO₂ emissions, dominated by road freight and particularly diesel trucks.³⁷ In Namibia as well, transport contributes the most to energy sector emissions.³⁸ Decarbonizing this segment involves a combination of electrification through battery-electric trucks and buses, and the use of hydrogen fuel-cell vehicles, given the region's unique characteristics such as extensive distances, heavy payloads, and cross-border logistics. Namibia's immediate plans, as outlined in its Industrial Blueprint, involve hydrogen dual-fuel locomotives and the establishment of hydrogen refueling infrastructure at strategic ports to support logistics and equipment operation. South Africa's hydrogen roadmap emphasizes deploying hydrogen in heavy road transport by 2030.

Green Hydrogen Production: Alkaline and proton exchange membrane (PEM) electrolyzers, co-located with dedicated renewable energy generation (wind, solar PV, or hybrid), form the backbone of production. Dedicated renewable electricity, not grid offtake, is essential to ensure the "renewable" designation under emerging regulatory frameworks such as the EU's Renewable Fuels of Non-Biological Origin (RFNBO) rules, which impose temporal and geographic matching requirements.³⁹

Enabling Infrastructure: Infrastructure for the transportation, transmission, distribution and storage of green hydrogen is not ancillary to industrial decarbonisation in hard-to-abate sectors; it is critical to the value chain. Hydrogen has an extremely low volumetric energy density at ambient conditions, requiring it to be compressed, liquefied or converted into denser carriers such as ammonia or Liquid Organic Hydrogen Carriers (LOHC) to enable economically viable large-scale transport. In addition, hydrogen can cause embrittlement in conventional steel pipelines, limiting the reuse of existing natural gas infrastructure without significant material upgrades or blending constraints. As a result, without enabling

³³ GIZ (2023). PtX Business Opportunities in South Africa. Renewable Hydrogen Market Potential and Value Chain Analysis. Available online: https://ptx-hub.org/wp-content/uploads/2024/05/Green-Hydrogen-South-Africa_2311_Business-Opportunities-South-Africa-GH2.pdf

³⁴ Energy Monitor (2022) Namibia stakes its future on the green hydrogen market. Available online: <https://www.energymonitor.ai/tech/hydrogen/namibia-stakes-its-future-on-the-green-hydrogen-market/>

³⁵ Government of Namibia (2024). Namibia Green Industrialisation Blueprint coverage. Available online: <https://ammoniaenergy.org/articles/namibia-green-industrialisation-blueprint/>

³⁶ GIZ (2025). Green Ammonia and E-Fertiliser in South Africa and the SADC Region: Opportunities For Production And Consumption. Available online <https://ptx-hub.org/publication/green-ammonia-and-e-fertiliser-in-south-africa-and-the-sadc-region/>

³⁷ Climate Analytics 1.5°C National Pathway Explorer, South Africa. Available online: <https://1p5ndc-pathways.climateanalytics.org/countries/south-africa/sectors/transport>

³⁸ Climate Analytics 1.5°C National Pathway Explorer, Namibia. Available online: <https://1p5ndc-pathways.climateanalytics.org/countries/namibia/>

³⁹ European Parliament Research Service (2023). EU rules for renewable hydrogen. Available online: [https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747085/EPRS_BRI\(2023\)747085_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747085/EPRS_BRI(2023)747085_EN.pdf)

infrastructure, even abundant and low-cost renewable resources cannot be effectively delivered to end markets, and decarbonisation benefits risk remaining stranded at the point of production.

Onshore, pipelines represent the lowest-cost option for hydrogen transport at scale. In 2024, South Africa and Namibia signed a landmark memorandum of understanding (MoU) for a cross-border hydrogen pipeline of approximately 2,500 km, with an estimated cost of EUR 20Bn. Such large-scale infrastructure can aggregate supply from multiple production sites, thereby optimising utilisation rates and reducing unit transport costs.⁴⁰

For long-distance export, dedicated port and terminal infrastructure is required, including ammonia loading systems (cryogenic storage tanks, specialised loading arms and vapour recovery systems), as well as facilities for liquid hydrogen or LOHC. Importing markets must also develop receiving terminals with capabilities for reconversion or direct use. Multi-scale storage solutions — ranging from on-site buffer tanks to strategic reserve caverns and tank farms at export hubs — are essential to manage the mismatch between variable renewable energy generation and steady offtake demand. Geological storage options such as salt caverns offer rapid-cycling, cost-effective capacity but are more geographically constrained, while depleted underground reservoirs and saline aquifers can provide much larger seasonal-scale storage capacity, though site availability and characterization requirements still limit deployment to favorable geological settings.⁴¹ In parallel, battery energy storage systems (BESS), when integrated with electrolyser operations, can optimise electricity consumption by shifting hydrogen production to periods of peak renewable generation. Together, these infrastructure components are essential to ensure the efficiency, reliability and scalability of hydrogen value chains.

Please see below the summary of how these different decarbonisation pathways solve key baseline climate change challenges in the respective industrial sectors that are part of the investment strategy of SIDF.

Table 1: Illustrative decarbonisation pathways for key sectors and evidence focus in South Africa and Namibia

Sector	Primary country application	Baseline / Counterfactual	Decarbonisation mechanisms that gcf support may enable	Emissions trajectory to be shifted	Potential linked output types, parameters and evidence focus
Iron & Steel	South Africa and Namibia	SA's steelmaking is predominantly (~60%) coal-based Blast Furnace - Basic Oxygen Furnace (BF-BOF); ~40% use of electric arc furnace (EAF); New Namibian green iron or steel capacity stays in pilot stage, is delayed or follows a fossil-dependent production pathway.	Enables (i) Electrification via scrap-based EAF using renewable electricity; (ii) Hydrogen Direct Reduced Iron (H ₂ -DRI) using green hydrogen instead of coke; (iii) production of green HBI/steel using renewable-powered processes	Reduces or avoids emissions from reducing agents, process energy and electricity relative to the applicable conventional iron or steel production route.	Tonnes of green steel/DRI, hydrogen consumption, electricity consumption and country-specific project-scenario emissions where applicable.
Chemicals, Fertilisers and Synthetic Fuels (Ammonia, Methanol, SAF)	South Africa and Namibia	High emissions from fossil-based hydrogen used in ammonia and chemical production. Grey ammonia and methanol produced from coal or natural	Enables (i) replacement of fossil-derived hydrogen with green hydrogen in Haber-Bosch (green ammonia); (ii) production of green methanol via CO ₂ + H ₂ ; (iii) production of	Replaces fossil-derived hydrogen and lowers feedstock, energy and process emissions associated with	Tonnes of green ammonia produced, hydrogen input, plant uptime, electricity source and offtake. Tonnes of green methanol

⁴⁰ Pipeline Technology Journal (2025). South Africa and Namibia to Finalize Cross-border Green Hydrogen Pipeline Agreement. Available online: <https://www.pipeline-journal.net/news/south-africa-and-namibia-finalize-cross-border-green-hydrogen-pipeline-agreement>

⁴¹ Raad, S. M. J., Leonenko, Y., & Hassanzadeh, H. (2022). Hydrogen storage in saline aquifers: Opportunities and challenges. Renewable and Sustainable Energy Reviews, 168, 112846. Available online: <https://doi.org/10.1016/j.rser.2022.112846>

		gas; limited local production in Namibia with import dependence.	synthetic fuels (e.g., SAF) via Power-to-X pathways; (iv) use ammonia/methanol as low-carbon fuels and energy carriers.	ammonia or fertiliser production.	produced, hydrogen input, feedstock source, electricity source and offtake.
Renewable power for existing industrial users	Primarily SA, with potential application to existing Namibian mining and industrial users	Existing facilities continue to be supplied by carbon-intensive grid electricity or fossil-based captive generation using coal, natural gas, diesel or other higher-emissions fuels for industrial equipment, process heat or steam.	Provides development and construction capital, enables dedicated or contracted renewable generation, storage and associated connections to supply eligible industrial users	Displaces higher-emissions electricity and reduces the emissions associated with existing industrial production.	Installed capacity MW, generation, grid emission factor, storage, surplus allocation and attribution.
Industrial energy efficiency	Primarily SA, with potential application to existing Namibian mining and industrial users	Existing industrial facilities continue operating at the prevailing electricity, fuel or material intensity, without the identified efficiency intervention	Finance the conversion or replacement of eligible equipment and the associated lower-emissions electricity, renewable-heat and supporting infrastructure.	Reduces the electricity or fuel required to produce a defined level of industrial output.	Baseline and project energy use, recovered heat or heat-pump output, operating hours, COP where relevant, energy saved and capex basis where used.
Enabling Infrastructure (T&D, Storage, Ports, Pipelines)		Eligible low-emissions industrial assets cannot operate, operate at a smaller scale or rely on higher-emissions energy and infrastructure alternatives because transmission, storage, water, port or logistics capacity is unavailable. Inability to transport and store hydrogen efficiently, reliance on fossil fuel logistics infrastructure; no integrated value chain limiting real decarbonisation impact	Enables (i) Conversion to derivatives (ammonia, LOHC, methanol) for transport; (ii) pipeline networks for bulk transport; (iii) port and export terminal infrastructure; (iv) multi-scale storage (tanks, caverns, BESS); (v) reconversion, distribution and refuelling systems	Enables the linked low-emissions activity to displace or avoid a higher-emissions baseline. The infrastructure should not be treated as an independent source of mitigation where its impact is already attributed to the linked asset.	Physical completion, capacity, interconnection and enabling narrative; do not count direct avoided emissions unless an approved future methodology is added.

Physical Climate Risks:

The Notre Dame Global Adaptation Initiative Index (ND-GAIN) shows a country's vulnerability to climate change impacts and its capacity to improve its resilience and adapt to these impacts. For 2024, it ranks South Africa at 116 and Namibia at 133 out of 187 countries assessed. This places both countries in the highly vulnerable category for physical climate risks given their high reliance on climate-sensitive sectors, limited water resources, and coal-dependent energy systems.⁴²

Physical climate risks can undermine the reliability, bankability and mitigation performance of long-lived industrial decarbonisation assets. The most material hazards in the Southern African region are water scarcity and drought, rising temperatures and extreme heat, intense rainfall and flooding, and changing atmospheric conditions. This leads to disruption in renewable energy generation and industrial supply chains resulting in damage to transmission and other enabling infrastructure. The industrial assets financed and supported by SIDF are expected to operate for decades and are highly dependent on connected power, water, transport, storage and export systems. Interruption of any critical dependency can reduce availability, raise expenditure, weaken returns and undermine expected greenhouse-gas reductions.

South Africa's established, spatially concentrated industrial and infrastructure system is already affected by water stress, heat stress, drought, severe rainfall and flood events.⁴³ Mining, mineral processing, steel, chemicals, refineries, manufacturing and power infrastructure rely on bulk-water systems, grid connections, roads, railways and ports. The evidence compiled from the Climate Change Knowledge Portal of the World Bank indicates that, relative to 1995-2014, South Africa's annual mean temperature is projected to rise by approximately 1.50°C under SSP2-4.5 and 1.96°C under SSP5-8.5 in 2040–2059, while average maximum temperature is projected to rise by approximately 1.58°C and 2.08°C respectively.⁴⁴ According to the World Bank's ThinkHazard! analysis, South Africa is currently susceptible to high river, urban and coastal floods, and wildfires, with medium exposure to landslides, extreme heat and tsunami events.⁴⁵ Such disruptions can therefore propagate beyond an individual industrial site: low reservoir levels or water restrictions can constrain production, flooding can isolate mines or damage rail and port links, and heat or fire can reduce the transfer capacity and reliability of electricity networks.

On the other hand, Namibia's physical climate risks are concentrated around water scarcity and extreme heat. The World Bank country profile describes Namibia as one of the driest countries in sub-Saharan Africa, with highly variable rainfall and recurrent drought.⁴⁶ Evidence compiled from the Climate Change Knowledge Portal indicates that annual mean temperature could rise by approximately 1.65°C under SSP2-4.5 and 2.18°C under SSP5-8.5 in 2040-2059, while average maximum temperature could rise by approximately 1.70°C and 2.29°C respectively.⁴⁷ Extreme heat is a high and rising risk for Namibia's industrial assets. Water security is the central physical dependency for Namibia's emerging hydrogen, ammonia, green-iron, mining and mineral-processing value chains. These physical risks increase evaporation, cooling requirements and occupational heat exposure, and can compound the operating risks of water, power and logistics systems.

Transition Risks:

Transition risk arises from changes in climate policy, technology, product standards, buyer behaviour and capital allocation. It is distinct from general project-development barriers. The relevant question for transition risks in industrial sectors is whether a cost, constraint or revenue risk results directly from the shift towards lower-emission production and markets. Such transition risks can delay industrial transformation and erode competitiveness and asset value.

⁴² Notre Dame Global Adaptation Initiative. Country ranking by ND-GAIN Index. Scores for 2024. Available online:

<https://gain.nd.edu/our-work/country-index/rankings/>

⁴³ Climate risk country profile: SA, 2021. World Bank Group. Available online:

https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/15932-WB_South%20Africa%20Country%20Profile-WEB.pdf

⁴⁴ World Bank Group (2021) Climate risk country profile: South Africa.. Available online:

https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/15932-WB_South%20Africa%20Country%20Profile-WEB.pdf

⁴⁵ ThinkHazard! South Africa (2026), The World Bank Group. Available online: <https://thinkhazard.org/en/report/227-south-africa>

⁴⁶ Climate Change Knowledge Portal, World Bank Group (2021). Namibia – Mean Projections (CMIP6). Available online:

https://climateknowledgeportal.worldbank.org/sites/default/files/2021-08/15931-WB_Namibia%20Country%20Profile-WEB.pdf

⁴⁷ Climate Change Knowledge Portal, World Bank Group (2026). Namibia – Mean Projections (CMIP6). Available online:

<https://climateknowledgeportal.worldbank.org/country/namibia/climate-data-projections>

Among the transition risks, policy and market pressures are already materializing in SIDF countries. South Africa already applies a carbon tax, with the headline rate increasing to ZAR 308/tCO_{2e} from January 2026⁴⁸, while the Climate Change Act establishes the legal framework for a low-carbon and climate-resilient transition, including sectoral emissions targets and carbon budgets as relevant provisions are implemented.⁴⁹ These measures can increase the direct cost of emitting and the indirect cost of carbon-intensive electricity, fuels and inputs. The Carbon Border Adjustment Mechanism (CBAM) is the European Union's (EU) policy tool that places a carbon price on specific imported goods to reflect their hidden carbon emissions. The EU is a major market for Southern African exports, making CBAM directly relevant to the competitiveness of South African and Namibian industry. CBAM entered its definitive regime on 1 January 2026 and initially covers cement, iron and steel, aluminium, fertilisers, electricity and hydrogen. EU importers must report embedded emissions and meet the associated financial obligations, creating a transmission channel from European carbon pricing to producers outside the Union.⁵⁰ For South African and Namibian exporters, the principal risk is not only the border charge itself but the combined requirement to measure, verify and communicate product-level emissions, demonstrate the carbon price already paid where applicable, and compete against lower-emission suppliers. Evolving buyer procurement rules, greenhouse gas emission targets, product standards, certification and traceability requirements can similarly determine eligibility for premium markets and long-term offtake.

Carbon-intensive assets can also become stranded before the end of their technical lives. Industrial facilities that depend on coal-based electricity, fossil process heat, high-emission feedstocks or equipment with limited retrofit options may require unplanned capital expenditure, operate at lower utilisation levels or close early as carbon costs rise and customers switch to lower-emission products. Delayed action compresses the period available to align upgrades with normal replacement cycles, increasing the risk of abrupt write-downs and a disorderly transition. Conversely, early investment can preserve optionality by designing new assets for low-emission inputs, modular expansion, traceable energy supply and future technology substitution. The cost of transition increases with delay. Therefore, SIDF's participation in the C13 Funds is timely and critical at this stage. More details on the physical and transition risks to industrial decarbonisation in South Africa and Namibia are presented in Annexure 2.

Addressing Investment Barriers for Systemic Transformation

Achieving the industrial transition in South Africa and Namibia will also largely depend on a combination of policy and regulatory certainty, technological innovation and large-scale capital mobilisation. Estimates by the WEF suggest that global industrial decarbonisation will require approximately USD 30Tn in cumulative additional capital, to achieve a net-zero transition by 2050. This represents approximately 45% of total global investment requirements for net zero, underscoring the scale of the financing challenge.⁵¹ In South Africa, studies suggest that ZAR 792Bn - 948Bn may be required by 2050 for decarbonizing key industrial sectors.⁵² Namibia similarly requires substantial investment—estimated at USD 40Bn by 2050 — for green industrial projects.⁵³ But there is currently a significant investment gap.

In essence, SIDF contributes to fulfilling this investment gap in South Africa and Namibia and attempts to address several market failures and investment barriers that prevent technically credible concepts from becoming investment-ready and bankable. It does so by developing and constructing industrial decarbonisation projects that transform hard-to-abate sectors such as iron and steel, chemicals and fertilisers, and heavy-duty transport, where emissions intensity is high and viable decarbonisation pathways are emerging but require significant upfront investment. More information on the investment barriers and the role of GCF's concessional finance is provided in Section B.5.

Finally, SIDF is designed to catalyse a systemic transformation in industrial decarbonisation financing by addressing structural barriers that have historically constrained investment in hard-to-abate sectors across emerging markets. More information on SIDF's contribution to paradigm shift and replicability potential in South Africa and Namibia is presented in Section D.2 and B.6 respectively.

Access to water for green hydrogen production in South Africa and Namibia:

⁴⁸ Budget 2026 Frequently Asked Questions (2026), South African Revenue Service. Available online: <https://www.sars.gov.za/about/sars-tax-and-customs-system/budget/budget-2026-frequently-asked-questions/>

⁴⁹ Climate Change Act (2024). Republic of South Africa. Available online: https://www.gov.za/sites/default/files/gcis_document/202407/50966climatechangeact222024.pdf

⁵⁰ Carbon Border Adjustment Mechanism (CBAM) (2026), European Commission, Directorate-General for Taxation and Customs Union. Available online: https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en

⁵¹ World Economic Forum (2024) How to raise the \$30 trillion investment needed for 'hard-to-abate' sectors to reach net zero. Available online: <https://www.weforum.org/stories/2024/12/net-zero-transition-requires-a-30-trillion-investment-for-hard-to-abate-sectors/>

⁵² Climate Policy Initiative (2025). South African Climate Finance Landscape 2025. Presidential Climate Commission, South Africa. Available online: <https://www.climatepolicyinitiative.org/publication/the-south-african-climate-finance-landscape-2025/>

⁵³ Government of Namibia (2022). Green industrialisation blueprint. Namibia Green Hydrogen Council. Available online: <https://gh2namibia.com>

South Africa and Namibia face physical climate risks including water stress as outlined above. Modelling by the IPCC suggests that at 1.5°C global warming, the frequency and length of droughts will increase over large parts of Southern Africa. At 2°C, unprecedented extreme droughts are projected to emerge. Above 3°C global warming, average annual rainfall is projected to decrease by 10-20% in the summer rainfall region, particularly in western parts. The length of meteorological droughts is also projected to double from two to four months. The reduced rainfall that caused the 2015-2017 Cape Town drought was three times more likely because of human-induced climate change.⁵⁴

According to the World Bank, some regions, including Africa, could experience economic growth declines of up to 6% due to water-related losses, with South Africa's growth projected to decline by at least 1%.⁵⁵ Industry already accounts for approximately 22% of global freshwater withdrawals globally, and green hydrogen production requires purified water for electrolysis, which may place additional pressure on scarce resources if not carefully managed.⁵⁶ South Africa uses almost all of its currently available water for agriculture, households and energy uses⁵⁷, while around 12% of Namibia's rural population still lacks access to clean drinking water.⁵⁸ Women in particular are affected by water scarcity, especially in rural areas, as they bear a disproportionate share of responsibility for securing and managing household water supplies as well as a disproportionate share of the costs of water insecurity. These include intensified unpaid labour burden, reduced income-generating opportunities, and increased exposure to health and wellbeing risks⁵⁹. Climate change directly extends this burden: a study published in *Nature Climate Change* (2024) found that a 1° C temperature rise historically increased daily water collection times by approximately four minutes, and projects that daily collection times for women without household water access could increase by 30% globally and up to 100% in some regions by 2050 under high-emission scenarios.⁶⁰

Significant water stress and the associated burden faced by the populations of both South Africa and Namibia is likely to intensify with further industrialisation if not proactively managed. In the case of green hydrogen production, options exist; an article by RMI outlines how water access and requirements for green hydrogen production can be effectively managed if intentional sourcing, project siting, and efficient use is prioritized.⁶¹ Green hydrogen produced via renewable-powered electrolysis has a relatively lower water footprint (approximately 20-30 L/kg) compared to grey hydrogen (approximately 40 L/kg). Another study, cited by the Netherlands Environmental Assessment Agency, suggests that solar-to-hydrogen water use is approximately 43 litres per kilogram of hydrogen on a life-cycle basis — about a third of the water intensity of oil extraction and refining⁶². Therefore, a shift away from fossil fuel for industrial use may lead to net water savings if managed effectively through integrated water management.⁶³ Nevertheless, water use remains a critical consideration in South Africa and Namibia for green hydrogen production and associated industrial decarbonisation projects within the broader physical climate risks context.

To address this, SIDF will manage the water risk within the context of green hydrogen production for industrial use through appropriate design measures such as renewable energy-powered desalination plants built alongside hydrogen production and industrial facilities. These systems decouple industrial water use from limited freshwater resources. This can be implemented particularly in coastal regions where access to seawater is abundant but freshwater is scarce. Notably, five of South Africa's six identified green hydrogen hubs (Saldanha Bay, Boegoebaai, Coega, Richards Bay and eThekweni, except Vaal Triangle) and two of Namibia's three hubs (Lüderitz and Walvis Bay except Erongo) are located in coastal areas, creating favorable conditions for seawater desalination. Therefore, by integrating renewable-powered desalination, wastewater recycling and circular water-use systems, green hydrogen projects can contribute to industrial

⁵⁴ Trisos, C. et al (2022) 'Factsheet: The IPCC's Sixth Assessment Report: Impacts, Adaptation Options and Investment Areas for a Climate-Resilient Southern Africa,' CDKN, ACDI, ODI, SouthSouthNorth, University of Capetown. Available online:

<https://cdkn.org/resource/ipcc-sixth-assessment-report-new-factsheet-decision-makers-southern-africa>

⁵⁵ World Bank (2016). "High and Dry: Climate Change, Water, and the Economy." World Bank, Washington, DC. Available online:

<https://www.worldbank.org/en/topic/water/publication/high-and-dry-climate-change-water-and-the-economy>

⁵⁶ Budget 2026 Frequently Asked Questions (2026), South African Revenue Service. Available online:

<https://www.sciencedirect.com/science/article/pii/S0924646022000069>

⁵⁷ Water Market Intelligence Report (2021), GreenCape. Available online: https://greencape.co.za/wp-content/uploads/2022/10/WATER_MIR_2021_31_3_21-3.pdf

⁵⁸ Assessing the Cost of Inaction on Water, Sanitation and Hygiene (WASH) in Namibia (2024), UNICEF and Ministry of Agriculture, Water and Land Reform. Available online: <https://www.unicef.org/namibia/media/2051/file/WASH%20COSTREPORT%20ONLINE.pdf.pdf>

⁵⁹ Gendered Effects of Water Scarcity on Rural Livelihoods in South Africa: A Feminist Political Ecology Perspective (2025), Makhanya et al. Available online: <https://www.ajol.info/index.php/gab/article/view/303697>

⁶⁰ Climate Change to Exacerbate the Burden of Water Collection on Women's Welfare Globally (2024), Carr, Kotz, Pichler, Weisz, Belmin and Wenz. Available online: <https://doi.org/10.1038/s41558-024-02037-8>

⁶¹ Hydrogen Reality Check: Distilling Green Hydrogen's Water Consumption (2023), Rocky Mountain Institute (RMI). Available online: <https://rmi.org/resources/hydrogen-reality-check-distilling-green-hydrogens-water-consumption/>

⁶² The Opportunities, Challenges and Potential for Hydrogen in Africa (2023), Dagnachew et al., PBL Netherlands Environmental Assessment Agency. Available online: <https://www.pbl.nl/en/publications/the-opportunities-challenges-and-potentials-for-hydrogen-in-africa>

⁶³ Does the Green Hydrogen Economy Have a Water Problem? (2021), Beswick, Oliveira and Yan. Available online: [10.1021/acsenergylett.1c01375](https://doi.org/10.1021/acsenergylett.1c01375)

decarbonisation without exacerbating water scarcity. In parallel to managing water risk, the potential for other maladaptation risks and unintended consequences will also be carefully assessed as part of the E&S due diligence process undertaken for each potential investment (see Section G.1) and will draw on GCF's thematic brief and emerging industry practices. The goal will be to avoid risk and mitigate where avoidance is not possible through project design, and ongoing risk management.

B.2 (a). Theory of change narrative and diagram (max. 1500 words, approximately 3 pages plus diagram)

Goal Statement

SIDF, by its participation in CI3 Funds, aims to catalyse low-emission economic growth by accelerating the deployment of industrial decarbonisation solutions in hard-to-abate sectors in South Africa and Namibia. By demonstrating commercially viable investment models across these value chains, the CI3 Funds seek to mobilise private sector capital at scale and support a structural transition towards low-carbon industrial development.

Climate Problem

As described in Section B.1, South Africa and Namibia face different but related industrial decarbonisation challenges. South Africa must reduce emissions from an established, energy-intensive industrial economy while maintaining productive capacity and competitiveness and in parallel, managing the risk of stranded, fossil-fuel based assets along with other climate transition risks. Namibia is entering a period of industrial expansion, and the technologies, energy sources and infrastructure chosen now will determine whether that growth avoids or locks in future emissions. In both countries, deep emissions reductions in sectors such as steel, chemicals, fertilisers and heavy transport will require more than conventional efficiency improvements.

At the same time, physical climate risks add a further layer of complexity. Water scarcity, drought, rising temperatures, flooding and other extreme weather events can affect the reliability and bankability of industrial infrastructure, renewable energy assets and green hydrogen value chains. SIDF must therefore accelerate industrial decarbonisation while ensuring that supported assets can maintain their expected mitigation performance under changing climate conditions.

Market Failure

Despite strong renewable resource potential, clear national policy commitments and growing market demand for low-carbon industrial products, investments in green hydrogen, industrial decarbonisation and enabling infrastructure in South Africa and Namibia remain insufficient. Green hydrogen and other emerging decarbonisation value chains still lack the operating track record, level of demand and integrated infrastructure needed to give investors the confidence in future revenues and project performance. First-of-a-kind technologies add further uncertainty. Consequently, projects with substantial mitigation potential are not moving from concept through development, construction and operation quickly enough. With few projects reaching financial close and operation, the market cannot build the evidence needed to demonstrate commercial viability, reassure investors or mobilise private capital at the scale required for industrial transformation.

Investment Barriers

A range of investment barriers prevents technically credible projects from becoming investment-ready and from progressing to financial close and implementation. These include substantial upfront capital requirements, long development timelines, construction and execution risks, uncertain offtake arrangements and revenue visibility, evolving product standards and certification requirements, and limited availability of patient, risk-tolerant capital across the development and construction stages. These factors contribute to elevated costs of capital and constrain project viability, particularly for first-of-a-kind industrial decarbonisation investments. Project developers and investors must also manage previously mentioned physical climate risks that can affect the reliability, costs and mitigation performance of long-lived assets. These barriers delay projects, weaken expected risk-adjusted returns and reinforce investor caution, limiting the scale and pace of broader market development.

While these barriers and risks are material, the theory of change assumes that demand for low-carbon industrial products continues to develop, supported by industrial decarbonisation commitments, climate policies and evolving market requirements. It also assumes that sufficient technical, financial and execution capacity exists among project developers and partners, and that enabling infrastructure and supply chains can be developed or accessed where required. Failure of these conditions to materialise could affect project timelines, investment mobilisation and the pace of industrial transformation.

Need for Concessional Finance

The scale and risk profile of industrial decarbonisation investments in South Africa and Namibia mean that commercial capital is not currently available on the terms, at the stages, or at the scale required. Projects incur substantial development expenditure and face offtake, technology, construction, transition and execution risks before they can become investment-ready. Patient, risk-tolerant capital is particularly scarce during project development, while elevated costs of capital and risk perceptions constrain financing for construction and implementation.

Concessional finance is therefore needed to absorb risks that commercial investors are currently unable or unwilling to bear, including by funding project development and taking appropriately risk-tolerant positions within the blended finance structure. This support can strengthen project preparation and structuring, improve project- and fund-level risk-return profiles, and enable participation by investors with different risk-return requirements.

By helping projects move to operating assets, concessional capital can create the conditions for larger-scale participation by development finance institutions, impact investors, commercial financiers and institutional investors. In doing so, it helps establish a pipeline of investable projects, supports the demonstration of commercial viability in emerging value chains and contributes to broader market development and replication.

GCF Intervention

SIDF provides funding to the CI3 Funds which have a blended, whole-of-lifecycle financing structure that combines project-development capital with construction equity. By establishing the Development Tranche (DT) and tiered Construction Equity Tranches (CET), the CI3 Funds support projects from opportunity identification and development through construction, operation, refinancing and exit. Financing is combined with technical, financial, legal, environmental and social due diligence and structuring support, enabling technically credible concepts to become investment-ready projects and ultimately operating assets.

Project-development support includes technical, financial, legal, environmental and social assessment and structuring activities that help identify viable opportunities, strengthen project quality, reduce development risks and prepare projects for investment approval and financial close. During construction and operation CFM, as the Manager, remains an active investor and applies ongoing asset management, monitoring and ESG oversight. These activities are intended to improve project quality, manage execution and physical climate risks, and protect the reliability and long-term mitigation performance of supported assets.

Rather than financing isolated technologies, the CI3 Funds seek to develop integrated industrial decarbonisation value chains. Depending on project needs, this may involve renewable energy generation and storage, green hydrogen production, storage and distribution, water, transport and other enabling infrastructure, and industrial end uses such as green steel, fertilisers, chemicals and synthetic fuels. By supporting coordination across these interdependent components, CI3 Funds aim to reduce interface and coordination risks and strengthen the commercial and mitigation case for investment.

Private Capital Mobilisation

CI3 Funds' blended finance structure is designed to allocate, absorb and manage risks that currently constrain investment in industrial decarbonisation projects. At the fund level, a critical demonstration output is commercial viability. This means demonstrating that well-structured projects in hard-to-abate sectors can reach financial close, operate successfully and generate risk-adjusted returns. By building a track record of financed and operating projects, CI3 can address information gaps and investor concerns relating to technology performance, offtake structures, execution risks and financing models.

Private capital is expected to be mobilised directly through participation in the CI3 Funds' Construction Equity Tranches and, where applicable, alongside individual projects. By demonstrating commercially viable investment models and reducing investor uncertainty, the CI3 Funds aim to crowd in additional private sector capital across the project lifecycle. Over time, successful project development, construction and operation can create reference cases, transferable knowledge and more standardised investment approaches that support refinancing, replication and scaling beyond the initial portfolio and lifetime of the CI3 Funds.

Industrial Transformation

SIDF, via its participation in CI3 Funds, seeks to support the transformation of industrial systems in South Africa and Namibia by accelerating investment in low-emission technologies, production systems and enabling infrastructure across hard-to-abate sectors. Expected portfolio outputs include renewable energy generation and storage capacity; green hydrogen production, storage and distribution capacity; and low-carbon industrial applications in sectors such as green ammonia and fertilisers, synthetic fuels, iron and steel, chemicals and other hydrogen-enabled industrial processes. The Facility may also support enabling infrastructure and selected manufacturing activities for low-carbon technology components. Project development, construction and operation are also expected to create or support employment

opportunities across the green industrial value chain, while surplus renewable electricity generated beyond operational requirements may be supplied to external users where appropriate.

By linking renewable energy and green hydrogen production with transport, storage, water and other enabling infrastructure and downstream industrial applications, SIDF's support to the CI3 Funds seeks to accelerate the development of integrated industrial decarbonisation value chains. This supports a transition from carbon-intensive industrial systems that rely on fossil-based electricity, fuels, and production processes towards lower-emission industrial pathways based on renewable energy, green hydrogen and other decarbonisation solutions. In doing so, SIDF aims to demonstrate how industrial decarbonisation can be implemented across value chains rather than through isolated asset-level interventions. This can support the emergence of new markets for low-carbon industrial products, facilitate adoption of cleaner production technologies, and contribute to the longer-term transformation of hard-to-abate sectors in South Africa and Namibia.

Climate Impact

The CI3 Funds' portfolio is expected to contribute to measurable climate mitigation outcomes through several routes. Renewable energy generation and storage can displace higher-emission electricity used by industrial facilities. Green hydrogen and its derivatives can replace fossil-derived hydrogen, fuels, feedstocks, while industrial electrification, energy-efficiency measures and lower-emission production technologies can reduce both energy- and process-related emissions. SIDF's support to hard-to-abate industrial facilities is also expected to increase the value of physical assets that are more able to avoid or reduce greenhouse gas emissions, alongside reducing the transition risks that they face as a result of evolving policy and market pressures (refer to Annexure 2 for further detail).

Beyond these outcomes, the fund seeks to contribute to wider market transformation through the demonstration of commercially viable industrial decarbonisation pathways and increased mobilisation of private capital. Over time, the replication and scaling of successful investments is expected to generate additional emissions reductions beyond those directly attributable to the Fund.

SIDF via its participation in the CI3 Funds is also expected to generate the following **socio-economic co-benefits**:

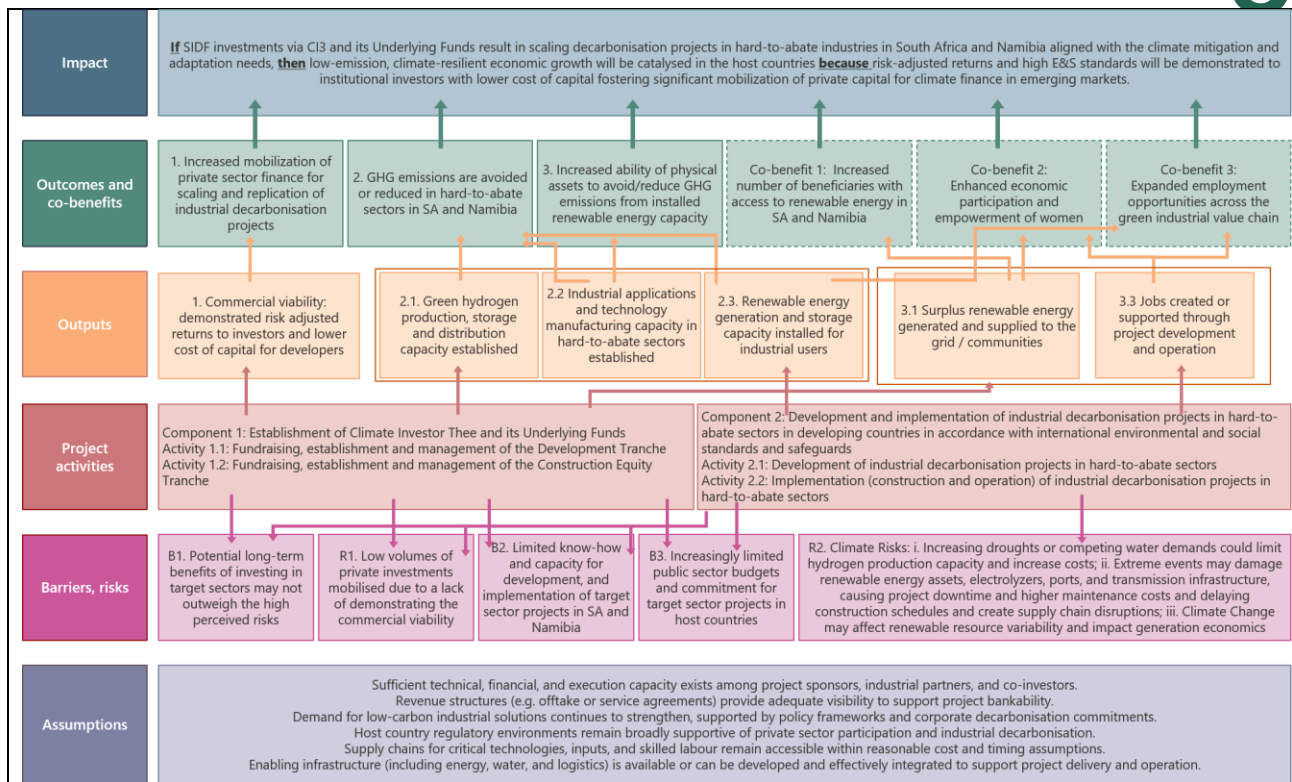
1. Where **surplus renewable electricity** from supported projects is supplied to local communities or other grid-connected beneficiaries, it can increase access to renewable energy and contribute to energy-system reliability. This is particularly relevant in contexts exposed to energy supply constraints including routine outages and rural electrification as is the case in both South Africa and Namibia.
2. **Enhanced economic participation and empowerment of women** is supported through targeted gender-responsive measures as further detailed in the Fund's gender action plan (Annex 8). At the Sub-Project level, actions relate to recruitment, gender-responsive workplace safeguards, economic empowerment initiatives, and gender-responsive community engagement. Where feasible, Sub-Projects that make excess energy available to local communities may also contribute to women's empowerment: improved reliability of supply reduces the time and cost constraints that can otherwise limit their income-earning potential, provided the enabling framework is in place to ensure women are intentionally targeted as beneficiaries.
3. **Expanded employment opportunities** are supported across the green industrial value chain, primarily as indirect effects associated with investee activities such as green ammonia production, low-carbon industrial applications, and related supply chains. These opportunities arise primarily as indirect or value chain effects associated with the deployment of low-carbon industrial applications, including activities such as ammonia production and related supply chains. Such opportunities are particularly relevant in both countries for different reasons; in South Africa, to support the government in its commitment⁶⁴ to protect vulnerable workers and communities, especially coal miners, women and youth that will be affected by the move away from coal, and in Namibia in support of its affirmative action and policies to promote employment opportunities for vulnerable and disadvantaged groups as part of a growing economy.

Figure 2: SIDF Theory of Change

⁶⁴ Refer to the Just Energy Transition Investment Plan which cites the Political Declaration which was signed between the Government of South Africa and the Governments of France, Germany, United Kingdom, United States, and the European Union (collectively, the International Partners Group [IPG]) at COP26, and which gave rise to the establishment of the Just Energy Transition Partnership (JETP).



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B.2 (b). Outcome mapping to GCF results areas and co-benefit categorization

Outcome number	GCF Mitigation Results Area (MRA 1-4)				GCF Adaptation Results Area (ARA 1-4)			
	MRA 1 Energy generation and access	MRA 2 Low-emission transport	MRA 3 Building, cities, industries, appliances	MRA 4 Forestry and land use	ARA 1 Most vulnerable people and communities	ARA 2 Health, well-being, food and water security	ARA 3 Infrastructure and built environment	ARA 4 Ecosystems and ecosystem services
Outcome 1: Increased mobilization of private sector finance for scaling and replication of industrial decarbonisation projects	X		X					
Outcome 2: GHG emissions are avoided or reduced in hard-to-abate sectors in SA and Namibia	X		X					
Outcome 3: Increased ability of physical assets	X		X					

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to avoid/reduce GHG emissions from installed renewable energy capacity								
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Co-benefit number	Co-benefit					
	Environmental	Social	Economic	Gender	Adaptation	Mitigation
Co-benefit 1: Increased number of beneficiaries with access to renewable energy in SA and Namibia	☐	☐	☐	☐	☒	☐
Co-benefit 2: Enhanced economic participation and empowerment of women	☐	☒	☐	☒	☐	☐
Co-benefit 3: Expanded employment opportunities across the green industrial value chain	☐	☒	☐	☐	☐	☐

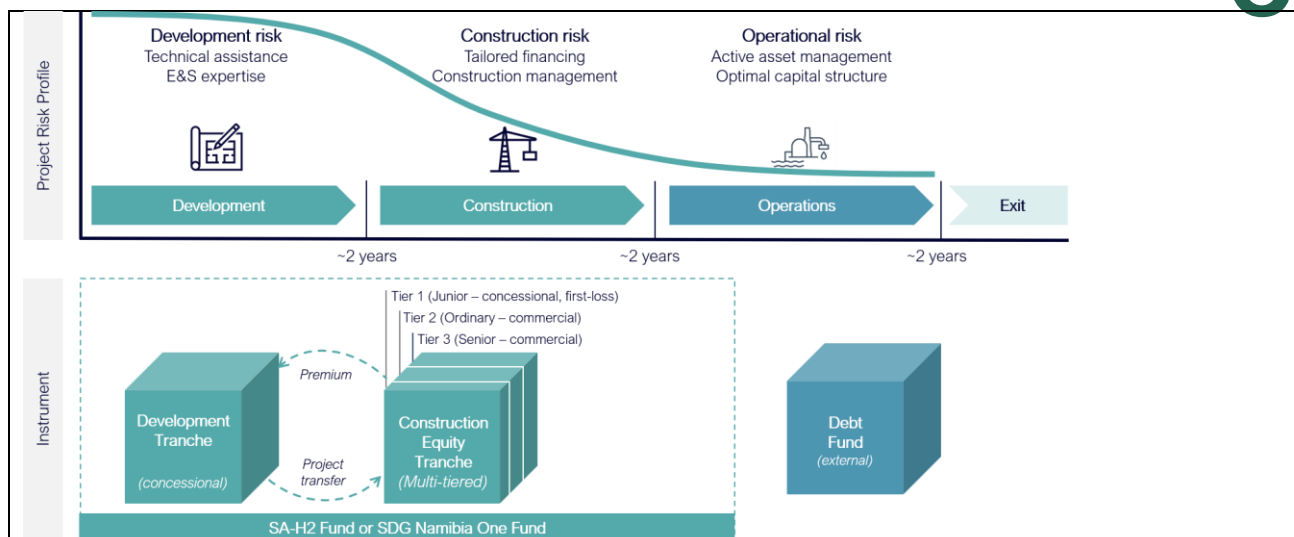
B.3. Project/programme description (max. 2500 words, approximately 5 pages)

CI3 Funds provide funding for the development and construction/operation stages of the projects through the Development Tranche (DT) and Construction Equity Tranche (CET), respectively. The DT is a unique feature which de-risks certain development-related risks of infrastructure investments. Studies suggest that roughly 70% of projects in EMDEs never move beyond the feasibility stage and this rate is even higher in Africa. Key reasons include inadequate funding for technical assessments, studies, and data sourcing; unclear or unattractive risk-return profiles; and insufficient local institutional support or capacity during critical early-stage development.⁶⁵ The DT addresses this specific challenge by providing 'development loans' to projects. These development loans are at risk of the fund and are only repaid upon graduation.

Once projects successfully complete their development phase, they 'graduate' to the construction phase where 'equity' capital from CET is injected into bankable projects to implement the construction and operation stages and successfully deliver industrial decarbonisation projects in South Africa and Namibia.

Figure 3: "Whole of Lifecycle" Blended Finance Approach

⁶⁵ RMI (2026). From Bottlenecks to Breaking Ground. How catalytic finance and smart project preparation can turn ambitious climate and development goals into investable pipelines. Available online: <https://rmi.org/resources/cop30-project-finance-preparation/>



Development Tranche (DT):

The aim of the DT is to focus on de-risking projects during the development stage and ensure that projects meet international ESG standards, secure permits while improving commercial viability and risk-return profile. The DT provides support in the form of development loans which includes funding for:

- Feasibility studies
- Technical studies
- Legal and structuring advisory
- Environmental & Social Impact Assessments (ESIAs)
- Gender assessments
- Stakeholder engagement processes

Construction Equity Tranche (CET):

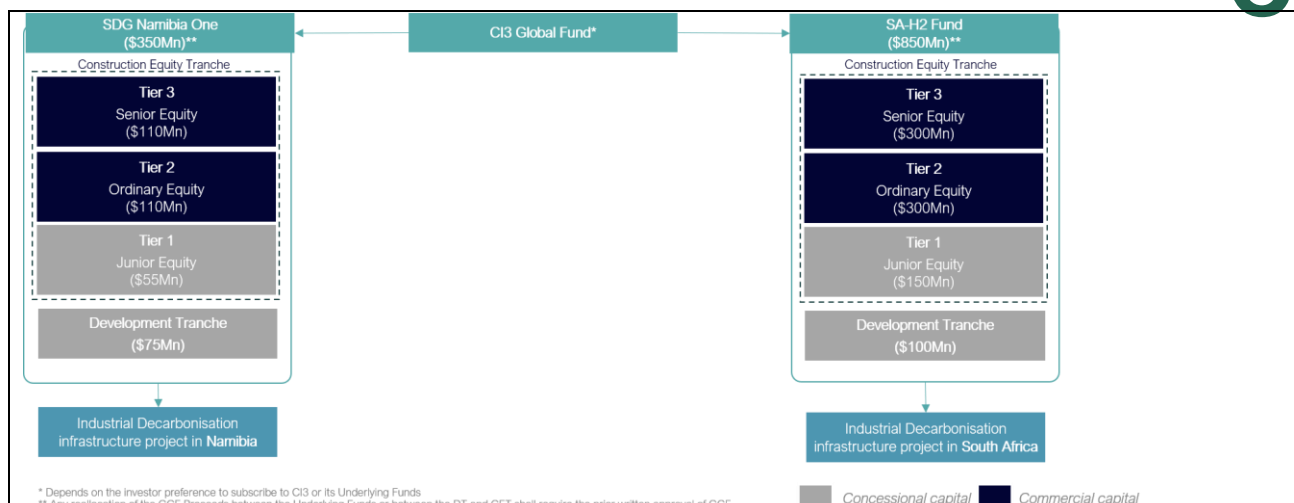
During the construction and operations stage, the equity solutions of CET seek to reduce the overall cost and time of getting projects operational by:

- Providing continuity in funding from development to construction stage without fundraising delay and mismatch in investor expectations
- Reducing construction timeline and thereby reducing the (costly) exposure period to investors,
- Reducing costs by eliminating the need for certain debt-specific costs

If the project receives equity funding from CET, the development loan provided by DT is reimbursed with a premium. This is how CFM ensures that DT, which primarily has donor funding, remains 'self-replenishing' by recycling its capital. As it is expected that not all projects successfully complete the development phase (CFM expects 2/3rd of the projects to graduate), the DT is reimbursed with a premium that compensates for losses made on unsuccessful projects. The premium paid remains subject to the default rate within the DT (but would equal 50% if the default rate does end up at a third).

The current envisaged size for SA-H2 is USD 850Mn and for SDGNO is USD 350Mn. The high-level summary of the flow of funds and breakdown of funding sizes across different tranches is outlined in the figure below.

Figure 4: Breakdown of Funding Sizes for the CI3 Funds



SIDF is expected to support a diversified and balanced portfolio of the CI3 Funds in industrial decarbonisation, enabling infrastructure and selected investments in green hydrogen and its derivatives as critical inputs in industrial process, fuels and downstream applications. The indicative portfolio mix of technology sectors is as follows:

(indicative and subject to change as the pipeline evolves)

Industrial Decarbonization and Enabling Infrastructure:

- Renewable energy (including solar, wind, run-of-river hydro, biomass, biogas, geothermal energy and energy efficiency) associated with decarbonisation of hard-to-abate industries
- Large-scale battery energy storage systems (BESS) and other energy storage solutions
- Carbon capture, utilisation and storage (CCUS) infrastructure to capture CO₂ from flue gas or process streams using solvents, sorbents, or membranes and associated CO₂ transport and storage networks.
- appliances and related infrastructure for green hydrogen and its derivatives (including mobility, transport, heating, industries, fertiliser companies);
- transportation, transmission, distribution and storage infrastructure for green hydrogen and its derivatives (including ports, shipping, storage and/or batteries, (re)conversion, transformation, re-electrification, fuel cells and pipelines)
- any other associated infrastructure and services required to facilitate the energy transition and/or the green hydrogen/power-to-X value chain.

Green Hydrogen and its derivatives:

- Electrolyser installations for the production of green hydrogen.
- Water supply and treatment facilities for electrolysis.
- Air separation units (ASUs) for oxygen co-production, where relevant.
- Balance of plant and auxiliary systems for hydrogen production, including compression, purification, and monitoring
- Grid interconnection and dedicated power lines for green hydrogen hubs.
- Industrial process conversion and retrofitting infrastructure to enable hydrogen use in sectors such as:
 - Steel (e.g., direct reduced iron with green H₂)
 - Cement (e.g., hydrogen-fired kilns and hybrid fuel systems)
 - Chemicals and fertilisers for domestic uses (e.g., green ammonia production and integration with existing assets)
- Infrastructure for green hydrogen derivatives (e.g., green ammonia, e-fuels) in Industrial processes and heating
- Heavy-duty transport and logistics decarbonization:
 - Hydrogen dual-fuel and/or fuel-cell locomotives, trucks, buses, and ships.
 - Establishment of hydrogen refuelling hubs at strategic ports, corridors, and industrial zones.
 - Integration with battery-electric mobility systems for complementary logistics decarbonization.

We expect a growing demand for large volumes of competitively priced green hydrogen in other parts of the world (especially Europe and Asia). Importantly, the large export focused projects will support economies of scale and make

efficient use of the existing infrastructure such as ports and roads bringing down the costs of green hydrogen and its derivatives. Therefore, SA-H2 and SDGNO are targeting a balance in large export-oriented green ammonia and hydrogen projects as well as local industrial applications, without relying fully on the near-term realization of such large export projects.

This positioning has been reflected in SIDF's pipeline development and deployment profile, with capital deployment shifting across sectors in line with project readiness – from delayed large export-oriented projects to a greater share of local industrial decarbonisation investments.

Components, activities and underlying (sub)activities of SIF:

Component 1: Establishment and management of Climate Investor Three and its Underlying Funds

The first component aims at establishing and raising funding for CI3, SA-H2 and SDGNO. Thereafter, it aims at managing the relevant legal entities that underpin the CI3 Funds, including the fund managers and the vehicles through which development and construction capital are deployed. This includes putting in place and maintaining all legal, fiduciary, governance, risk management, and operational arrangements required for the effective implementation.

Activity 1.1: Fundraising, establishment, and management of the Development Tranche (DT)

CFM will continue to raise donor and catalytic funding, including development loans capital and other appropriate forms of concessional finance, for the DT of the Underlying Funds. The DT will finance early-stage project development activities for industrial decarbonisation projects in hard-to-abate sectors in South Africa and Namibia. CFM will proactively engage donors, philanthropic foundations, development finance institutions, and multilateral organisations whose mandates align with climate mitigation, adaptation, just energy transition, and green industrialisation objectives. Once the DT has reached its targeted commitments, CFM will oversee and manage all affairs of the legal entity throughout the implementation period in the respective countries of domicile.

Activity 1.2: Fundraising, establishment, and management of the Construction Equity Tranches (CET)

CFM will continue to raise funding for the different tranches from commercial investors, institutional investors, DFIs, impact-oriented investors, family offices etc. for the CET of the Underlying Funds. The CET will provide construction-phase equity to projects advanced through the DT and will maintain a blended finance structure designed to improve the risk-return profile for private investors while preserving climate impact integrity. Once the targeted commitments and final closing are achieved, CFM will oversee and manage all affairs of the legal entity for the duration of the implementation period in the respective countries of domicile.

Outcome 1: Increased mobilisation of private sector finance for scaling and replication of industrial decarbonisation projects

By successfully establishing the blended finance structure of the CI3 Funds and mobilising concessional and commercial capital, CFM will engage private sector investors in industrial decarbonisation opportunities that would otherwise remain underfinanced. It does so in three main ways:

- (i) by directly mobilising private finance through a blended finance solution that makes investment in first-of-a-kind or early-market projects more attractive;
- (ii) by demonstrating that whole-of-lifecycle project financing can improve bankability and lower the cost of capital for project developers in hard-to-abate sectors; and
- (iii) by demonstrating the commercial viability of industrial decarbonisation, green industrialisation, renewable energy, and enabling water-related infrastructure projects in South Africa and Namibia.

This outcome is closely linked to the development and successful implementation of projects under Component 2 and contributes to broader market creation and replication.

Output 1: Commercial viability demonstrated

SIDF, via the CI3 Funds, will demonstrate that projects in hard-to-abate sectors can deliver risk-adjusted returns to investors while lowering the cost of capital for developers through a blended finance and whole-of-lifecycle financing approach. This output is essential for crowding in institutional capital and building a replicable investment track record.

Component 2: Development and implementation of industrial decarbonisation projects in hard-to-abate sectors in South Africa and Namibia

Activity 2.1: Development of industrial decarbonisation projects in hard-to-abate sectors

Activity 2.1.1: Identification of potential investment opportunities and initial due diligence.

CFM deal teams will originate and screen potential project opportunities across the green industrialisation value chain in South Africa and Namibia. This may include a mix of projects linked to industrial decarbonisation, green hydrogen and its derivatives, renewable energy generation and enabling infrastructure. Once a potential opportunity has been identified and sufficient preliminary information has been gathered, the case will be presented to the Underlying Fund Investment Committee (IC) for initial screening and guidance. The IC will determine whether:

- (i) the project fits within the investment mandate of the Underlying Funds;
- (ii) the project has sufficient climate rationale and commercial potential; and
- (iii) additional information, restructuring, or due diligence is required before presentation to the Underlying Fund IC for development funding.

Following screening approval, the deal team will undertake the tasks required to strengthen the project case. During this phase, the team will assess the technical, financial, legal, commercial, environmental, social, and climate dimensions of the opportunity. Initial due diligence will also be carried out on project sponsors, co-developers, offtakers, technology providers, and other key counterparties. Where necessary, the project structure will be refined to enhance bankability, reduce implementation risks, and improve alignment with the Funds' climate impact and investment criteria. The nature of E&S due diligence varies based on the risk categorization and involves document reviews, site visits, assessment of project developers' E&S awareness and capacity etc. based on which an E&S action plan is prepared. Refer to Section F for more information relating to the E&S risk assessment process.

Activity 2.1.2: Project approval by the Underlying Fund IC for the development funding

Once the initial due diligence and structuring work have been completed, the deal team will present the investment case again to the respective Underlying Fund's IC for the development stage approval. The Committee will assess whether the project is consistent with the respective fund's climate mitigation objectives, development rationale, commercial approach, and risk appetite.

For mitigation, the deal team will explain how the project's products, services, or technologies will reduce, avoid, or displace greenhouse gas emissions in hard-to-abate sectors along with the green industrialisation value chain. This may include, for example, emissions reductions through cleaner industrial processes, renewable energy substitution, green hydrogen production and use, or supply-chain decarbonisation. The proposal will outline the project's mitigation logic, climate rationale, expected greenhouse gas accounting approach, and key indicators to be monitored over time.

For physical risks assessment, the deal team should explain how physical climate risks have been considered to ensure durability and performance of mitigation investments. The deal team will describe how the project responds to observed or projected climate risks relevant to industrial operations and surrounding communities, including water stress, drought, climate variability, and other physical climate hazards. Particular attention will be given to projects where water availability, resilient energy supply, or climate-proofed infrastructure are material to sustained operation. The proposal should also clarify how the project avoids maladaptation and contributes to more climate-resilient economic development.

At this stage, the IC may also approve terms of reference for more detailed independent assessments to be carried out during the project development phase. Only after approval by the IC would a proposed investment receive DT resources to move into detailed due diligence and project development.

Activity 2.1.3: Project development and extensive due diligence

Following this IC approval, the project enters the full development phase. During this stage, CFM, supported by independent technical, legal, environmental, social, and other advisers, will undertake extensive due diligence to prepare the project for a final investment decision by the IC for construction equity funding. This phase may include, but is not limited to, stakeholder engagement, land and permitting assessments, legal structuring, engineering and design studies, market analysis, financial modelling, gender assessment, environmental and social impact assessment, and climate risk analysis etc.

Where relevant, this phase will also include assessments of industrial decarbonisation, potential water resource availability and sustainability, renewable energy integration, transmission or logistics requirements, community impacts,

workforce needs, and compliance with the CI3 Funds' E&S Requirements. All material concerns and any gaps with the CI3 E&S Requirements must be resolved (or an action plan implemented to resolve them in accordance with the requirements of the CI3 Funds Responsible Investment Code) before a project can proceed to the construction phase. For more information, refer to Section F.

Activity 2.2: Implementation (construction and operation) of industrial decarbonisation projects in hard-to-abate sectors

Activity 2.2.1: Project approval by the Underlying Fund IC for construction equity funding

Upon successful completion of the development case, the deal team will resubmit the project to the IC for the construction equity funding. This submission will include the full package of due diligence findings and all relevant technical, commercial, legal, environmental, social, gender, and climate assessments. Only after approval by the IC and following satisfactory completion of independent assessments and detailed due diligence will a proposed investment receive construction-phase equity from the CET.

The funds don't take any technology risk as investments are made only in proven technologies from known/trusted manufacturers. In addition, the projects need to have secured offtake agreements or be in advanced discussions stage. The projects are also required to have secured all the necessary contracts, permits and licenses such as EPC contracts and OEM maintenance contracts. For E&S requirements, prior to seeking approval for equity funding, independent due diligence will be conducted by suitably qualified experts with a track record and knowledge of all applicable legal and other requirements to satisfactorily assess the project's alignment with CI3's E&S requirements as set out in the CI3 Environmental and Social Management System. The ESMS for CI3 serves as the ESMS for SIDF as well. For more information, refer to Section F.

Activity 2.2.2: Project construction

Following the IC approval, the projects will repay the development financing provided by the DT, including any premium required to preserve the revolvability of the development capital, and will commit equity to finance the construction phase. During construction, CFM will take active asset management approach, actively overseeing and managing implementation, including through board representation, shareholder oversight, or participation in project-level governance bodies, as appropriate. This oversight will support timely project delivery, value creation, E&S compliance, and effective risk management.

Activity 2.2.3: Project operation, refinancing, and exit

Once construction is completed, the project will enter operations. After the project has demonstrated stable performance in operational, climate impact, and cash flow terms, CFM will seek to optimise the capital structure, including through project-level debt refinancing where appropriate.

B.4. Implementation arrangements (max. 1500 words, approximately 3 pages plus diagrams)

TRANSACTION OVERVIEW

With a GCF participation of USD 140Mn via SIDF, the prospective fund size of the CI3 Funds is estimated at USD 1200Mn, comprising USD 175Mn for the DT and USD 1025Mn for the CET. GCF participation would enable the CI3 Funds to scale significantly and provide scarce, highly additional concessional capital to the structure, to crowd in further private sector participation with a mobilisation ratio of 1:4 and even higher at the project level. To operationalise this, CI3 acts as a central fund-of-funds and adopts a national-level approach across South Africa and Namibia, implemented through two Underlying Funds: the SA-H2 Fund ("SA-H2") for South Africa and the SDG Namibia One Fund ("SDGNO") for Namibia. Out of USD 140Mn, SA-H2 will receive USD 84Mn as Tier 1 of the CET. SDGNO will receive a total of USD 56Mn - USD 15Mn for the DT and USD 41Mn as Tier 1 of the CET. The aggregate allocation across CI3 Funds to the CET shall therefore amount up to USD 125Mn while up to USD 15Mn shall be allocated to the DT of SDGNO Fund. Any reallocation of the GCF Proceeds between the Underlying Funds or between the DT and CET shall require the prior written approval of GCF.

ROLES AND RESPONSIBILITIES:

Roles and Responsibility of DBSA as the AE:

- Policy alignment: Passing down of relevant GCF policies to the Fund level and portfolio company-level.
- FAA compliance: Monitor EE's compliance with FAA, including retro-active policy compliance to the GCF's policies,
- Monitoring and Reporting: Analyzing quarterly reports and annual performance reports
- Financial Management: Maintaining GCF accounts and Disbursing GCF (equity) proceeds

- Governance: Representing the GCF on Donors/Investors Meetings and Advisory Board of CI3 and Underlying Funds
- Evaluation: Assessing achievement of SIDF, targeted outcomes, and results as per the log-frame, while commissioning independent interim and final evaluation reports as per GCF's requirements.

Table 2: Roles and Responsibility of the EEs:

EEs	Roles and Responsibility
• Coöperatief CI3 Global Fund U.A. (CI3 Global Fund or CI3)	Operates as a fund-of-funds with CFM EU BV. as the Statutory Director, participating in establishing the Underlying Funds and their respective Fund Managers.
• SDG Namibia One Fund Trust (SDGNO Fund or SDGNO) • SA-H2 Fund (or SA-H2)	Funds established for the sole purposes of financing the development, construction and operation stage of industrial decarbonisation projects in South Africa and Namibia
• CFM EU BV (CI3 Global Statutory Director or Statutory Director) • SA-H2 GP (Pty) Ltd (SA-H2 GP)	The Statutory Directors and General Partners are responsible for overseeing fund governance and appointing the fund managers on behalf of the fund.
• Climate Fund Managers B.V. (CFM or the Manager) • SA-H2 Fund Managers (Pty) Ltd (SA-H2 Manager) • Namibia Hydrogen Fund Managers (SDGNO Manager)	Fund Managers of the respective funds are responsible for pipeline origination, project development, transaction execution, portfolio management, investment monitoring and day-to-day management of the CI3 Funds

Roles and Responsibilities of the Strategic Partners:

Environmental Investment Fund of Namibia (EIF) is CFM's implementation partner in Namibia. EIF's main contribution will be to provide strategic insight, contextual expertise and to facilitate stakeholder engagement in Namibia through participation in boards and advisory structures. CFM, as the experienced and primary executing entity, remains responsible for all core fund management functions, including any reporting, ensuring consistency and accountability across investment activities.

Namibia Hydrogen Fund Managers (SDGNO Manager) was established by CFM EU and the Environmental Investment Fund of Namibia ("EIF") and incorporated in the Netherlands.

Invest International: Invest international is one of the first backers of the CI3 and has provided EUR 90Mn in commitments to CI3 Development and Construction Equity Tranche. CFM EU B.V. is owned by Climate Fund Managers B.V. ("CFM") and Invest International Investment Management B.V.

Experience of the Involved Parties:

DBSA: Since its accreditation by GCF in 2016, DBSA has acted as AE and EE on several programmes including the DBSA Climate Finance Facility (FP098 - 2018), the Embedded Generation Investment Programme (FP106 - 2019) and the Climate Change Resilience through South Africa's Water Reuse Programme (FP209 - 2023), demonstrating strong financial controls and reporting systems. DBSA teams have extensive experience in managing complex multi-country programmes, providing project preparation support to develop bankable infrastructure projects and providing implementation capital to large scale infrastructure projects across Africa. In implementing GCF funded activities, DBSA ensures compliance with international fiduciary standards and has demonstrated its ability to manage financial transactions and comply with fiduciary standards. DBSA will continue to play a critical role in catalysing public and private sector investment in green industrialisation in SA and Namibia through its accreditation with the GCF. DBSA has extensive experience in renewable energy in South Africa through its pioneering role of assisting the government in setting up the Independent Power Producer Procurement Programme Offices that subsequently implemented the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).

CFM: Climate Fund Managers (CFM) is currently the Executing Entity for FP099 Climate Investor One (approved by the GCF Board in Bahrain in 2018), FP190 Climate Investor Two (approved by the GCF Board in Seoul in 2022) and FP223 Project GAIA (approved by the GCF board in Tbilisi, Georgia in 2023). Both FP099 and FP190 are Programmatic Approaches and have been successful in efficient and effective deployment of GCF proceeds towards the development and construction of renewable energy and water and sanitation infrastructure in Latin America, Asia and Africa. Both

Funding Proposals had FMO, the Dutch Development Bank, as its AE. FP223 has MUFG Bank as the AE. CFM also got accredited to the GCF at the GCF Board B.45 in Dushanbe, July 2026 (including large projects up to Category I-1).

EIF: EIF is accredited to GCF in decision B.10/06, paragraph (c), in July 2015 as Direct Accredited Entity (DAE) and subsequently re-accredited in the year 2021. The EIF is accredited under projects/programme activities of Micro size (up to and including USD 10Mn). The EIF has four GCF-approved funded activities (FP023, FP024, SAP001 and SAP006) which are all adaptation projects in drought-stricken rural communities in Namibia. The total approved funding for EIF projects is USD 39.1Mn (comprising USD 37.7Mn in GCF financing and USD 1.4Mn in co-financing).

Invest International: Invest International is a joint venture between the Dutch government (Dutch Ministry of Finance) and FMO, officially established on July 28, 2021, with the purpose of supporting Dutch companies in financing innovative solutions that contribute to the Sustainable Development Goals.

Organisational structure and team composition:

The CI3 Funds' team structure is built around a locally anchored fund management model in South Africa and Namibia, led by dedicated fund CEOs responsible for day-to-day management and strategic leadership of country-level vehicles. The core investment teams are established in-country and are supported by CFM's central Corporate and Investment Services, which provides shared expertise across functions such as HR, governance, marketing, structuring and valuations, finance, investor relations etc. Recruitment remains ongoing, with additional roles to be filled as the fund progresses toward first close, reflecting a phased scaling of operational capacity.

At the functional level, the team composition combines investment, technical, and ESG capabilities required for industrial decarbonisation and green hydrogen projects. The organisational structure includes roles such as CEO, Investment Director, Senior Investment Manager, Investment Associates and Analysts, as well as specialised functions including ESG Manager and Technical Manager. This multidisciplinary setup enables the CI3 Funds to originate, develop, and manage projects across the full lifecycle, while leveraging external partners and advisors where needed.

B.5. Justification for GCF funding request (max. 1000 words, approximately 2 pages)

Both South Africa and Namibia face significant investment needs for industrial decarbonisation underscoring the catalytic role of SIDF. In South Africa, decarbonising heavy industry requires large-scale capital deployment- to the order of ZAR 792-948Bn⁶⁶. Namibia similarly requires substantial investment — estimated at USD 40Bn by 2050 — for green industrial projects.⁶⁷ At the same time, according to OECD 2025 analysis, between 2000 and 2023, only USD 1.5Bn or less than 1% of total mitigation-related international development finance went to industrial decarbonisation in EMDEs. This led to mobilisation of USD 2Bn in private finance in these sectors. OECD suggests that additional USD 5Bn in grants and USD 3Bn in concessional finance will be needed for industrial decarbonisation in EMDEs from international public finance providers.⁶⁸

Within this context, SIDF's design leverages the increasingly scarce yet highly additional GCF contribution to provide "whole of lifecycle" financing to industrial decarbonisation projects. It does so in the following ways:

- **Concessionality needed at project development stage for targeted de-risking:** A part of the funding from GCF is deployed as 'development loans' via the Development Tranche, and this plays a key role in de-risking the projects. It will fund, *inter alia*, project due diligence; FEED studies; environmental and social impact assessment studies; permitting and licensing; transaction structuring; action as may be required to align with GCF's best practices for country ownership; impact analysis and forecasting; gender analysis and preparation of action plans; and any other studies that may be required to prepare a project for final investment decision (while remaining compliant to international standards). This funding addresses a critical market failure that arises during the pre-financial-close phase of industrial decarbonisation projects. Bringing large-scale industrial decarbonisation projects to an investment-ready stage requires significant expenditure on technical, environmental, social, commercial and legal activities long before a project can demonstrate bankability or secure committed financing. At this stage, projects face substantial uncertainty regarding technological feasibility, permitting outcomes, infrastructure access, offtake arrangements and financing availability. Because there are no predictable cash flows against which these activities

⁶⁶ Climate Policy Initiative (2025). South African Climate Finance Landscape 2025. Presidential Climate Commission, South Africa.

Available online: <https://www.climatepolicyinitiative.org/publication/the-south-african-climate-finance-landscape-2025/>

⁶⁷ GH2 Namibia. (2022). *Green industrialisation blueprint*. Namibia Green Hydrogen Council. Available online: <https://gh2namibia.com>

⁶⁸ OECD 2025. Support for decarbonising heavy industry in emerging markets and developing economies. Available online: https://www.oecd.org/en/publications/support-for-decarbonising-heavy-industry-in-emerging-markets-and-developing-economies_7787cde0-en.html

can be financed and because financial close remains uncertain, commercial lenders and investors are generally unwilling to provide capital for these activities. The development loans provided by SIDF are intended to overcome a temporary financing gap rather than provide a permanent subsidy. If and when a project under development graduates to the CET, development loans are reimbursed with a premium and are then recycled into new projects, enabling the same GCF capital to support development of multiple industrial decarbonisation projects. The premium is structured in a manner that ensures the Development Tranche remains whole and to ensure the GCF's proceeds are repaid at the end of the project's lifetime.

- **Concessionality needed at construction stage to address markets and unlock commercial investments:** Nascent sectors such as industrial decarbonisation demand large-scale patient capital at rates which can still compete with traditional (carbon-intensive) technologies. Although project risk profiles may improve as demand for low-carbon products and renewable energy increases and pressure mounts from transitions-risk perspective, a persistent financing gap exists for large-scale infrastructure projects. Such projects face several challenges in attracting commercial investments such as:
 - Upfront capital: The need for upfront capital rises significantly as projects move from development into construction but public finance for grants and subsidies is increasingly scarce.
 - Construction stage-risks and longer lead times: Projects in emerging markets face elevated construction-stage risks, including cost overruns, delays, relatory uncertainty, supply-chain constraints, limited contractor depth, currency risk, and offtaker or counterparty concerns. These risks can materially affect commercial viability beyond the risk appetite of traditional commercial investors. Addressing this often requires substantial construction-stage equity or risk capital before the projects are sufficiently de-risked for senior lenders.
 - First-of-a-kind industrial risk: Many eligible projects represent early commercial applications of low-carbon industrial production pathways. These investments generate significant demonstration, learning and market-creation benefits that extend beyond the project itself. At the same time, they face first-of-a-kind technology and integration risks, uncertain demand, long investment horizons and limited operating precedents. Conventional lenders and institutional investors generally participate in such projects only after these risks have been substantially reduced. As a result, without concessional finance, such projects are delayed, reduced in scope or prevented from reaching operations stage. In the absence of operating evidence risks are sustained for subsequent investments and investment case further weakens.
- **High cost of capital:** The industrial decarbonisation projects in emerging markets face high cost of capital. An OECD study in 2023 found that the relatively high cost of capital remains a key constraint on the cost-competitiveness of green hydrogen, as is the case for many low-carbon technologies required to achieve net-zero emissions.⁶⁹ This largely reflects elevated investment risks, including uncertainties related to offtake (price and volume), country conditions, liquidity, technology maturity, and market pricing dynamics. As a result, a number of projects initially expected to become operational in 2022-2023 have faced delays. The study suggests that an increase in the cost of capital (or weighted average cost of capital / WACC) from 10% to 20% can lead to a substantial increase of up to 73% in the Levelized Cost of Hydrogen (LCOH).⁷⁰ This in turn increases the cost of industrial decarbonisation and climate mitigation in general.

B.6. Exit strategy (max. 500 words, approximately 1 page)

FINANCIAL SUSTAINABILITY AND EXIT STRATEGY

Each investment supported under the CI3 Funds is structured to be commercially viable and self-sustaining in the long term, ensuring the programme's impact endures after the involvement ends. The three principles of commercial viability are as follows:

- **Self-Sustainability and Diversified Revenue Streams:** Strong, long-term revenue models to generate sufficient income and independently is a pre-requisite ensuring longevity beyond exit. Finding multiple revenue streams or end uses for green products is highly encouraged.
- **Planned Exits:** A clear exit plan is developed to attract follow-on private investors, refinancing and recycling capital.

⁶⁹ Lee, M. and D. Saygin (2023), "Financing cost impacts on cost competitiveness of green hydrogen in emerging and developing economies", *OECD Environment Working Papers*. Available online: <https://doi.org/10.1787/15b16fc3-en>

⁷⁰ WACC represents the minimum return a project must generate to be considered investable, while the internal rate of return (IRR) reflects the actual return generated by the project based on its expected revenues and cash flows. Where the WACC is too high relative to the IRR, the project will struggle to attract investment.

- **Market-Driven Adaptability:** By pivoting and innovating, projects can stay competitive and financially sound well into the future.

Expected buyers after exit include large strategics, large institutional, large PE funds or buy-outs structures by co-shareholders. If equity sales seem unlikely, self-liquidating investments may be structured (e.g. mezzanine) that provide a full exit through project/investment distributions within the Fund life.

REPLICABILITY AND SCALABILITY

The CI3 Funds are designed for replicability, scalability and long-term impact at the global, national, and sectoral levels. It will aim to set a precedent for other development finance institutions and private investors to replicate in new markets. This approach removes critical barriers (e.g. financing gaps and high upfront risks) by ensuring projects progress smoothly from concept to full operation, with a clear path to continue beyond the CI3 Funds's exit. Evidence on technology performance, construction costs, operational integration, offtake, safeguards and risk allocation can reduce uncertainty for subsequent investments. This can support replication across industrial sectors, improve risk pricing and enable later projects to mobilise a greater share of commercial and institutional capital.

According to a BII-BCG report on 'Scaling Blended Finance: Practical tools for Blended Finance Fund design', a three-tier equity fund design with junior, mezzanine and senior tranche have high mobilisation potential at scale to channelize institutional investment into high risk, new technologies in emerging markets and developing countries.⁷¹

The CI3 Funds also serve as a clear indication of replicability and mobilisation potential of the 'Climate Investor' model. Since the launch of Climate Investor One (CI1) in 2017, the model has been adapted and expanded through subsequent vehicles, including Climate Investor Two (CI2), Climate Investor Three (CI3), and the GAIA Climate Loan Fund, demonstrating its ability to mobilise capital for different climate sectors while maintaining the same core structuring principles. Credible industry associations like International Coalition for Sustainable Infrastructure have cited the 'Climate Investor' model to be replicable for increasing capital flows towards climate infrastructure sectors.⁷²

Specifically, the elements that can be replicated include: (i) the three-tier blended finance structure combining concessional, mezzanine and commercial capital; (ii) the project preparation and development methodology used to bring early-stage climate infrastructure projects to bankability; (iii) standardised contractual, governance, ESG and impact-management frameworks; and (iv) the value-chain approach that identifies and addresses bottlenecks preventing private investment in emerging sectors. The Climate Investor model therefore provides a repeatable framework that can be applied to other industrial decarbonisation sectors, technologies and EMDE markets. In the context of CI3, lessons generated through project development, transaction structuring, risk allocation, offtake arrangements, hydrogen ecosystem development, and policy engagement will be captured and disseminated through case studies, knowledge products, stakeholder engagement, and collaboration with local developers, contractors and other financial institutions. These lessons can inform the development of similar industrial decarbonisation and green hydrogen investment platforms in other EMDEs facing comparable barriers to private investment.

FINANCING INFORMATION

C.1. Total financing

(a) Requested GCF funding (i + ii + iii + iv + v + vi + vii)	Total amount		Currency	
	140		million USD (\$)	
GCF financial instrument	Amount	Tenor	Grace period	Pricing
(i) Senior loans	Enter amount	Enter years	Enter years	Enter %
(ii) Subordinated loans	Enter amount	Enter years	Enter years	Enter %

⁷¹ Scaling Blended Finance II: Optimising Catalytic Capital in Blended Finance Funds (2026), Boston Consulting Group (BCG). Available online: <https://www.bcg.com/publications/2025/scaling-blended-finance-practical-tools-for-blended-finance-fund-design>

⁷² Climate Investor Two: Resilient Infrastructure Case Study (2023), Coalition for Climate Resilient Investment (CCRI). Available online: <https://sustainability-coalition.org/case-study/climate-investor-two/>

(iii) Equity	140,000,000				Enter		
(iv) Guarantees	Enter amount	<u>Enter years</u>	Enter years	Enter %			
(v) Reimbursable grants	Enter amount	Enter years	Enter years	Enter %			
(vi) Grants	Enter amount	Enter years	Enter years	Enter %			
(vii) Results-based payments	Enter amount	Enter years	Enter years	Enter %			
(b) Co-financing information	Total amount	Currency					
	1060	million USD (\$)					
Name of institution	Financial instrument	Amount	Currency	Tenor & grace	Pricing	Seniority	
The Development Tranche Donors	<u>Reimbursable Grants</u>	<u>160</u>	<u>million USD (\$)</u>	Enter years	Enter %	<u>junior</u>	
Tier 1 investors	<u>Equity</u>	<u>80</u>	<u>million USD (\$)</u>	Enter years	Enter %	<u>junior</u>	
Tier 2 investors	<u>Equity</u>	<u>410</u>	<u>million USD (\$)</u>	Enter years	Enter %	<u>senior</u>	
Tier 3 investors	<u>Equity</u>	<u>410</u>	<u>million USD (\$)</u>	Enter years	Enter %	<u>senior</u>	
(c) Total financing (c) = (a)+(b)	Amount	Currency					
	<u>1200</u>	million USD (\$)					
(d) Other financing arrangements and contributions (max. 250 words, approximately 0.5 page)	CFM aims to raise up to USD 1,200Mn in funding for the CI3 Funds. This consists of USD 175Mn in development loans for DT and USD 1,025Mn in funding for CET. The GCF commitment will contribute USD 15Mn to the DT and USD 125Mn to the Tier 1 of the CET. As explained in section B, the CET is a structured fund with three different tiers with different investors that have different risk/return profiles. The first tier, or 'Tier 1', constitutes as junior equity that has been provided by Donors and arguably the most additional. The second tier, or 'Tier 2', constitutes of impact investors and DFIs. The third most senior tier, or 'Tier 3', constitutes of institutional and private investors. The ratio between the three tiers is set at 20/40/40. Whenever one or two out of the three tiers exceed that ratio that capital remains 'locked'. The total 'unlocked' commitments equal to the maximum value for which the 20/40/40 can be preserved. This implies that USD 125Mn of GCF's Tier 1 capital will unlock USD 250Mn in Tier 2 and USD 250Mn in Tier 3 capital, once it's raised. GCF participation in the Tier 1 will therefore mobilise a large portion of private finance. The Dutch Government (through Invest International) and the European Commission (through FMO) have already committed to CI3 and its Underlying Funds. The Underlying Funds have additional regional backing from Industrial Development Corporation of South Africa, and the Public Investment Corporation, acting on behalf of the Government Employees Pension Fund. The Manager is currently still fundraising and therefore unable to disclose the names of all prospective limited partners in this Funding Proposal. In case either of the Underlying Funds fails to raise sufficient funding in the Tier 2/Tier 3 of their respective tranches, CFM and the AE will look to mitigate the consequences by subscribing the GCFs' proceeds to the other respective Underlying Fund (while still ensuring the actual Sub-Projects are within both Namibia and South Africa).						
C.2. Financing by component							
Component	Output	Indicative cost	GCF financing		Co-financing		
			Amount	Financial Instrument	Amount	Financial Instrument	Name of Institutions

C

		million USD (\$)	million USD (\$)		million USD (\$)		
Establishment and management of the CI3 Funds	Fundraising, establishment and management of the Development and Construction Equity Tranche	0	0	0	0	0	0
Development and implementation of industrial decarbonisation projects in hard-to-abate sectors in developing countries	Development of industrial decarbonisation projects in hard-to-abate sectors	175	15	Development Loans	160	Development Loans	<u>Donors / T1 investors -</u>
	Implementation (construction and operation) of industrial decarbonisation projects in hard-to-abate sectors	1025	125	Equity	900	Equity	<u>Tier 1, tier 2, and tier 3 investors</u>
Indicative total cost (USD)		<u>1200</u>	<u>140</u>		<u>1060</u>		

C.3 Capacity building and technology development/transfer (max. 250 words, approximately 0.5 page)

C.3.1 Does GCF funding finance capacity building activities?

Yes ☒ No ☐

C.3.2. Does GCF funding finance technology development/transfer?

Yes ☒ No ☐

SIDF via the CI3 Funds may, where appropriate, back companies with relevant technologies or business models that have been developed in other markets, including both developed and developing economies. The objective would be to support the adaptation and deployment of these solutions in the target countries, while enabling knowledge transfer through partnerships with local developers, service providers and other in-country stakeholders. CFM will also seek to engage local financial institutions, including DAEs where relevant, to support refinancing options once projects are sufficiently de-risked and operational. Please note that the Environmental Investment Fund of Namibia, a national entity and an environmental fund located in Namibia, is already a strategic partner to the SIDF.

Capacity-building support may also be provided through the Development Tranche. GCF proceeds allocated to this tranche can help finance project-preparation and enabling activities, including feasibility studies, gender assessments, environmental and social impact assessments and action plans, and other technical or institutional support required to advance projects toward bankability.

EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA

D.1. Impact potential (max. 500 words, approximately 1 page)

SIDF, via its participation in the CI3 Funds, aims to catalyse low-emission economic growth by accelerating the deployment of green hydrogen, renewable energy, and industrial decarbonisation solutions in hard-to-abate sectors in South Africa and Namibia. By demonstrating commercially viable investment models across these value chains, the fund seeks to mobilise private sector capital at scale and support a structural transition towards low-carbon industrial development.

SIDF, via its participation in the CI3 Funds, is expected to reduce over 24.2 million tonnes of CO₂ equivalent over its lifespan, contributing directly to GCF Mitigation Core Indicator 1. It will deliver substantial energy savings of 359 GWh per year (Indicator 1.1), deploy energy storage capacity of 117 MW (Indicator 1.2), install 1.52 GW of renewable energy capacity (Indicator 1.3) and generate 53,900 GWh of renewable energy (Indicator 1.4). Overall, 114,300 people are expected to gain improved access to clean energy (Indicator 2) and ~3200 jobs are expected to be created. The Facility will contribute to enhanced economic participation and empowerment of women and support expanded employment opportunities across the green industrial value chain. Consequently, it advances multiple UN Sustainable Development Goals (SDGs) through inclusive growth. It also supports the adoption of innovative technologies and practices by building local capacity in emerging green industries (Core Indicator 6 and 8).

D.2. Paradigm shift potential (max. 500 words, approximately 1 page)

SIDF is designed to catalyse a systemic transformation in industrial decarbonisation financing by addressing structural barriers that have historically constrained investment in hard-to-abate sectors across emerging markets. Despite the critical role of industry in reducing global emissions, investment flows into industrial decarbonisation remain limited. At the same time, current financing models have proven insufficient to bridge the significant investment gap required to achieve net zero, particularly in green hydrogen and related infrastructure.

SIDF introduces a paradigm shift via the CI3 Funds by repositioning climate finance from a project-by-project or export-oriented approach toward a systemic industrial transition platform. SIDF addresses the structural gaps by targeting the intersection of industrial decarbonisation, green hydrogen, and emerging markets, three areas that are currently underserved but critical for global climate outcomes. Emerging markets are expected to account for a significant share of future emissions growth yet also offer some of the lowest-cost abatement opportunities due to abundant renewable resources. SIDF has ability to absorb transition and market risks in these emerging markets that are not currently financeable through commercial markets alone, rather than merely reducing the cost of capital. These include construction-stage risks, operational uncertainties, and market creation barriers associated with first-of-a-kind technologies such as green hydrogen-based steel and low-carbon fertilisers. By deploying GCF's concessional capital in a targeted manner, CI3 enables projects to cross the critical financing gap between concept and operational stabilisation, thereby crowding in private capital at scale.

The paradigm shift lies in CI3's ability to move beyond isolated project financing toward a programmatic, market-creation, ecosystem-building approach. The diversified portfolio approach of the CI3 Funds create a streamlined way for industrial decarbonisation which require simultaneous investments across generation, production, transport, and end-use infrastructure. By structuring investments across upstream, midstream, and downstream segments, the CI3 Funds enable the development of integrated industrial ecosystems rather than fragmented assets. This approach reduces systemic risk, unlocks economies of scale, and accelerates market formation for nascent technologies. The CI3 Funds do so through learning and replicability of several elements such as:

- (i) demonstrating a blended finance model tailored to high-risk EMDE contexts within niche sectors and geographies,
- (ii) supporting projects aligned with national strategies (e.g., South Africa and Namibia hydrogen strategies), and
- (iii) enabling knowledge transfer and standard setting across the hydrogen value chain (including financing structures, infrastructure integration, and industrial applications).

Table 1 in Section B.1 illustrated how the baseline project scenario and measurement evidence can be defined for key decarbonisation pathways that GCF will be supporting. As outlined, the aim of the diversified portfolio is to drive systemic, rather than incremental, decarbonisation of South Africa and Namibia's industrial base. Rather than treating each sector in isolation, the pathways are structured to reinforce one another: green hydrogen production, enabled by dedicated renewable power for existing industrial users, provides the low-carbon feedstock required to shift iron and steel away from coal-fired blast furnace-basic oxygen furnace routes, and to convert chemicals, fertiliser, and methanol production away from fossil-derived hydrogen. Industrial energy efficiency measures lower the baseline demand these renewable systems must serve, while investment in enabling infrastructure — transmission and distribution upgrades, storage, ports, and pipelines — provides the shared backbone without which none of the individual sector transitions can scale.

Importantly, CI3 Funds embed country ownership and domestic value creation in its design. The part of the facility caters to domestic offtake, industrial electrification, and local manufacturing, ensuring that investments contribute to structural economic transformation rather than only serving external markets. It strengthens domestic capability by building specialist skills among sponsors, advisers, contractors, suppliers, vendors and local financial institutions. Investments across

complementary sectors can support shared infrastructure and supply chains: renewable generation and storage can serve industrial users, while hydrogen can be used in the production of ammonia, green iron and synthetic fuels. Shared transport, water and port infrastructure may also support multiple projects are geographically and technically aligned.

SIDF is also positioned within a rapidly evolving landscape of climate finance initiatives targeting industrial decarbonisation and is designed to operate in a highly complementary and coherent manner alongside existing global and country-level programmes to contribute to a paradigm shift. The Facility aligns closely with the GCF's 2024-2027 strategic priorities, particularly in advancing low-emission, climate-resilient infrastructure, strengthening country-driven planning, and deploying systemic de-risking approaches to unlock private investment. At the country level, SIDF builds directly on national frameworks such as South Africa's Just Energy Transition Investment Plan (JETP) and Namibia's green industrialisation strategies by translating policy ambition into bankable, private sector-led investments, thereby complementing public financing commitments with scalable commercial capital mobilisation. In this context, JETP, focused largely on accelerating the phase-down of coal and enabling a broader energy transition, creates an enabling policy and infrastructure backbone, while SIDF targets the next layer of transition by decarbonising hard-to-abate industrial value chains and associated enabling infrastructure.

At the global level, SIDF is coherent with, and builds upon, emerging concessional finance initiatives such as the Climate Investment Fund's (CIF) USD 1Bn Industry Decarbonization Investment Program, which represents one of the first dedicated efforts to address industrial emissions in developing economies. South Africa and Namibia have both been identified as front-runner countries under this programme, with Namibia invited to develop a national investment plan of up to USD 250Mn focused on green ammonia, steel, and shipping value chains, and South Africa advancing a parallel industrial transformation agenda. SIDF complements these initiatives by providing an implementation platform capable of deploying blended finance across the full project lifecycle, from development through construction, thereby addressing critical financing gaps such as early-stage risk capital, long development timelines, and limited availability of patient capital that continue to constrain private investment.

D.3. Sustainable development (max. 500 words, approximately 1 page)

SIDF is designed to generate substantial co-benefits across environmental, social, and economic dimensions, aligned with the Sustainable Development Goals (SDGs), while supporting a just and inclusive industrial transition in Southern Africa. The Facility links climate mitigation with industrial transformation, domestic value creation, and country-owned development priorities, thereby reinforcing SDG alignment.

SIDF will support sustainable development by unlocking co-benefits including:

- Direct and indirect beneficiaries from access to renewable energy for grid-connected population.
- Economic participation and empowerment of women through targeted gender-responsive measures and improved access to reliable water resources and electricity.
- Expanded employment opportunities across the green industrial value chain and direct job creation.

SIDF supports delivery of the following SDGs:

- Gender Equality (SDG 5) - by implementing gender action plans and other gender-responsive measures as a core commitment of every Sub-project.
- Affordable and Clean Energy (SDG 7) - by expanding renewable energy capacity and generation.
- Decent Work and Economic Growth (SDG 8) - by creating green jobs and decarbonizing hard-to-abate sectors.
- Industry, Innovation, and Infrastructure (SDG 9) - by upgrading and retrofitting existing industrial facilities with greater adoption of low-emission energy, technologies, appliances and processes.
- Climate Action (SDG 13) - by supporting host countries in taking action to address climate change as part of their NDCs
- Partnerships for the Goals (SDG 17) - by supporting domestic skills development through partnerships with local developers, sponsors, suppliers and financial institutions.

D.4. Needs of recipient (max. 500 words, approximately 1 page)

The target countries, primarily Namibia and South Africa within the Southern Africa region, face a combination of climate vulnerability, structural economic constraints, and limited access to appropriate financing, which together constrain their ability to pursue low-carbon industrial development pathways. SIDF is designed to address these interlinked challenges through a targeted programmatic industrial transition approach.

Vulnerability of the country

The ND-GAIN Index ranks South Africa and Namibia as highly vulnerable to physical climate risks, primarily due to their reliance on climate-sensitive sectors, limited water resources and coal-dependent energy systems. Physical climate risks such as water scarcity and drought, rising temperatures and extreme heat, intense rainfall and flooding, and changing atmospheric condition can undermine the reliability, bankability and mitigation performance of long-lived industrial decarbonisation assets. The transition risks of policy and market pressures for decarbonizing industry are also already

materializing in SIDF countries. Section B.1 and the Annex 2 includes additional information on the impacts of climate change in South Africa and Namibia including physical and transition risks. However, a detailed understanding of the needs of specific populations will only be possible at the project level when jurisdiction and catchment area are known at project-level. More information on the socio-economic benefits of the CI3 Funds is provided in Section B.2 (a). Theory of Change

Absence of alternate sources of financing:

Namibia's NDC has estimated a total cost of implementation at approximately USD 5.33Bn by 2030, including USD 3.61Bn for mitigation measures. The Green Industrialisation Blueprint identifies a need for ~USD 40Bn in public and blended capital to develop shared infrastructure that enables green industrial projects. These investments would likely be phased through 2030-2050; they are crucial to attract private-sector projects and to ensure domestic benefits (e.g. energy access) alongside export-oriented industry. In South Africa, a study by National Business Initiative suggests that ~ZAR 950Bn would be required for the transition of SA's hard-to-abate manufacturing sector – iron, steel, chemicals and mining- to move away from emission-intensive practices. A recent study by Climate Policy Initiative and Presidential Climate Commission suggests that, even if South Africa is mobilising climate finance at scale, but current flows are below needs. Meeting NDC and net-zero targets will require at least two to threefold increase in current climate finance in SA, with estimated needs reaching up to ZAR 499Bn per year.⁷³

OECD 2025 analysis suggests that, so far, international public finance aimed at industrial decarbonisation in EMDEs has also been limited. Most funding has instead supported other clean energy technologies like renewable energy generation. From 2000 to 2023, less than 1% of all mitigation finance from international public sources- just USD 1.5Bn- went to the hard-to-abate industrial sectors- steel, cement and chemicals. This cumulative amount is smaller than the investment needed for one typical greenfield steel plant with near-zero emission breakthrough technology, such as hydrogen-based direct reduced iron (DRI) production or carbon capture use and storage (CCUS). This public finance also mobilized only USD 2Bn in private finance in these sectors- between 2012 and 2023.⁷⁴ As per the OECD analysis, USD 11Bn in grants and in concessional finance will be needed for industrial decarbonisation in EMDEs from international public finance providers.

D.5. Country ownership (max. 500 words, approximately 1 page)

Alignment with the Country's NDCs and Climate Priorities:

South Africa exemplifies country ownership in reducing heavy-industry emissions. Its updated 2025 NDC commits to an annual GHG emissions to be in a range from 320-380 Mt CO₂-eq in 2035. South Africa's Low-Emission Development Strategy (2020) sets a goal of net zero by 2050. Achieving these targets depends heavily on mitigation of hard-to-abate industrial sectors. Industry is the largest end-use consumer of energy in South Africa (38%) and many industrial process including steelmaking, cement and chemicals still largely depend on fossil fuels for energy (~50%).⁷⁵ Industrial transformation is therefore indispensable: without deep decarbonisation of heavy industry, South Africa cannot meet its 2035 NDC or 2050 net-zero ambition. To meet this, South Africa has developed a comprehensive policy ecosystem including the Just Energy Transition Partnership (JETP), Hydrogen Society Roadmap, and Low Emissions Development Strategy etc., which integrates industrial decarbonisation with broader economic and social objectives.

Namibia's Updated NDC and the Long-Term Low-Emission Development Strategy (LT-LEDS) aims to reduce emissions by about 24% below business-as-usual by 2030, conditional on international support, and by ~91% by 2050.⁷⁶ Energy along with Industrial Processes and Product Use (IPPU) in heavy industrial sectors such as steel, cement, chemicals and transport is critical for meeting Namibia's NDC targets. With some of the world's best solar and wind resources, Namibia Green Industrialisation Blueprint estimates that ~75 million tons per year of CO₂ emissions can be abated by 2050, 20x Namibia's total annual CO₂ emissions, under a green industrialisation / green hydrogen value chain. This transformation will create 250,000 jobs, about 20% of all projected workforce in Namibia by 2040. Establishing a new growth trajectory through green industrialisation will position Namibia as a climate leader and provide opportunities for sustainable employment.

Within this context, SIDF's mission to develop and construct industrial decarbonisation projects in South Africa and Namibia that transform hard-to-abate sectors into competitive, low-carbon industrial economies is strongly aligned with the countries' NDCs and broader national climate priorities. More information on South Africa and Namibia's climate change policies and strategies can be found in Annex 2.

⁷³ Climate Policy Initiative (2025). South African Climate Finance Landscape 2025. Presidential Climate Commission, South Africa. Available online: <https://www.climatepolicyinitiative.org/publication/the-south-african-climate-finance-landscape-2025/>

⁷⁴ OECD (2025). Support for decarbonising heavy industry in emerging markets and developing economies. Available online: https://www.oecd.org/en/publications/support-for-decarbonising-heavy-industry-in-emerging-markets-and-developing-economies_7787cde0-en.html

⁷⁵ International Energy Agency (IEA) (2023). South Africa: Understanding Energy End Uses. Available online: <https://www.iea.org/countries/south-africa/efficiency-demand>

⁷⁶ UNDP (2025). Namibia's Long-Term Low-Emission Development Strategy: A Strategic Policy Shift for Climate-Resilient Economic Development. Available online: <https://www.undp.org/namibia/blog/namibias-long-term-low-emission-development-strategy-strategic-policy-shift-climate-resilient-economic-development>

In addition, EIF (CFM's implementation partner in Namibia) is a fully government-owned entity. The AE for this proposal, DBSA, is also a state-owned entity. Both of their involvements ensure strong country alignment for this proposal.

Alignment with National Priorities:

As a climate-focused investment vehicle for emerging markets, it is crucial to ensure the alignment between a proposed investment and its host country's climate finance priorities as defined in its national strategies and policies. During the initial screening of all potential investments, an assessment will be conducted to confirm clear alignment between the proposed activity/ies to be financed by the CI3 Funds and the national climate finance priorities of the host countries by performing a cross-reference evaluation with a country's available and most up-to-date national strategies and policies, such as: the National Determined Contribution (NDC) and Nationally Appropriate Mitigation Actions (NAMA), as well as national action plans, climate policies or other climate strategies, where available.

Project-Level Stakeholder Engagement

All Projects are required to establish a project-specific arrangements for stakeholder engagement to be conducted throughout the lifetime of the Project. For Category A and B+ Projects, a detailed Stakeholder Engagement Plan (SEP) shall be developed as part of the IFC PS1-compliant ESIA process. In the case of Projects for which an ESIA is not required, the design of the plan for ongoing stakeholder engagement and/or consultation shall follow the guidance associated with IFC PS1 and implemented in accordance with IFC PS1 and the associated Guidance Note.

The SEP must be developed on the basis of stakeholder mapping and analysis and will include national, regional and local stakeholders including government, non-governmental organisations (NGOs), civil society organisations (CSOs) and Project-affected communities. Consultation will include focus groups with women, youth, elderly, ethnic minorities and other traditionally vulnerable groups to ensure that they are given an opportunity to contribute to baseline data gathering, and also to be involved in decision-making discussions where relevant. Where Indigenous Peoples are present, arrangements for engagement will involving IP representative bodies and organisations as well as representatives of affected communities of IP. A documented and structured process of information disclosure shall be established and informed consultation and participation shall be undertaken that takes into account existing social structures, leadership and decision-making processes. The Project Company shall establish and maintain an ongoing relationship based on informed consultation and participation with the IPs affected by a Project throughout its life cycle.

Refer to CI3's E&S Management Standards A1.2 (ESIA and Other Specialist Studies); A1.3 (Stakeholder Engagement and Grievance Mechanisms) and A1.9 (Indigenous Peoples) included in Annex 1 of the CI3 ESMS Manual for further guidance. The ESMS for the CI3 Funds also serves as the ESMS for SIDF.

Engagement for the NOL

Lastly, pursuant to the funding application requirements and protocol as set by the GCF, country consultations were conducted by CFM staff members, DBSA and EIF to manage the No Objection Letter ("NOL") engagement process in South Africa and Namibia on behalf of the CI3 Funds. This included engagement over the period of three years starting in 2023. Regular dialogue with NDAs and country representatives to address any clarifications that arise have been conducted and will continue to do so throughout the implementation of SIDF via the CI3 Funds.

The NOL from South Africa and Namibia NDAs are secured.

More information on the stakeholder engagement is provided in Annex 7.

D.6 Efficiency and effectiveness (max`. 500 words, approximately 1 page)

The GCF investment in the CI3 Funds is expected to achieve a mobilisation ratio **1:4 at the fund level** broadly in line with blended finance benchmarks, with each dollar of concessional GCF capital catalysing multiple dollars of senior and commercial capital within the capital structure. This reflects CI3's design as a multi-tranche blended finance vehicle, where junior capital plays a de-risking role to crowd in private sector participation.

Private sector finance leverage ratio = amount of private sector financing in the investment project divided by the amount of GCF support. This is referring to the total investments made by the private sector in the CI3 Funds catalyzed by the GCF contribution

$$= A / B = 7.57x$$

A = Private sector investors in CET (USD 1060Mn)

B = the GCF contribution (USD 140Mn).

Investment Mobilisation Ratio:

At the investment level, the CI3 Funds are expected to achieve strong leverage through the aggregation of multiple sources of capital. The additional equity from co-financiers and senior debt raised at the project level represents further catalytic mobilisation enabled by the CI3 Funds and is likely to be much higher. The below assumes 35% ownership of CI3 Funds in the construction phase of industrial decarbonisation, on average and the rest 65% comes from partner contributions forming the total cost of the project

=value of investment (total project cost) divided by the total amount of GCF support relating to this construction investment

= A / B = 24x

A = the CET (USD 1060Mn) + Partner Contributions (USD 1968Mn)

B = the GCF contribution (USD 125Mn in Tier 1 of CET)

E. LOGICAL FRAMEWORK				
E.1. Project/Programme Focus				
☒ Reduced emissions (mitigation) ☐ Increased resilience (adaptation)				
E.2. GCF Impact level: Paradigm shift potential (max 600 words, approximately 1-2 pages)				
Assessment Dimension	Current state (baseline)		Potential target scenario (Description)	How the project/programme will contribute (Description)
	Description	Rating		
Scale	Industrial decarbonisation and green hydrogen deployment in emerging markets, particularly in Southern Africa, remain at an early stage, with limited operational capacity and most projects still under feasibility or conceptual development. Large-scale investment requirements remain significant (e.g., >USD 60Bn and USD 40Bn needed for industrial decarbonisation in South Africa and Namibia respectively by 2050), while financing constraints and high cost of capital continue to limit project scale and deployment. At the same time, these sectors account for substantial share of energy use in South Africa and are needed for economic development in Namibia	<u>Low</u>	A transition towards large-scale, investment-grade green hydrogen and industrial decarbonisation projects in emerging markets, particularly in Southern Africa, where integrated value chains (production, transport, and end-use) are developed at scale to support both domestic industrial transformation and export markets.	The Programme will contribute by: (i) enabling deployment of integrated industrial decarbonisation value chains (upstream, midstream and downstream infrastructure), (ii) providing 'whole of lifecycle' financing to complex, large-scale projects to overcome high capital costs and financial barriers and risk management, and (iii) mobilizing private finance at scale with a blended finance solution that caters to different risk/return expectations of different commercial and institutional investors while making effective use of scarce concessional financing
Replicability	Industrial decarbonisation in EMDEs faces limited public and private finance mobilisation, with less than 1% of mitigation-related international public finance directed toward hard-to-abate sectors between 2000 and 2023. While substantial global policy momentum exists (e.g., 66 countries with green hydrogen and industrial decarbonisation strategies covering over 84% of emissions exist in 2026), implementation remains uneven and early-stage, with market uncertainties, regulatory gaps, and infrastructure constraints limiting replication.	<u>Low</u>	A potential target scenario would be a market environment in which green hydrogen-enabled industrial decarbonisation pathways are increasingly adopted across EMDEs, supported by replicable financing models, regulatory frameworks, and integrated infrastructure systems.	The Programme will contribute to replicability by: (i) demonstrating blended finance solutions tailored to high-risk EMDE contexts, (ii) supporting projects aligned with national strategies (e.g., South Africa and Namibia hydrogen strategies), and (iii) enabling knowledge transfer and standard-setting across the hydrogen value chain (including financing structures, infrastructure integration, and industrial applications).
Sustainability	Industrial systems in many EMDEs remain carbon-intensive, resource-constrained, and vulnerable to climate risks, including water scarcity, temperature	<u>Low</u>	A transition towards climate-resilient, low-carbon industrial systems where green hydrogen and renewable energy infrastructure enable	The Programme will support sustainability by: (i) investing in long-lived infrastructure assets and enabling infrastructure across

	increases, and infrastructure disruptions.		sustained emissions reductions, improved energy security, and long-term economic transformation, particularly in water- and climate-constrained regions.	the hydrogen and industrial decarbonisation value chains; (ii) integrating climate risk-management and safeguards for sustainability of mitigation investments such as water-risk screening, wastewater reuse, desalination, circular water use systems and resilient infrastructure design etc. to protect long-term performance and (iii) supporting domestic industrial value creation (e.g., green steel, fertilisers, and synthetic fuels), enhancing economic resilience and reducing carbon lock-in. The Programme is also expected to generate co-benefits including: ○ Direct and indirect beneficiaries (including men and women) from improved access to renewable energy for grid-connected households, where feasible in the context of hydrogen production Sub-projects. ○ Economic participation and empowerment of women through targeted gender-responsive measures (delivered via each Sub-project's community development programme) . ○ Expanded employment opportunities across the green industrial value chain and direct job creation.
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E.3. GCF Outcome level: Reduced emissions and increased resilience (IRMF core indicators 1-4, quantitative indicators)						
GCF Result Area	IRMF Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions / Note
				Mid-term	Final ⁷⁷	
<u>MRA1 Energy generation and access</u>	<u>Core 1: GHG emissions reduced, avoided or removed/sequestered</u>	Annual ex-ante and ex-post GHG emissions reduction calculations using the Annex 22	0	~7.9 MtCO ₂ e	~24.2 MtCO ₂ e over fund lifespan (~49.8	Avoided emissions from projects attributable to CI3 Funds +

⁷⁷ The final target means the target at the end of project/programme implementation period. However, for core indicator 1 (GHG emission reduction), please also provide the target value at the end of the total lifespan period which is defined as the maximum number of years over which the impacts of the investment are expected to be effective.

<u>MRA3 Buildings, cities, industries and appliances</u>		methodology/workbook and project-level MRV records and independent verification reports at mid-term, final evaluation, and project/fund close.			MtCO _{2e} at the end of lifespan of projects)	mobilised capital. The avoided emissions could not be split by GCF result area because most projects contain aspects of multiple GCF result areas. Assumptions are provided in Annex 22.
<u>MRA3 Buildings, cities, industries and appliances</u>	<u>Supplementary 1.1: Annual energy savings</u>	Annual ex-post analysis of heat-pump and WHR-system output and energy consumption	0	~359 GWh/year (Cumulative: 1,610 GWh)	~359 GWh/year ⁷⁸ (Cumulative: 4,480 GWh)	Annual energy savings from energy efficiency projects in hard-to-abate industrial sectors attributable to CI3 Funds + mobilised capital. Assumptions are provided in Annex 22.
<u>MRA1 Energy generation and access</u>	<u>Supplementary 1.2: Installed energy storage capacity</u>	Annual ex-post analysis (commissioning report) and verification of energy storage capacity at commissioning	0	~117 MW	~117 MW ⁷⁹	Installed energy storage systems in C&I projects attributable to CI3 Funds + mobilised capital. Assumptions are provided in Annex 22.
<u>MRA1 Energy generation and access</u>	<u>Supplementary 1.3: Installed renewable energy capacity</u>	Annual ex-post analysis (commissioning report) and verification of renewable energy capacity at commissioning	0	~1,520 MW	~1,520 MW ⁸⁰	Installed renewable energy capacity in C&I projects and for green hydrogen generation attributable to CI3 Funds +

⁷⁸ Mid-term and final target for this indicator are the same because all projects in the portfolio have will be operational before the mid-term year.

⁷⁹ Mid-term and final target for this indicator are the same because all projects in the portfolio have will be operational before the mid-term year.

⁸⁰ Mid-term and final target for this indicator are the same because all projects in the portfolio have will be operational before the mid-term year.

						mobilised capital. Assumptions are provided in Annex 22. Renewable energy capacity for green hydrogen projects is calculated based on the required capacity for the planned green hydrogen production plus 11%, allowing for 10% of the total capacity to be used for local communities.
<u>MRA1</u> <u>Energy</u> <u>generation</u> <u>and</u> <u>access</u>	<u>Supplementary 1.4:</u> <u>Renewable energy</u> <u>generated</u>	Annual ex-post analysis and power generated from renewable resources (GWh) to be measured at the end of the month through calibrated meter	0	~18,300 GWh	~53,900 GWh	Renewable energy generated in C&I projects and for green hydrogen generation attributable to CI3 Funds + mobilised capital. RE generation for green hydrogen projects is calculated based on required energy for the planned green hydrogen production plus 11%, allowing 10% of the total energy to be used for local communities.

MRA3 Buildings, cities, industries and appliances	Core 3: Value of physical assets made more resilient to the effects of climate change and/or more able to reduce GHG emissions	Portfolio data (as provided in Annual Reports)	0	~1.01 billion USD	~1.01 billion USD ⁸¹	Value of physical assets made more able to reduce GHG emissions. Calculated as CI3 Funds equity + mobilised capital invested in the construction of C&I, CCUS, and energy efficiency projects.
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E.4. GCF Outcome level: Enabling environment (IRMF core indicators 5-8 as applicable)					
Core Indicator	Baseline context (description)	Rating for current state (baseline)	Target scenario (description)	How the project will contribute	Coverage
Core Indicator 6: <u>Degree to which GCF investments contribute to technology deployment, dissemination, development or transfer and innovation</u>	Asset development and construction in hard-to-abate sectors require sufficient knowledge and technical skills to succeed. Barriers include 'first-of-a-kind' transition and financial risks across the entire lifecycle. These include long development timelines, construction risks, uncertain offtake markets, limited availability of patient risk capital, and elevated costs of capital. These barriers are preventing investment decisions and private finance participation at scale for industrial decarbonisation projects in South Africa and Namibia despite the urgent need.	<u>low</u>	Transfer of knowledge and technical skills to local partners and developers for adoption of innovative technologies, financial and legal structuring, contracting, project management along with commercial bankability and risk-adjusted returns	The project will contribute to knowledge and technology transfer by pro-actively cooperating (as stakeholder and Director of the Board) with local partners, financiers, and developers during the development as well as the construction of the assets.	<u>Multiple sub-national areas within a country</u>
Core indicator 8: <u>Degree to which</u>	Projects in hard-to-abate sectors often face	<u>low</u>	Integration of GCF and other industry	The project will contribute by	<u>Multi-countries</u>

⁸¹ Mid-term and final target for this indicator are the same because all projects in the portfolio have will be operational before the mid-term year.

<u>GCF investments contribute to effective knowledge generation and learning processes, and use of good practices, methodologies and standards</u>	shortcomings in relation to impact management and environmental and social safeguards which often fall below the standard required by international finance institutions.		best practices for impact management and environmental and social safeguarding in industrial decarbonisation and hard-to-abate sectors	ensuring the Fund's impact standards for impact management and environmental and social safeguards, as reflected in the Fund's ESMS are complied with at a project and Sub-project level. CFM will also screen all the partners, (co)-developers, and other third parties on their standards and willingness to comply with those of the Fund. CFM will commission independent expert due diligence of the proposed Sub-project and all partners during the development phase. None of the Sub-projects will receive construction funding if the required standards for impact management and environmental and social safeguards cannot be attained (or maintained).	
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E.5. Project/programme specific indicators (project outcomes and outputs)						
Project/Program me results (outcomes/ outputs)	Project/program me specific Indicator	Means Verification (MoV)	of Baseli ne	Target		Assumptio ns / Note
				Mid-term	Final	
Outcome 2 – GHG emissions avoided in hard-to-abate sectors in SA and Namibia	GHG emissions avoided in hard-to-abate sectors in SA and Namibia	Annual ex-ante and ex-post GHG emissions reduction calculations using the Annex 22 methodology/workbook and project-level MRV records and independent verification reports at mid-term, final evaluation, and project/fund close	0	~7.9 MtCO _{2e}	~24.2 MtCO _{2e} over fund lifespan (~49.8 MtCO _{2e} at the end of lifespan of projects)	Avoided emissions from projects attributable to CI3 Funds + mobilised capital. The avoided emissions could not be split by GCF result area because most projects contain aspects of multiple GCF

						result areas. Assumptions are provided in Annex 22
Outcome 3 – Increased ability of physical assets to avoid/reduce GHG emissions	Value of physical assets made more able to reduce GHG emissions	Portfolio financial report; Asset value information report	0	~1.01 billion USD	~1.01 billion USD ⁸²	Value of physical assets made more able to reduce GHG emissions. Calculated as CI3 Funds equity + mobilised capital invested in the construction of C&I, CCUS, and energy efficiency projects.
Output 2.1 - Green hydrogen production, storage and distribution capacity established	Established green hydrogen production, storage, and distribution capacity	Annual ex-post analysis (commissioning report) and verification of hydrogen production / storage / distribution capacity at commissioning	0	~57,900 tH ₂ /year	~59,500 tH ₂ /year	Established green hydrogen production, storage, and distribution capacity attributable to CI3 Funds + mobilised capital
Output 3.2. nstalled water treatment capacity for green hydrogen production	Installed water treatment capacity for green hydrogen production	Annual ex-post analysis (commissioning report) and verification of water treatment capacity at commissioning	0	~3,720m ³ /day	~3,720 m ³ /day ⁸³	Installed water treatment capacity for green hydrogen production attributable to CI3 Funds + mobilised capital
Project/programme co-benefit indicators						
Co-benefit 1: Increased number of beneficiaries with access to	Direct and indirect beneficiaries reached	Annual ex-post analysis of renewable energy fed to the grid (GWh) and average	0	~114,300	~114,300 ⁸⁴	Beneficiaries from surplus renewable energy generated for

⁸² Mid-term and final target for this indicator are the same because all projects in the portfolio have will be operational before the mid-term year.

⁸³ Mid-term and final target for this indicator are the same because all projects in the portfolio have will be operational before the mid-term year.

⁸⁴ Mid-term and final target for this indicator are the same because all projects in the portfolio have will become operational before the mid-term year.

renewable energy in SA and Namibia		electricity consumption per connected capita Ex-post review of change in outage rate experienced by grid-connected households compared with a counterfactual (using pre-project baseline). .				use by local communities attributable to CI3 Funds + mobilised capital, rounded to the nearest multiple of 1,000
Co-benefit 2: Enhanced economic participation and empowerment of women	Percentage of community development programme beneficiaries who are women	Annual ex-post analysis based on reports of development programmes	0	50%	50%	Share of women beneficiaries from community development programs undertaken by investee companies in project-adjacent areas. The programmes are focused on improving livelihoods and informed by gender-responsive community needs assessments .
Co-benefit 3: Expanded employment opportunities across the green industrial value chain	Green jobs created or supported	Annual ex-post analysis based on annual reports of Project Companies	0	Operational jobs: 3,080, of which 34% women Construction jobs: 4,330, of which 9% women	Operational jobs: 3,200, of which 34% women Construction jobs: 4,330, of which 9% women ⁸⁵	Direct jobs attributable to CI3 Funds + mobilised capital, rounded to the nearest multiple of 10.

E.6. Project/programme activities and deliverables

Activities	Description	Sub-activities	Deliverables
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⁸⁵ Mid-term and final target for this indicator are the same because all projects in the portfolio have will be operational before the mid-term year.

Activity 1.1: Fundraising, establishment and management of the Development Tranche	Fundraising for and management of the Development Tranche	Fundraising for and management of the Development Tranche	Up to USD 175,000,000 raised for the DT from different Donors And successful management of all affairs related to the DT over the entire implementation period of the CI3 Funds
Activity 1.2: Fundraising, establishment and management of the Construction Equity Tranche	Fundraising for and management of the Construction Equity Tranche	Fundraising for and management of the Construction Equity Tranche	Up to USD 1,025,000,000 raised for three tiers of the CET at final close out of which 20% consist of Donor (T1 funding), 40% of DFI's and impact investors (T2), and 40% of commercial and institutional investors (T3) Successful management of all affairs related to the CET over the entire implementation period of the CI3 Funds.
Activity 2.1. Development of industrial decarbonisation projects in hard-to-abate sectors	Development of industrial decarbonisation projects in hard-to-abate sectors	Sub-activity 2.1.1: Identifying opportunities	Identifying opportunities and initial due diligence.
		Sub-activity 2.1.2: Project approval by the Underlying Fund ICs for the development stage	Project approved by the Underlying Fund ICs to receive funding.
		Sub-activity 2.1.3: Project development and extensive due diligence	Projects successfully developed (including but not limited to stakeholder engagement, gender assessment, and Environmental and Social Impact Assessment).
Activity 2.2: Implementation (construction and operation) of industrial decarbonisation projects	Construction and operation of industrial decarbonisation projects that deliver climate mitigation benefits.	Sub-activity 2.2.1. Project approved by the Underlying Fund IC for construction stage	Projects approved by the Underlying Funds' IC to receive CET Funding (including repayment of the Development Finance provided by the DT, where applicable).
		Sub-activity 2.2.2: Project construction	Construction of industrial decarbonisation projects as an active investor to ensure efficiency, knowledge transfer, impact maximization, and environmental and social safeguarding.
		Sub-activity 2.2.3 Project refinancing and exit	Projects with climate mitigation benefits in industrial decarbonisation projects and sectors successfully constructed and exited by the CI3 Funds

E.7. Monitoring, reporting, and evaluation arrangements (max. 500 words, approximately 1 page)

Monitoring & Reporting

CFM reports on the investments done and financial performance of CI3 and the Underlying Fund's portfolio to all investors, including all Donors, on a quarterly basis. On an annual basis, a report will be provided that includes audited financial accounts and detailed information on investments, investment valuations, fees, and the impact indicators. In addition, the Accredited Entity, supported by CFM, will provide the GCF with an Annual Progress Report as mandated by the GCF.

Financial reporting:

Within sixty (60) calendar days after the end of each calendar quarter ended 31 March, 30 June, and 30 September, CFM shall prepare and provide all Investors with a quarterly report consisting of, *inter alia*:

- Project implementation progress;
- Sub-Projects investment pipeline maturity and deployment forecast;
- Fund utilisation status;

- Portfolio composition by country, sector and technology including concentration limits;
- Climate impacts, GHG reductions and climate risk management;
- Ex-post impacts associated with operating assets;
- Environmental and social performance;
- Capital account statements:

Within ninety days (90) calendar days after the end of financial year (1st January to 31st December), the Manager shall prepare and provide all Investors with an annual report (the "Annual Report") consisting of, inter alia (in addition to the quarterly updates):

- The annual accounts of the Programme, comprising at least a balance sheet, a profit, and loss account and explanatory notes thereto, as audited by the Auditor;
- A report of the Auditor on its findings resulting from its audit of the annual accounts;
- Financial performance, NAV and cash position

Environmental & Social Reporting

An important aspect of CFM's risk management process is the ongoing monitoring and review of each investment. Depending on which Tranche that investment is drawn from (Development or Construction Equity), different monitoring requirements will be applied. Monitoring is commensurate with the risk categorization, with physical visits to the location(s) of higher-risk projects during construction and operation.

All Project Companies drawing from the CI3 Funds are required to adopt the CI3 MRV protocol for ex-ante and ex-post impact calculation, monitoring and reporting. The ex-post impacts reported by the projects companies will be subject to independent verification. The projects are also required to monitor the performance of any contractors employed at the project site(s). In addition, CFM will also ensure that any legal requirements for monitoring, for example, that may be included in permits and licenses for development, construction, and operation, are incorporated into the Sub-project's management system and associated control framework. Audits of the Sub-project's compliance with legal and Fund requirements will be conducted or commissioned by CFM to take place at least once during the construction phase (and more often if considered necessary on the basis of the Sub-project's environmental and social risk profile). Operational Sub-projects will be audited at least once annually.

CFM requires all Sub-projects to report on impact and environmental and social performance against a range of indicators on a routine basis on either a monthly or quarterly basis to enable CFM to measure and monitor performance against all logframe indicators. Data is reported and collated using an online data management platform and reviewed and validated by CFM's E&S staff. Once validated, the data is consolidated into quarterly and annual reports that are shared with the investors. This ensures that data is available on a routine basis for DBSA oversight, as well as for confirming alignment with the GCF annual performance reporting requirements.

More information on the CI3 annual and quarterly reporting requirements is presented in Annex 6 – Reporting Requirement of CI3 Environmental and Social Management System (ESMS). In addition, detailed information on impact calculation measurement, reporting and verification principles and methodologies are included in the Monitoring, Reporting and Verification (MRV) Protocol. This also details arrangements for data management including data governance roles and responsibilities.

Evaluations

The Accredited Entity, with inputs from CFM where needed, will arrange for an interim and final evaluation to be outsourced to an independent evaluator after 6 and 12 years, respectively, subject to extensions as required. The interim evaluation will focus on the extent to which SIDF via the CI3 Funds is achieving its goals across GCF impact indicators. The final evaluation will constitute an ex-post effectiveness study. The evaluation will focus on the OECD-DAC criteria, which focus on relevance, effectiveness, efficiency, impact, and sustainability and the GCF's evaluation criteria.

- Relevance: the extent to which the investments are suited to the priorities and policies of SIDF;
- Effectiveness: the extent to which the objectives of SIDF were achieved;
- Efficiency: the extent to which activities were cost-efficient and timely;
- Impact: determining the positive and negative changes produced by SIDF, directly or indirectly, intended or unintended; and
- Sustainability: the extent to which the investments of the CI3 Funds are likely to continue after SIDF has exited.

F. RISK ASSESSMENT AND MANAGEMENT

F.1. Risk factors and mitigations measures (max. 3 pages)

Selected Risk Factor 1		
Category	Probability	Impact
Technical and operational	Low	Medium
Description		
Investment Risk Risk that the assets in the CFM managed assets' portfolio underperform investment expectations and decline in value.		
Mitigation Measure(s)		
- Robust asset selection processes in accordance with defined investment criteria, including IC approval. - Comprehensive due diligence procedures and assessment of risk management framework in place at the asset. - Oversight by way of representation on project company board and Involvement in asset strategy decisions. - Monitoring of asset performance and revenue-drivers through active asset management approach. - Regular site visits to assets to remain updated on management and operational activities and progress.		
Selected Risk Factor 2		
Category	Probability	Impact
Governance	Medium	Medium
Description		
Regulatory Risk Risk that changes in the regulatory environment or regulator's attitude will have an adverse impact on CFM and the CFM managed assets' operations and/or strategy.		
Mitigation Measure(s)		
- Alignment with the needs of the recipient country, and NDA / NOL support. - Continual dialogue with regulators/governments and continued evaluation, review of legislation. - Strong contractual position in the project documents. - Dedicated legal and compliance staff.		
Selected Risk Factor 3		
Category	Probability	Impact
Technical and operational	Low	Medium
Description		
Development Risk Risk that CET is buying a project from the Development Tranche that is not fully developed and/or not yet ready for construction.		
Mitigation Measure(s)		
Preparation of all documentation required before construction can start including but not limited to offtake agreements, land-use permits, construction permits, environmental permits, insurance contracts, EPC contracts, O&M contracts and other related documentation.		
Selected Risk Factor 4		
Category	Probability	Impact
Technical and operational	Low	Medium
Description		
Construction Risk (EPC execution risk) Risk that reliance on the EPC contractor may introduce counterparty risk and lead to underperformance.		

Mitigation Measure(s)		
- High-quality planning and project management, and high-quality EPC and Balance of Plant contractors with an appropriate track record. - Occasional contracting of multiple EPC contracts and adoption of a split EPC approach for some projects, as required and advised by the CFM Technical Engineering Team.		
Selected Risk Factor 5		
Category	Probability	Impact
Technical and operational	Medium	Low
Description		
Construction Risk (EPC financial risk) Risk that the project construction may experience financial consequences (missed revenues, penalties payable to offtaker etc.) due to delayed Commercial Operations Date (COD). Risk that the project doesn't perform as expected due to unforeseen reasons such as technical challenges.		
Mitigation Measure(s)		
- High-quality planning and project management, and high-quality EPC and Balance of Plant contractors with an appropriate track record. - Regular monitoring and oversight from CFM Technical Team including representation at the investee company board on construction and technical matters. - In case of unforeseen delays, the construction risk is primarily transferred to the EPC contractor(s) through fixed-price, date-certain EPC contracts, which include Letters of Credit (LCs) or other financial security instruments to backstop contractor obligations.		
Selected Risk Factor 6		
Category	Probability	Impact
Technical and operational	Medium	Low
Description		
Construction Risk (Cost Overruns) Risk that cost overruns may occur during the construction phase; typically these are costs that fall outside of the scope of works such as variations, change order etc.		
Mitigation Measure(s)		
- High-quality planning and project management, and high-quality EPC and Balance of Plant contractors with an appropriate track record. - Robust definition of a fixed scope of work. - Mitigation through a risk allocation framework between EPC contractor(s) and the project company as follows, especially for in case of unforeseen cost overruns. - Within Scope of Work (SoW): - Transferred to EPC contractor(s) under lump-sum, fixed-price EPC contracts. - Contractor assumes responsibility for managing costs within defined scope. - Outside Scope of Work (SoW): - Retained at project level (e.g., variations, force majeure, scope gaps). - Mitigated through a contingency budget (typically 5–10% of capex) to absorb unforeseen costs.		
Selected Risk Factor 7		
Category	Probability	Impact
Technical and operational	Low	Medium
Description		
Operational Risk Risk of financial losses due to lower than expected volume or quality of output to design deficiencies, equipment underperformance, or operational inefficiencies, particularly in the early years of project commissioning OR higher than expected operational expenditure		

Mitigation Measure(s)		
Mitigated through a phased allocation across contractors: - High-quality planning and project management, and high-quality EPC and O&M contractors with an appropriate track record. - Early operations (ramp up phase): - Risk partially transferred to EPC contractor and/or process designer. - Backed by performance guarantees and acceptance tests, ensuring that output meets specified design capacity and efficiency levels. - Operational phase: - Risk allocated to the O&M contractor, responsible for maintaining plant performance in line with agreed availability and efficiency standards.		
Selected Risk Factor 8		
Category	Probability	Impact
Forex	Medium	Medium
Description		
Currency Risk Risk of currency mismatch between the currency of offtake revenues on the one hand, and the currency of the investment and other liabilities.		
Mitigation Measure(s)		
- The operating currency of CI3 and SDG Namibia One funds is USD. No major currency mismatch is expected, as most projects will have hard currency offtake aligned with O&M and debt service, while some operating costs (such as staff and local expenses) and certain feedstock will be paid in local currency. While the operating currency of the SA-H2 Fund is ZAR, the Fund's investments are expected to be significantly exposed to hard currency-linked revenue streams. - To mitigate the currency risk, the Fund Manager will assess and, where appropriate, implement hedging strategies. - The SA-H2 Fund T1 hurdle is higher than that of CI3 Global/SGNO to mitigate for the inflation rate differential / expected depreciation of the ZAR. - In principle, CFM may only enter into futures, options, or other derivative transactions for the purpose of, and only to the extent required for, hedging currency positions on non-USD Investments. CFM is not obliged to do this, and the use of derivatives will be subject to cost-benefit considerations. - A hedging policy may be adopted in respect of non-USD currency commitments for imminent acquisitions or divestments, considered on a project-by-project basis or for hedging of short-term distributions.		
Selected Risk Factor 9		
Category	Probability	Impact
Technical and operational	Low	Low
Description		
Financial Close Risk Limited access to finance and protracted timelines to agree terms prevent projects from reaching financial close and subsequently refinancing.		
Mitigation Measure(s)		
- Providing a one-stop-shop for finance at development, construction, and refinance phases to avoid protracted negotiations with multiple parties. - Match-making projects with suitable local, international, or public finance.		
Selected Risk Factor 10		
Category	Probability	Impact
Technical and operational	Low	Low
Description		

Exit Risk		
Risk that CFM is not able to dispose of all of its assets in full.		
Mitigation Measure(s)		
- Development of high-quality projects. - M&A activity in investment regions shows an appetite for industrial decarbonisation projects. - Active divestment opportunity screening throughout the lifetime of a project.		
Selected Risk Factor 11		
Category	Probability	Impact
Credit	Low	Low
Description		
Counterparty / Credit Risk		
Risk that a counterparty (the other party with whom an investment or borrowing transaction is made) will fail to perform contractual obligations and default in either whole or part under a contract.		
Mitigation Measure(s)		
- Risk assessed as part of the due diligence process, preparing the underlying investment proposal and reviewed on an ongoing basis. - International credit ratings checked where relevant.		
Selected Risk Factor 12		
Category	Probability	Impact
Technical and operational	Medium	Low
Description		
Liquidity Risk		
Risk that CFM and a CFM-managed asset do not have sufficient cash to meet forward commitments. This would mean that revenues on the manager or project levels are below expenses and there is a lack of liquidity.		
Mitigation Measure(s)		
- Detailed 5-year cash forecast updated monthly. "Forward commitments test" and liquidity limits under which available liquidity must not fall.		
Selected Risk Factor 13		
Category	Probability	Impact
Other	High	High
Description		
Political Risk		
Risk that sovereign rights exercised by governments are contrary to the rights of the Fund, or project company under the relevant agreements.		
Mitigation Measure(s)		
- Virtue of donors as Official Development Assistance (ODA) providers and DFI funding. - Acquiring Political Risk Guarantee (World Bank, MIGA) when specific events heighten the political risk in a project company. - Government Letter of Support. - GCF funding would be complementary to already establish ODA providers (European Commission, Dutch Government) in the Development Tranche and T1 Construction Equity Tranche of CI3, in providing additional political risk mitigation capabilities on the back of being established under the framework of the UNFCCC.		
Selected Risk Factor 14		
Category	Probability	Impact
Reputational	High	Medium

Description		
Environmental and Social Risk		
Impact on natural resources, employees, investors, customers, and community by the business activities of CFM or a CFM managed asset fund and its investments.		
Mitigation Measure(s)		
- The application of DBSA's experience in the design of the CI3 Environmental and Social Management System, which will apply to all CI3 investments. - Adherence to international Environmental and Social standards as well as local legal requirements. - Disclosure of project-related information in accordance with local legal requirements as well as GCF policies and other international standards including, <i>inter alia</i>, the IFC Performance Standards (PS). - Dedicated E&S specialist to implement the CI3 environmental and social due diligence process. - Monitoring of implementation of the ESMS and all CI3 requirements, as well as Sub-project-specific agreements throughout the lifecycle of any project. - Implementation of the CI3 GAP with particular focus on gender-responsive stakeholder engagement and consultation as well as gender-responsive grievance mechanisms.		
Selected Risk Factor 15		
Category	Probability	Impact
Technical and operational	Medium	Low
Description		
Technology Risk		
Risk of technology underperforming through inadequate natural resources, feedstock, and/or inadequate maintenance.		
Mitigation Measure(s)		
- Risk assessed as part of due diligence and preparing the underlying investment proposal. - Investing in proven technologies from known/trusted manufacturers. - Contracting independent experts to assess the viability of resource potential of project sites. - Securing EPC contracts and OEM maintenance contracts.		
Selected Risk Factor 16		
Category	Probability	Impact
Technical and operational	Low	Medium
Description		
Conflicts of Interest Risk		
Risk that a conflict of interest occurs in an area of CFM's service provision to its Managed Vehicles, their investors, and its relationship with all of its stakeholders whereby CFM (or an investor or other stakeholder of CFM) may benefit whilst possible tangible loss may be caused to (another) investor to whom CFM provides a service.		
Mitigation Measure(s)		
- CFM has a comprehensive policy established to manage conflicts of interest. - Following the identification of a potential conflict, the manager will implement measures to manage and mitigate the identified conflict will be implemented promptly through three basic mechanisms to manage a conflict, namely controlling, avoiding, and disclosing. - The appropriate mechanism to manage a conflict will depend on the circumstances and nature of any given conflict. - Documented policies and procedures (periodically updated as required).		
Selected Risk Factor 17		
Category	Probability	Impact
Other	Low	Low
Description		

Good Governance / Rule of Law / Corruption

Risk of failed governance at the project company level; a counterparty or employee acting corruptly or fraudulently or in breach of law.

Mitigation Measure(s)

- A focus on good governance at both the fund and project level which will benefit local counterparties through strict adherence to the rule of law and in mitigating corruption risk.
- Existence of robust and clear compliance policies and procedures including KYC, Anti Money Laundering and Counter-Terrorist Financing and Anti-Corruption.
- Ensuring appropriate fraud insurance cover.
- Ongoing KYC, internal sanctions list, and anti-money laundering and counter-terrorist financing checks and verifications.

GCF POLICIES AND STANDARDS

G.1. Environmental and social risk assessment (max. 750 words, approximately 1.5 pages)

The below section will use Category A/I-1 and Category B/I-2 interchangeably.

CFM Group Responsible Investment Policy

The CFM Group Responsible Investment Policy sets out CFM's commitments for responsible investment in relation to ESG. The CI3 Funds and the Project Companies into which the Funds are directly invested are required to align with and uphold these commitments.

CI3 Responsible Investment Code

The CI3 Responsible Investment Code is a core policy document that is mandated at CI3 Funds level. It describes the requirements for the implementation and operation of the CI3 Funds' ESMS; and defines Environmental and Social (E&S) Requirements and Guiding Principles with which the CI3 Funds must comply and the E&S risk categories and requirements.

CI3 Environmental and Social Management System

CFM, in cooperation with the AE, has developed a CI3 Environmental and Social Management System (ESMS) as a core element of the CI3 Funds' risk management framework. The ESMS includes policies, organisational structure, planning activities, responsibilities, practices, procedures, and resources for developing, implementing, achieving, reviewing, and maintaining compliance with the E&S Requirements and upholding the Guiding Principles for the purpose of identifying and managing E&S impacts and risks. The manual that describes this system has been disclosed in accordance with GCF's ex-ante disclosure requirements for category A/I-1 projects/Programmes and is available on the CFM website. It also serves as the ESMS for the Southern African Industrial Decarbonization Facility (SIDF).

ESG Roles and Responsibilities

There are multiple different entities within the CI3 Funds universe that have important E&S risk management and oversight responsibilities. The E&S roles are summarised in the table below.

Stakeholder	E&S Responsibilities
GCF Accredited Entity	In its role as the AE for the CI3 Funds, DBSA is responsible for ensuring compliance with GCF policies such as the Revised Environmental and Social Policy; Gender Policy; Indigenous Peoples Policy, and the Information Disclosure Policy.
GCF Executing Entity	As the GCF Executing Entity (EE), CFM is responsible for implementing the E&S commitments and arrangements described in the CI3 ESMS other supporting documentation relating to the GCF funding agreement.
CI3 Fund Manager	As the Fund Manager, CFM is responsible for project screening, structuring, administration, implementation monitoring, and ensuring project compliance with, <i>inter alia</i> , the CI3 Funds' relevant E&S and governance policies.
Project Companies	The Project Companies are responsible for compliance with the E&S Requirements as detailed in the ESMS manual and supporting documentation and managing and continually improving the Project's E&S performance. Each Project Company is required to implement a Project-level ESMS in place as well as ensuring adequate staffing and resources to effectively manage these responsibilities.

External E&S Advisors	Adequately qualified independent E&S advisors are appointed to support CFM with, <i>inter alia</i> , due diligence, specialist studies, and ongoing monitoring. This support will be defined, facilitated and monitored by CFM and is commissioned through issue of defined terms of reference. The E&S due diligence will be commissioned using defined terms of reference
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E&S Risk Categorisation

In accordance with the CI3 Funds' Responsible Investment Code, all investment opportunities are subject to assessment to determine the E&S risk categorisation according to their potential environmental and social adverse impacts and risks. The Fund's risk categories are aligned with those adopted by the GCF, with Category B further subdivided in accordance with the Fund's Responsible Investment Code and in line with the classification system used by the European DFI community. The E&S risk categorisation reflects the potential contextual risks associated with the country and the geographic setting in which the funded activity/ies will be located, along with an analysis of various factors including, *inter alia*, the economic sector; the Project's intended activities; size of the investment; purpose of the financing (e.g. greenfield development, brownfield), etc. The Fund will not be invested in an existing operation that has not been developed by the Fund if it is confirmed by independent and adequately qualified experts to be categorised as Category A.

Risk Assessment

Section 4 of the CI3 ESMS Manual describes the E&S risk assessment activities that are undertaken during the investment process. E&S considerations are fully integrated, with activities undertaken during each stage, as summarised below.

- **Preliminary Due Diligence (screening):** all potential investment opportunities are subject to desk-based screening to determine: (i) compliance with the CI3 Funds' Exclusion List; and (ii) preliminary E&S risk categorisation on the basis of contextual risk screening. Aside from confirming that the proposed investment does not involve any activities included in the Exclusion List, the output will be a summary of the expected environmental and social issues and any key areas of concern to be included in the scope of the Full Due Diligence process.
- **Full Due Diligence:** the purpose of this step is to determine the nature and significance of E&S impacts and risks; the degree to which an activity, process, operation, product or service meets the E&S Requirements, and the required measures to meet the E&S Requirements which shall be documented in the form of a development action plan. This phase involves site visits, stakeholder interviews, and review of documentation. Where identified as being required, additional, specialist studies will also be commissioned, for example in relation to topics such as human rights, supply chain labour issues, Indigenous Peoples (IPs). The potential for maladaptation risk and unintended consequences will form a specific part of every assessment.
- **Project Development:** for all potential new or follow-on investments that are categorised as Category A and Category B, independent and adequately qualified experts will be appointed to carry out further evaluation in line with the CI3 E&S Requirements. For greenfield operations and major expansions of existing facilities this will comprise an environmental and social impact assessment (ESIA) compliant with IFC PS1 and other international standards (including the GCF's E&S Policy and IP Policy) along with any additional and specialist studies and plans for specific contextual risks, e.g. relating to IPs, biodiversity, land acquisition and cultural heritage. For existing operations that have not been developed by the CI3 Funds, and for potential Projects rated as Category C a comprehensive E&S audit will be conducted (in addition to the Full Due Diligence). In addition, all Projects, regardless of the E&S risk category, will be required to commission or develop (i) a gender analysis and action plan; (ii) an ESMS commensurate with the risks associated with the planned activities, and (iii) a climate risk and vulnerability assessment and adaptation plan.
- **Equity Financial Close:** The Fund will only make an investment in a proposed Project Company if any identified adverse impact or performance has been resolved in accordance with the E&S Requirements; or the proposed Project Company has agreed to an E&S Action Plan (ESAP) to resolve the identified adverse impacts or performance within a reasonable timeframe (including appropriate conditions precedent for the proposed investment), and the investment documentation includes appropriate remedies if the proposed Project Company fails to implement the E&S Action Plan, along with standard E&S covenants requiring compliance with E&S Requirements.
- **Asset Management:** During the lifetime of the investment, monitoring will be conducted to assess ongoing compliance with the Funds' E&S Requirements, and to identify any corrective actions that may be required to address non-compliances and areas for improvement. Such monitoring will take the form of, *inter alia*, engagement via technical sub-committee meetings, routine monitoring visits, and periodic audits.
- **Exit:** As part of CFM's commitment to responsible exit, the Fund Manager will conduct a review to confirm that all actions detailed in the ESAP, any corrective actions and any outstanding E&S risk management obligations have been appropriately addressed or transferred prior to exit.

Additional Note Regarding GBVH and SEAH

- Gender Based Violence and Harassment (GBVH)/Sexual Exploitation Abuse and Harassment (SEAH) risks are incorporated into each stage of the risk assessment, management and monitoring process. Risks are identified and assessed during E&S screening and Full Due Diligence and are managed through risk-proportionate measures under the ESMS and relevant project-level safeguarding instruments. Monitoring is conducted through reporting, audits and evaluations. Specific arrangements for GBVH/SEAH risk management are detailed in Annex 7 of the Funds' ESMS and for reporting in Annexures 10 and 11.

Additional Note Regarding Indigenous Peoples

CFM recognizes the critical importance of respecting the rights of IPs and of avoiding any adverse impacts on the IPs which may arise because of a Project. CFM will avoid proceeding with a Project beyond the Development phase (activity 2.1) where adverse impacts cannot be avoided. When avoidance is not feasible, CFM requires measures to be put in place to minimize and mitigate these impacts. Compensation shall only be considered as a last resort. If the Full ESDD reveals the potential presence of IP communities in the proposed area of the Project, but it is too early to be able to complete a detailed impact assessment (i.e. in those situations where the specific activities or locations of the Project have not yet been confirmed due to the early stage of the Project's development), the Project Company shall implement an IP Planning Framework (IPPF). The IPPF sets out the legal and institutional requirements for engaging with Indigenous Peoples, aligned with national laws and international standards. It defines processes to identify impacts, conduct specialist assessments, and determine when Free, Prior and Informed Consent (FPIC) is required, while addressing potential adverse impacts even when FPIC is not triggered. It establishes mechanisms for inclusive consultation, information disclosure, culturally appropriate benefit-sharing, and long-term engagement with affected communities. It also clarifies roles, responsibilities, grievance mechanisms, and the preparation of project-specific Indigenous Peoples Plans.

Annex 1 of the CI3 ESMS Manual (A1.9 Management Standard: Indigenous Peoples) describes CFM's IPPF which was developed with input from GCF IP specialists and draws on IFC PS7 and the associated guidance note, and the Green Climate Fund IPP and associated GCF Operational Guidelines. In light of the confirmed E&S risk classification of SIDF as Category A/I-1, and consistent with the GCF IP Policy, particular emphasis is placed on ensuring the full and effective participation of IPs through culturally appropriate and meaningful consultation processes during the programme design stage.

In line with these requirements, CFM has initiated early engagement with six national and regional IP organisations in South Africa and Namibia to organise introductory consultations and gather initial inputs, with the objective of integrating their perspectives into programme design and implementation. CFM has subsequently held a virtual meeting with one organisation that represents two of those we approached; the South African Government Department of Cooperative Governance and Traditional Affairs (CoGTA). This is an important stakeholder given its responsibilities for the policy, legislative, and administrative framework governing traditional and Khoi-San leadership institutions across South Africa. COGTA shared information about their ongoing stakeholder engagement with traditional leadership and appreciated CFM's proactive outreach. CFM and relevant Sub-Project companies will consult with COGTA for support and guidance during the implementation of SIDF, as applicable in the context of Sub-Project development in an area where Indigenous Peoples may be present. CFM will continue to follow up with the identified IP organizations for introductory consultations.

G.2. Gender assessment and action plan (max. 500 words, approximately 1 page)

CFM recognizes that the projects can only be successful if they are gender responsive. The use of the term 'gender' refers to the social relations between women and men; thereby the need to work with women and men to ensure both equitably benefit. It is further recognized that women have as much to gain from its projects (and particularly from increased access to water and energy) as men but given their relative social position, will likely not profit as men from the access to water and energy. Alongside these opportunities, gendered challenges and risks exist.

CFM, in cooperation with the AE, has undertaken a country assessment and gender analysis in line with GCF's published guidance (Mainstreaming Gender in Green Climate Fund Projects, 2017) and based on this, a Gender Action Plan ("GAP") has been developed for implementation by CFM across all investments in South Africa and Namibia. The GAP will be supplemented at the individual Project-level by a local analysis of gender issues, risks and opportunities, and a Project-specific gender quality and social inclusion action plan will be developed that aims to address Project-specific risks and opportunities. The Project Company will be required to implement this action plan throughout the duration of the investment, in parallel to implementing the complementary safeguarding obligations that are documented in the Funds' ESMS (including, *inter alia*, Annex 7 on GBVH/SEAH risk assessment and management).

The GAP is intended to support CFM in fulfilling its commitments to responsible investment in accordance with the CFM Group Responsible Investment Policy and the CFM Group Gender Policy. It includes an (estimated) budget for addressing each of the actions. The AE and the EE confirm that the budget would be readjusted in case it is deemed insufficient during the implementation of CI3.

The gender analysis and CI3 Gender Action Plan are included as Annex 8.

G.3. Financial management and procurement (max. 500 words, approximately 1 page)

Financial management and procurement is done at two levels: (i) the AE (DBSA) and (ii) the EEs. On the AE's level, the AE will enter into the Funding Activity Agreement (FAA) with the GCF. The AE will oversee the fiduciary management of GCF's funding in its GCF account and on a ledger specific to SIDF. The AE will request the GCF funds, based on the funding needs as predicted by

CFM, on a bi-annual basis. The AE will then disburse these funds to CI3 Global whenever CFM issues a drawdown request. CFM will not manage any unused funds of GCF. The drawdown requests and payments at AE will follow the AEs standard policies and procedures.

Once received by CFM, the funds will be administered by CFM including drawdowns from and distributions to investors, as well as all fund-related accounting will be initiated, overseen, and performed by CFM (asset manager). CFM has an Authorization and Payments Policy in place, which details the process of authorizing and making payments to external parties, including the various levels of internal authorization required in order to ensure a sound control environment. CFM has controlled access to the Fund bank accounts and is responsible for initiating and releasing payments according to the Authorization and Payments Policy and generally in accordance with the CI3 Funds' governing documentation. All investor reporting is controlled and managed by CFM. A monthly review of the trial balance is performed by the CFM Finance Manager and quarterly and annual reports are prepared by CFM. The CI3 Funds and CFM's accounts will be audited annually by an external auditor. Accounts will be prepared according to the International Financial Reporting Standards (IFRS) and will consist of, among others, a balance sheet, profit and loss account, explanatory notes, auditor's report, an overview of project turnover activity, breakdown of management fees paid, breakdown of fund operating costs, etc. CFM will require the Project Companies to prepare accounts in accordance with appropriately recognized financial reporting standards, and each Project Company is required to appoint an Auditor. CFM's financial reports will be subject to approval AE review and approval through AE's participation on Underlying Funds' advisory boards.

The EE will follow CFM's Procurement and Outsourcing Policy throughout the implementation of the SIDF programme. DBSA, as the AE, has reviewed CFM's Procurement Policy and has found it aligned with AE requirements for fund managers. The AE has also recommended that CFM must ensure that all procurement-related activities are done in a fair and transparent manner. The DBSA shall reserve the right to periodically and reasonably request procurement information from CFM as the EE to fulfill its reporting and oversight obligations to the GCF. Refer to Annex 10 for overview of the Procurement Policy and implementation at EE level and project-level.

G.4. Disclosure of funding proposal

Note: The Information Disclosure Policy (IDP) provides that the GCF will apply a presumption in favour of disclosure for all information and documents relating to the GCF and its funding activities. Under the IDP, project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Information provided in confidence is one of the exceptions, but this exception should not be applied broadly to an entire document if the document contains specific, segregable portions that can be disclosed without prejudice or harm.

Indicate below whether or not the funding proposal includes confidential information.

☐ **No confidential information:** The accredited entity confirms that the funding proposal, including its annexes, may be disclosed in full by the GCF, as no information is being provided in confidence.

☒ **With confidential information:** The accredited entity declares that the funding proposal, including its annexes, may not be disclosed in full by the GCF, as certain information is being provided in confidence. Accordingly, the accredited entity is providing to the Secretariat the following two copies of the funding proposal, including all annexes:

- full copy for internal use of the GCF in which the confidential portions are marked accordingly, together with an explanatory note regarding the said portions and the corresponding reason for confidentiality under the accredited entity's disclosure policy, and
- redacted copy for disclosure on the GCF website.

The funding proposal can only be processed upon receipt of the two copies above, if containing confidential information.

ANNEXES

H.1. Mandatory annexes

- | | | |
|-------------------------------------|----------|--|
| ☒ | Annex 1 | NDA no-objection letter(s) (template provided) |
| ☒ | Annex 2 | Feasibility study - and a market study, if applicable |
| ☒ | Annex 3 | Economic and/or financial analyses in spreadsheet format |
| ☒ | Annex 4 | Detailed budget plan (template provided) |
| ☒ | Annex 5 | Implementation timetable including key project/programme milestones (template provided) |
| ☒ | Annex 6 | E&S document corresponding to the E&S category (A, B or C; or I1, I2 or I3):
(ESS disclosure form provided)
☐ Environmental and Social Impact Assessment (ESIA) or
☐ Environmental and Social Management Plan (ESMP) or
☐ Environmental and Social Management System (ESMS)
☐ Others (please specify – e.g. Resettlement Action Plan, Resettlement Policy Framework, Indigenous People's Plan, Land Acquisition Plan, etc.) |
| ☒ | Annex 7 | Summary of consultations and stakeholder engagement plan |
| ☒ | Annex 8 | Gender assessment and project/programme-level action plan (template provided) |
| ☒ | Annex 9 | Legal due diligence (regulation, taxation and insurance) |
| ☒ | Annex 10 | Procurement plan (template provided) |
| ☒ | Annex 11 | Monitoring and evaluation plan (template provided) |
| ☒ | Annex 12 | AE fee request (template provided) |
| ☒ | Annex 13 | Co-financing commitment letter, if applicable (template provided) |
| ☒ | Annex 14 | Term sheet including a detailed disbursement schedule and, if applicable, repayment schedule |

H.2. Other annexes as applicable

- | | | |
|-------------------------------------|----------|--|
| ☐ | Annex 15 | Evidence of internal approval (template provided) |
| ☐ | Annex 16 | Map(s) indicating the location of proposed interventions |
| ☒ | Annex 17 | Multi-country project/programme information (template provided) |
| ☐ | Annex 18 | Appraisal, due diligence or evaluation report for proposals based on up-scaling or replicating a pilot project |
| ☐ | Annex 19 | Procedures for controlling procurement by third parties or executing entities undertaking projects financed by the entity |
| ☐ | Annex 20 | First level AML/CFT (KYC) assessment |
| ☐ | Annex 21 | Operations manual (Operations and maintenance) |
| ☒ | Annex 22 | Assessment of GHG emission reductions and their monitoring and reporting (for mitigation and cross cutting-projects) ⁸⁶ |
| ☐ | Annex X | Other references |

⁸⁶ Annex 22 is mandatory for mitigation and cross-cutting projects.



**forestry, fisheries
& the environment**

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Yeonsu-gu
INCHEON 22004
Republic Of Korea

Email: fundingproposal@gcfund.org; countries@gcfund.org

Dear Madam, Sir

RE: NO-OBJECTION LETTER IN RESPECT OF THE FUNDING PROPOSAL TITLED “SOUTHERN AFRICAN DECARBONIZATION FACILITY” SUBMITTED BY THE DEVELOPMENT BANK OF SOUTHERN AFRICA

We refer to the funding proposal titled “Southern African Decarbonization Facility” in Namibia and South Africa submitted by the Development Bank of Southern Africa (DBSA) to us on 22 June 2026 (the “**Proposal**”).

The undersigned is the duly authorized representative of the Department of Forestry, Fisheries and the Environment (DFPE the **national designated authority** of South Africa

Pursuant to GCF Decisions B.08/10, B.37/22, and B.41/02, the content of which we acknowledge to have reviewed, in my capacity as **representative of the national designated authority**, we hereby communicate our no-objection to the Proposal.

By communicating our no-objection, it is implied that:

- (a) The government of South Africa has no-objection to the Proposal; and
- (b) The Proposal is in conformity with the national priorities, strategies and plans of South Africa.

We also confirm that our national process for ascertaining no-objection to the **Proposal** has been duly followed.



Batho pele – putting people first



Departement van Bosbou, Visserie en die Omgewing • Department of Forestry, Fisheries and the Environment • UmNyango wezamaHlathi, zokuThiya neBhoduluko • iSebe lezamaHlathi, ezokuLoba noKusingqongileyo • Umnyango WezamaHlathi, Ezokudoba Nezemvelo • Kgoro ya Dithokgwa, Boreahlapi le Tikologo • Lefapha la Meru, Botshwasi ba ditlhapi le Tikoloho • Lefapha la Dikgwa, Ditlhapi le Tikologo • Litiko Letemahlatsi, Tinhlanti Netendzawo • Muhasho wa zwa Vhusima-magaka, Vhureakhovhe na Mupo • Ndzawulo ya Swihlahla, Vunjoveri na Mbango. The processing of personal information by the Department of Forestry, Fisheries and the Environment is done lawfully and not excessively for the purpose of processing in compliance with the POPI Act, any codes of conduct issued by the Information Regulator in terms of the POPI Act, and/or relevant legislation providing appropriate security safeguards for the processing of personal information of others.

NO-OBJECTION LETTER IN RESPECT OF THE FUNDING PROPOSAL TITLED “SOUTHERN AFRICAN DECARBONIZATION FACILITY” SUBMITTED BY THE DEVELOPMENT BANK OF SOUTHERN AFRICA

Notwithstanding the foregoing, we expect the Development Bank of Southern Africa to take the necessary measures to ensure that the **programme [and its sub-projects]** as described in the Proposal are implemented in a manner consistent with applicable national laws.

We acknowledge that this letter will be made publicly available on the GCF website.

Yours sincerely



Ms Nomfundo Tshabalala
DIRECTOR GENERAL
DATE: 17/07/2026



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The Secretariat
Green Climate Fund
G-Tower, 24-4 Songdo-dong, Yeonsu-gu Incheon
Republic of Korea

Windhoek, 07 July 2026

Re: No-objection letter in respect of the funding proposal titled "Southern African Decarbonization Facility" submitted by the Development Bank of Southern Africa

Dear Madam, Sir,

We refer to the funding proposal titled "Southern African Decarbonization Facility" in Namibia and South Africa submitted by the Development Bank of Southern Africa (DBSA) to us on 22 June 2026.

The undersigned is the duly authorized representative of the Ministry of Environment, Forestry and Tourism, the National Designated Authority of Namibia.

Pursuant to GCF Decisions B.08/10, B.37/22, and B.41/02, the content of which we acknowledge to have reviewed, in my capacity as focal point, we hereby communicate our no-objection to the Proposal.

By communicating our no-objection, it is implied that:

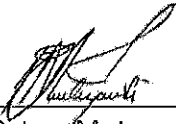
- (a) The government of Namibia has no-objection to the Proposal; and
- (b) The Proposal is in conformity with the national priorities, strategies and plans of Namibia.

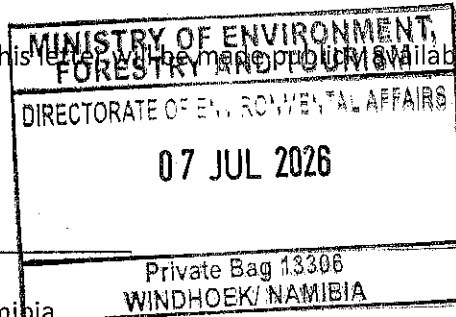
We also confirm that our national process for ascertaining no-objection to the Proposal has been duly followed.

Notwithstanding the foregoing, we expect the Development Bank of Southern Africa to take the necessary measures to ensure that the programme [and its sub-projects] as described in the Proposal are implemented in a manner consistent with applicable national laws.

We acknowledge that this letter will be made publicly available on the GCF website.

Kind regards,


Mr. Petrus Muteyauli
GCF Focal point for Namibia
Ministry of Environment, Forestry and Tourism
Namibia



Environmental and social safeguards (ESS) report disclosure form

Basic project or programme information	
Project or programme title	Southern African Industrial Decarbonization Facility (SIDF)
Potential sub-project(s) anticipated after GCF Board approval	Yes
Sector (public or private)	Private
Accredited entity/Project-specific Assessment Approach (PSAA) applicant	Development Bank of Southern Africa Limited
Environmental and social safeguards (ESS) category	Category I-1
Location – specific location(s) of project or target country or location(s) of programme	South Africa and Namibia
Safeguard Documents: Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plans (ESMPs), Environmental and Social Management System (ESMS), Environmental and Social Due-Diligence (ESDD) report, Land Acquisition and/or Resettlement Action Plan (LARAP), Indigenous Peoples Plan (IPP), Indigenous Peoples Planning Framework (IPPF), Resettlement Action Plan (RAP), Resettlement Policy Framework (RPF) etc. (as applicable)	
Date of disclosure on entity's website	Friday, June 26, 2026
Language(s) of disclosure	English
Explanation on language	English is an official language of South Africa and Namibia and is the most appropriate language for a technical document of this nature. It is also widely understood in the project's target areas.
Link(s) to disclosure	Environmental and Social Management System (ESMS)¹ English: https://www.dbsa.org/sites/default/files/media/documents/2026-10/SIDF-CI3-ESMS_v0.5_PUBLIC-Disclosure.pdf
Other link(s)	https://climatefundmanagers.com/wp-content/uploads/2026/09/SIDF-CI3-ESMS_v0.5_PUBLIC-Disclosure.pdf
Remarks on compliance with GCF policies	An Environmental and Social Management System (ESMS) consistent with the requirements for a Category I-1 programme is contained in the documents above. *
Disclosure in locations convenient to affected peoples (stakeholders)	
Date(s)	Friday, June 26, 2026
Place(s)	South Africa: Development Bank of Southern Africa Limited 1258 Lever Road Headway Hill Midrand South Africa 1685 SA-H2 Fund Managers Proprietary Limited Osborne Place, 1 st Floor

¹ The ESMS for Climate Investor Three (CI3) serves as the ESMS for the Southern African Industrial Decarbonization Facility (SIDF).

	1 Osborne Road Claremont Cape Town South Africa 7708 Namibia: Environmental Investment Fund of Namibia 8933 Heinitzburg Heights c/o Heinitzburg & Dr Theo-Ben Gurirab Streets Klein Windhoek Windhoek Namibia Namibia Hydrogen Fund Managers (Pty) Limited 24 Orban Street, Klein Windhoek Namibia
Date of Board meeting in which the FP is intended to be considered	
Date of entity's Board meeting	N/A
Date of GCF's Board meeting	Monday, October 26, 2026

* Subsequent to the disclosure of this form to the Board and active observers on 25 June 2026, the Environmental and Social Management System (ESMS) has been updated to be consistent with the requirements for a Category I-1 programme.

Note: This form was prepared by the entity stated above.

Independent Technical Advisory Panel's assessment of FP314

Proposal name:	Southern African Industrial Decarbonisation Facility (SIDF)
Accredited entity:	Development Bank of Southern Africa
Country/(ies):	Namibia, South Africa
Project/programme size:	Large

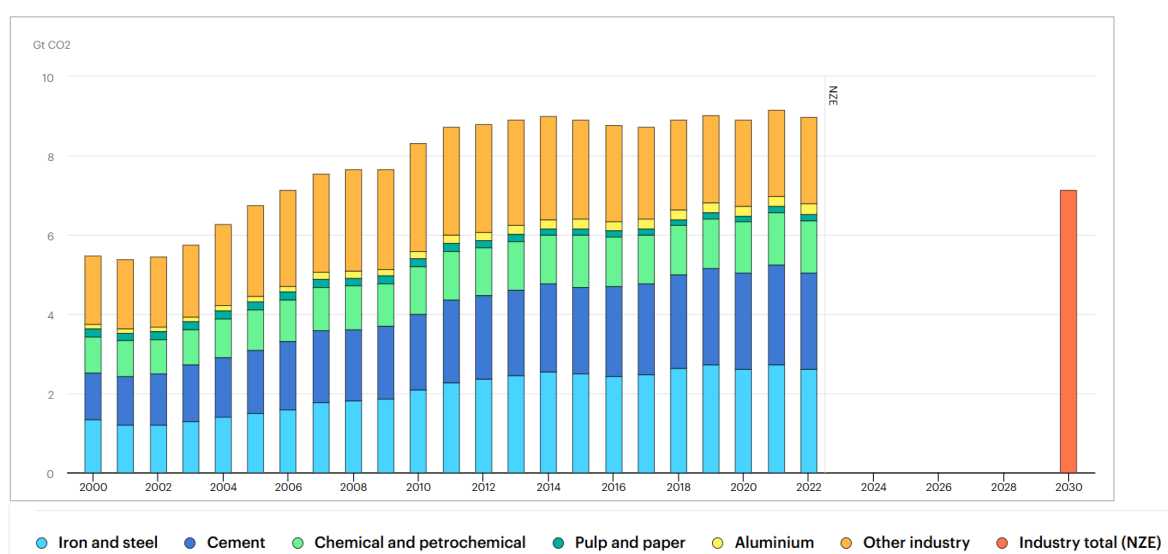
I. Assessment of the independent Technical Advisory Panel

1.1 Overview

1. The industrial sector accounts for around one third of global greenhouse gas (GHG) emissions, including indirect emissions related to electricity and heat generation. Industrial fuel combustion accounts for the largest share, followed by industrial process emissions.¹ South Africa is heavily reliant on fossil fuels. Industry is the largest energy user in the country and the second largest GHG emitter. The decarbonisation of the South African economy thus requires reducing industrial emissions. Currently, Namibia has limited industrial GHG emissions, but the country aims to leapfrog towards a green industrial economy leveraging abundant renewable energy resources to develop green hydrogen hubs and low-emission industries.

2. The world's industrial emissions are not yet aligned with the International Energy Agency's Net Zero Emissions by 2050 Scenario (see figure 1). Carbon dioxide (CO₂) emissions from the iron and steel, cement, and chemical and petrochemical sectors accounted for around 70 per cent of global direct industrial CO₂ emissions in 2021.

Figure 1: Direct CO₂ emissions from industry in the Net Zero Scenario, 2000–2030



¹ See <https://www.ipcc.ch/report/ar6/wg3/chapter/chapter-11/>.

Source: International Energy Agency. "Direct CO₂ emissions from industry in the Net Zero Scenario, 2000–2030"; available at <https://www.iea.org/data-and-statistics/charts/direct-co2-emissions-from-industry-in-the-net-zero-scenario-2000-2030-2>.

Note: Direct emissions include both fuel combustion and industrial process emissions. "Other industry" includes light industries, other non-metallic minerals and other non-ferrous metals.

Abbreviation: NZE = Net Zero Emissions by 2050 Scenario.

3. Expected interventions of the programme are primarily in the area of renewable energy generation and storage capacity within the industrial sector, green hydrogen production, storage and distribution capacity and low-carbon industrial applications in sectors such as green ammonia and fertilisers, synthetic fuels, iron and steel, chemicals and other hydrogen-enabled industrial processes, as well as other enabling infrastructure required for the transition of hard-to-abate sectors. It is expected that the project will finance 30–40 industrial decarbonisation projects across South Africa and Namibia.

4. Green hydrogen and enabled industrial processes still lack the operating track record, level of demand and integrated infrastructure needed to give investors the confidence in future revenues and project performance. Few projects reach financial closure and operations, due also to investment barriers, including high upfront capital requirements, long development timelines and uncertain offtake arrangements. The project provides for patient, risk-tolerant capital across the development and construction stages with a development tranche, which provides development loans to early-stage projects, and a construction equity tranche, which provides long-term risk capital during construction and early operations. The project expects to crowd in additional private sector capital across the project lifecycle.

5. The prospective fund size is estimated at USD 1,200 million, of which USD 140 million is requested from GCF as equity.

6. The accredited entity (AE) is the Development Bank of Southern Africa (DBSA). The project is managed by Climate Fund Managers (CFM) and its affiliated local fund managers through the Climate Investor Three (CI3) platform, which acts as a central feeder facility adopting a national-level approach across the two countries. The implementation period is 12 years, comprising a 7-year investment and a 5-year divestment period.

1.2 Impact potential

Scale: Medium

7. The GHG mitigation impact is estimated at 24 Mt CO₂ over the lifespan of the technologies and investments.

8. GHG emission reductions are calculated on the basis of an indicative pipeline of projects. Impact targets are based on the share of impact that is attributable to CI3 plus mobilised capital. A total of 62 per cent of the expected impact is to come from industrial decarbonization, which is broken down as follows: 80 per cent from commercial and industrial renewable energy generation (primarily solar photovoltaic with and without storage), 10 per cent from carbon capture and storage and 10 per cent from energy efficiency measures (waste heat recovery and heat pumps). The remaining 38 per cent comprises 27 per cent from green ammonia, 9 per cent from green steel, 1 per cent from green methanol production and 1 per cent from green hydrogen and fertilizers. The project expects to generate nearly 54,000 GWh of renewable energy per year, with an installed renewable energy capacity of 1.52 GW and a storage capacity of 117 MW.

9. GHG calculation approaches are transparently documented and follow internationally accepted methodologies. As in other GCF-financed programmes, the projected GHG emission mitigation impact is based on an indicative initial pipeline of investments and thus needs to be considered with due caution as these are preliminary estimates, with actual results depending on actual investments to be realized. A large share of GHG emission reductions is due to

commercial and industrial renewable energy generation, where the baseline is related to the carbon factor of the grids in Namibia and South Africa. South Africa has one of the highest carbon grid factors in the world and therefore renewable energy projects have a large GHG impact potential. The independent Technical Advisory Panel (iTAP) questions, however, whether all of these projects during the implementation period of 12 years are additional. Non-additional investments would be business as usual and no additional GHG impact would result from such investments.

10. South Africa is a high-emitting, fossil-fuel based industrial economy where the project can support the transition of existing emission-intensive assets to low-carbon industrial production. Namibia currently has no industrial base. It has, however, the potential to establish itself in specific areas as a new industrial green power hub owing to its very large low-cost renewable energy potential. Under a business as usual scenario it can be assumed that Namibia's industrial emissions would not increase greatly – the assumption that grey hydrogen would be produced in Namibia instead of green hydrogen or fossil-based ammonia instead of green ammonia is misleading as the country has no fossil energy reserves. Calculated emission reductions for green hydrogen based on the worldwide benchmark of how hydrogen is produced (grey hydrogen) are in principle correct. However, these emission reductions do not occur in Namibia but rather in countries which produce or use grey hydrogen and to which green hydrogen is exported. The projected GHG impact of the programme in the case of Namibia is thus not considered as a contribution towards achieving Namibia's national GHG emission reduction target but as a contribution towards reducing worldwide GHG emissions from the usage of fossil hydrogen, ammonia, methanol and other outputs which can be substituted with green hydrogen and derivatives.

11. Hydrogen leakage from pipelines and storage facilities is increasingly considered a GHG problem, with estimates in the range of 2–20 per cent of leakage losses.² Hydrogen reacts in the atmosphere with the limited amount available of hydroxyl radicals which reduce methane. Hydrogen leaks would thus prolong the permanence of methane in the atmosphere. High leakage could evaporate the GHG mitigation benefit of green hydrogen production. Owing to the very limited available information on leakages the project assumed in its GHG emission calculations that no leakage occurs. After discussions with the iTAP the project has agreed upon monitoring hydrogen leakage on a per project level. This is reflected in the updated version of the monitoring, reporting and verification protocol. The project also claims that leakage prevention measures will be incorporated in the project designs.

12. Invested companies could also claim carbon credits to offset carbon taxes in the domestic market in South Africa or for international usage. This would result in double claiming of GHG emission reductions. An invested company which claims carbon credits and sells them on the domestic or international market still reduces its own GHG emissions but by selling the credits to third parties these would offset the additional emissions originating from the third party. In such a case GCF would invest its resources in a company without any subsequent net GHG impact. The AE intends to monitor this ex-post. According to the GCF Secretariat the FAA with the AE includes currently a condition that the AE shall, to the extent permitted by the applicable laws and regulations, cause or contractually require (as applicable) that any greenhouse gas emission reductions (e.g. in emissions by sources or an enhancement of removal by sinks) achieved by the Project shall not be converted into any offset credits or units generated thereby, or if so converted, will be retired without allowing any other emissions of greenhouse gases to be offset. The iTAP expects that the fulfillment of this condition is monitored and checked.

² Hydrogen leakage: a potential risk for the hydrogen economy? Columbia Sipa 7/2022; Trapani et al. 2025. Hydrogen leakages across the supply chain: current estimates and future scenarios. *International Journal of Hydrogen Energy*. 145: pp.1084–1095.

13. Overall, the iTAP considers that the expected mitigation benefit as calculated by the project to be very optimistic and potentially overstating the actual impact. Potential use of carbon credits, exports of green hydrogen and derivative outputs, potentially non-additional renewable energy investments, changes in the portfolio of invested companies and potential leakages associated with the transport and use of hydrogen all have the potential of significantly reducing the expected mitigation impact. The calculations are therefore not deemed to follow a conservative approach. Nevertheless, the iTAP recognizes that the project has a significant potential impact on decarbonizing industrial emissions in Namibia and South Africa.

1.3 Paradigm shift potential

Scale: Low to medium

14. The project basically invests in 30 to 40 individual projects. These are potentially critical to showcase actual implementation of projects in hard-to-abate industrial sectors. Technologies around the proposed investments are, however, well known and reasons for not applying them are largely market-based; with current conditions and demand for green industrial products such as green steel, the investments are currently financially not attractive. The project itself will not work on changing these critical market factors but it reduces the barriers of lack of concrete implementation projects, especially for large-scale green hydrogen projects (industrial renewable energy projects are already well known – see discussion above relative to the additionality of such investments).

15. The project provides development loans to early-stage projects, and long-term risk capital during construction and early operations. The development tranche is expected to have a size of USD 175 million and the construction equity tranche a size of USD 1,025 million. In total some USD 350 million is expected to be invested in Namibia and USD 850 million in South Africa.

16. Multiple other activities and investments occur in the same countries in the sphere of industrial decarbonization, including other activities financed or to be financed by GCF, such as the Transformation Pathways Initiative, co-financed by Finance in Motion and the United Nations Industrial Development Organization. The link with such activities helps to disseminate information around project success as well as to create enabling policy frameworks and has thus components lacking in this project proposal, which focuses purely on investments. Most notable among comparable activities is the Climate Investment Funds (CIF) Industry Decarbonization Program, where both Namibia and South Africa have been selected with a target investment by CIF per country of USD 250 million. In discussions with the iTAP the AE gave the assurance that these programmes are complementary and that coordination and interchange will occur. This is considered as especially important in the case of the CIF programme.

17. The project does not have an institutionalized approach or specific activities for knowledge-sharing and replication. Neither does it have an institutionalized approach or activities in the sphere of improving the enabling framework for low-carbon industrial investments. This is also not considered an area where the AE or the executing entities (EEs) involved have competence. The project basically relies on “automatic” replication of successful investment models.

18. Based on the above points, the iTAP considers the paradigm shift potential of the project to be low to medium.

1.4 Sustainable development potential

Scale: Low to medium

19. The project is potentially aligned with several Sustainable Development Goals (SDGs): SDG 7 (Affordable and clean energy); SDG 8 (Decent work and economic growth); SDG 9 (Industry, innovation and infrastructure); SDG 12 (Responsible consumption and production); and SDG 13 (Climate action).
20. Environmental co-benefits are related to reduced pollution effects caused directly or indirectly by fossil energy sources. This includes expected improvements to air quality and an improved resource efficiency.
21. Economic benefits are achieved by companies which can reduce costs through investments in renewable energy generation and through improved material efficiency. Surplus renewable energy generated at the commercial and industrial level will be used for surrounding communities, thus improving access to affordable and reliable grid electricity. Overall, 114,000 people are expected to gain improved access to clean energy.
22. Social benefits are realized through the creation of green jobs. The project counts only the jobs generated through the investments. However, on a net basis, jobs might be lost through the shift towards green industries. For example, shifts towards reduced coal use can result in lower numbers of jobs in the mining industry. Employment opportunities arising from the green economy transition can be in different geographic areas from those experiencing employment losses in fossil fuel dependent sectors and/or can require different skill sets. South Africa has for this purpose advanced efforts in establishing a Just Transition Framework. Key objectives include mitigating employment losses, facilitating workforce reskilling and redeployment, supporting economic diversification in affected regions, minimizing the need for involuntary relocation of workers and communities, and ensuring that the costs and benefits of the transition are distributed fairly across sectors, geographic regions and population groups. DBSA, in partnership with the Presidential Climate Commission and with financial and technical support from the Government of Germany, is currently developing a Just Transition Financing Mechanism. The mechanism is intended to provide targeted support to communities adversely affected by the transition to a low-carbon economy. This, however, is not part of the proposed project.
23. A critical environmental and social component is water usage for green hydrogen production. Namibia possesses world-class renewable energy resources (solar and wind) that position it uniquely for the green hydrogen transition. Freshwater availability is, however, very limited. Desalination plants if powered by fossil energy will increase overall GHG emissions. Upon the request of the iTAP the AE confirmed that green hydrogen projects in Namibia will be based on renewable energy powered desalination plants, wastewater recycling and closed-loop circular water-use systems, which will be built alongside hydrogen production and industrial facilities. Water sources will be either marine (i.e. seawater) or groundwater. In any scenario where a groundwater resource is planned to be used, it will be independently assessed and confirmed to be brackish groundwater (and not freshwater). There will be no abstraction from fossil aquifers; this is to be confirmed by an independent third-party hydrological study before financial close or first disbursement. All independent assessments will be updated where abstraction rates, wellfields or aquifer conditions materially change. While the programme has updated the measurement, reporting and verification framework to establish the minimum requirements for projects with material water demand or groundwater dependency, the recommendation of the iTAP is to ensure contractually with the AE that no investments can be made in projects which do not fully follow these principles and that these need to be ensured by an independent third-party validator approved by GCF.
24. The project's gender action plan includes supportive measures for improved gender considerations. Its focus is on increasing awareness and increasing opportunities without having hard, measureable targets to enhance women's participation.

25. Overall, the iTAP considers the project's sustainable development potential as low to medium.

1.5 Needs of the recipient

Scale: Medium

26. South Africa is an upper-middle-income economy and Namibia a lower-middle-income economy.
27. South Africa is the largest GHG emitter in Africa and ranks among the top 15 emitters globally in absolute terms.³ Coal remains the dominant fuel in South Africa's overall energy and emissions profile with industry being the largest end-use consumer of energy. Many industrial processes, including steelmaking, cement and chemicals, still require fossil fuels as sources of energy.⁴ Namibia has very low GHG emissions but faces significant exposure to climate change. The agriculture and land use sector accounts for 80 per cent of emissions in Namibia. Within the energy sector, the transport sector is by far the largest emission source. Industrial emissions are marginal. As per the International Energy Agency's analysis, Namibia possesses low-cost renewable energy resources that position it uniquely for the green hydrogen transition, including a very high solar irradiance, high average wind speeds, land availability and coastal access.
28. Southern Africa faces a large investment gap in energy transition and industrial decarbonization. While governments have adopted ambitious climate and industrial development strategies, significant financing constraints continue to limit implementation, particularly for large-scale private infrastructure.
29. Based on above aspects, the iTAP considers the needs of the recipient to be medium.

1.6 Country ownership

Scale: High

30. The no-objection letters of the Governments of South Africa and of Namibia have been provided.
31. The AE held various stakeholder meetings prior to presenting the project.
32. The project is fully aligned with South Africa's updated 2025 nationally determined contribution commitment and the country's Low-Emission Development Strategy. Achieving GHG targets set by the government depends heavily on mitigation of hard-to-abate industrial sectors. The project is also fully aligned with the relevant policy ecosystem, including the Just Energy Transition Partnership and the Hydrogen Society Roadmap.
33. The project is fully aligned with Namibia's updated nationally determined contribution, Long-Term Low-Emission Development Strategy and Green Industrialisation Blueprint, which aims to create a green industrialization/green hydrogen value chain.
34. The AE for this proposal, DBSA, is a State-owned entity from South Africa, ensuring strong country alignment. The fund structure for Namibia is a joint venture between CFM, Invest International and the Environmental Investment Fund of Namibia, which is a fully government-owned entity, also indicating a strong country alignment. The Environmental Investment Funds main contribution is to provide strategic insight and contextual expertise and to facilitate stakeholder engagement in Namibia.
35. DBSA is the AE for this project. It has acted as AE and EE on several GCF programmes, including the DBSA Climate Finance Facility (FP098, 2018), the Embedded Generation

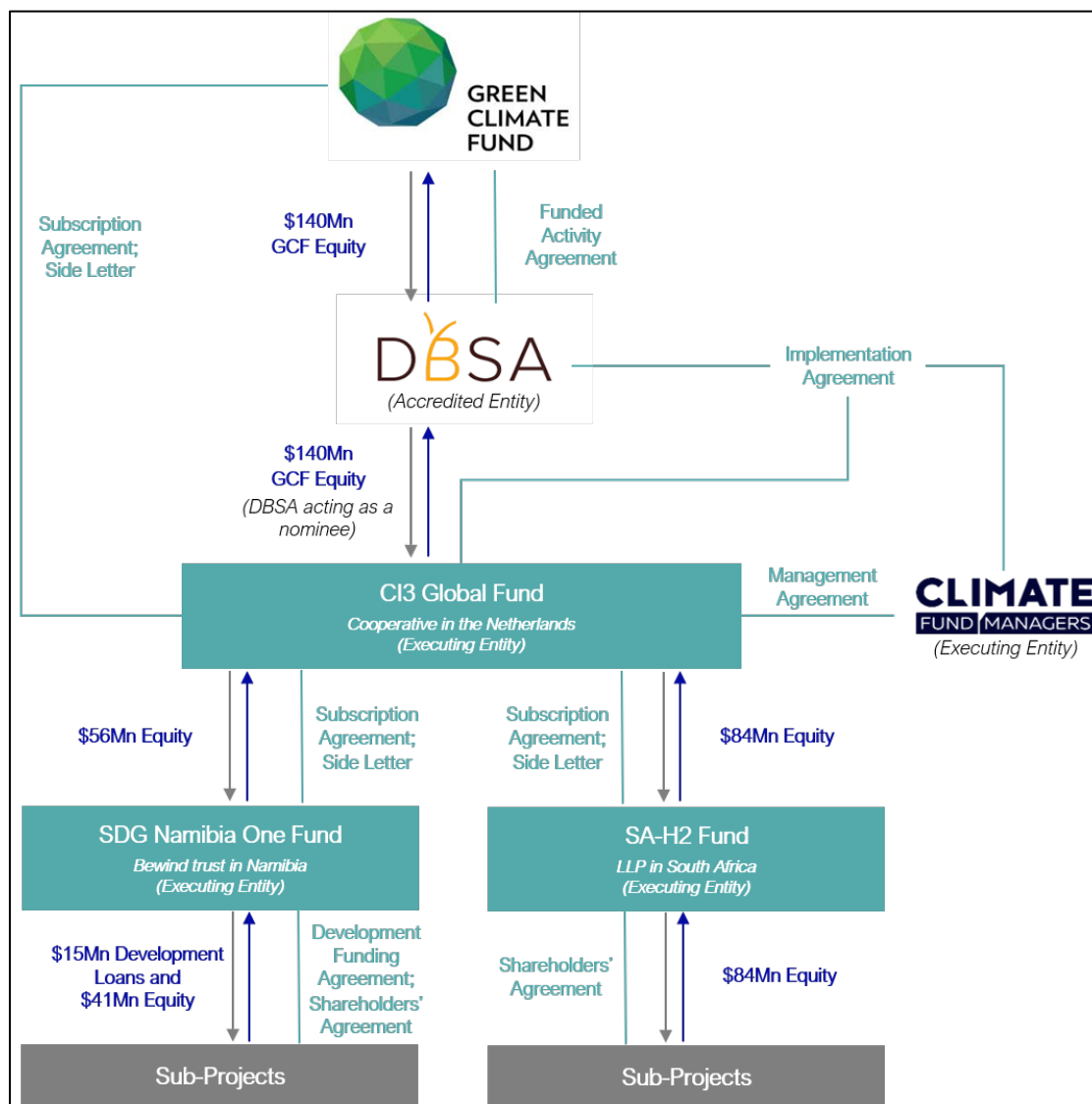
³ Energy Council of South Africa. See <https://energycouncil.org.za/mzansi/emissions/>.

⁴ International Energy Agency. See <https://www.iea.org/countries/south-africa/efficiency-demand>

Investment Programme (FP106, 2019) and the Climate Change Resilience through South Africa's Water Reuse Programme (FP209, 2023).

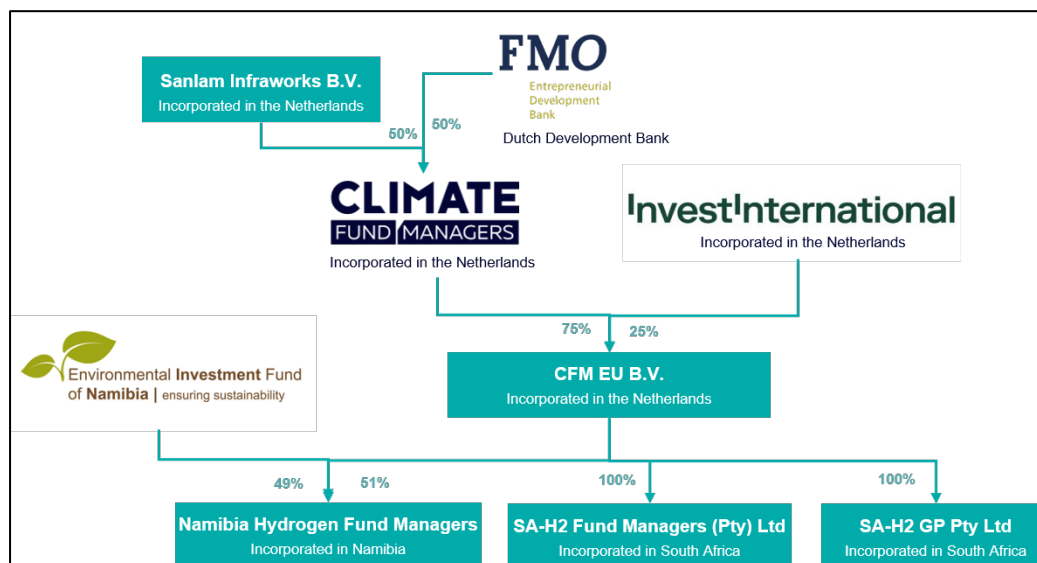
36. The project has in total eight EEs. CFM is currently the EE for FP099 Climate Investor One, FP190 Climate Investor Two and FP223 Project GAIA. Both FP099 and FP190 are programmatic approaches in the areas of renewable energy and water and sanitation infrastructure in Latin America, Asia and Africa. CFM was accredited to GCF in July 2026. The CI3 Global Fund or CI3 (EE) acts as the central feeder fund allocating capital to the underlying funds SDG Namibia One Fund and SA-H2 Fund, established for the sole purpose of financing the development, construction and operation stage of industrial decarbonization projects in South Africa and Namibia. CFM EU B.V. (EE) and SA-H2 GP Ltd. (EE) are responsible for overseeing fund governance and appointing the fund managers on behalf of the fund. CFM, SA-H2 Fund Managers Ltd. (EE) and Namibia Energy Transition Fund Managers Ltd. (EE) are fund managers of the respective funds and are responsible for pipeline origination, project development, transaction execution, portfolio management, investment monitoring and day-to-day management of the CI3 Global Fund and its underlying funds. Figures 2 and 3 show the flow of funds and the underlying fund-ownership structure.

Figure 2: Flow of funds



Source: Funding proposal, figure 5.

Figure 3: CI3 and its underlying funds – ownership structure



Source: Funding proposal, figure 7.

37. Based on the above aspects, the iTAP considers the country ownership of the recipient to be high.

1.7 Efficiency and effectiveness

Scale: Medium to high

38. The project has mitigation benefits. Based on the investment of GCF and the expected mitigation impact the cost per t CO₂ is in the order of USD 6. This is a low value, especially for industrial decarbonization. Based on the total investment the value is around USD 50 per t CO₂ mitigated. As previously mentioned, the GHG mitigation impact has been calculated based on rather optimistic assumptions and as such the GHG mitigation cost could be higher than anticipated.

39. The total project investment is USD 1,200 million, of which GCF contributes USD 140 million. The GCF contribution is junior equity with a 12-year tenor and 3-year grace period. The GCF commitment will contribute USD 15 million to the development tranche (8.6 per cent of the projected total of the development tranche) and USD 125 million to tier 1 of the construction and equity tranche (12.2 per cent of the total projected construction and equity tranche and 61 per cent of tier 1 investors). Expected co-finance is USD 1,060 million, of which USD 80 million tier 1 junior equity with terms aligned with the GCF tier 1; USD 820 million in tier 2 and tier 3 senior equity, but subject to different pricing arrangements. All tiers have a 12-year tenor and 3-year grace period.

40. The construction and equity tranche is a structured fund with three tiers with different investors that have different risk/return profiles. Tier 1 constitutes junior equity to be provided by donors, tier 2 constitutes impact investors and development finance institutions and tier 3 constitutes institutional and private investors. The ratio between the three tiers is set at 20:40:40. Whenever one or two out of the three tiers exceed that ratio that capital remains 'locked'. This implies that USD 125 million of GCF tier 1 capital will unlock USD 250 million in tier 2 and USD 250 million in tier 3 capital, once it is raised. The expected co-finance ratio is 7.6 to 1. The Government of the Kingdom of the Netherlands (through Invest International) and the European Commission (through FMO) have already committed funding to CI3 and its underlying funds. The underlying funds have additional regional backing from IDC and the PIC.

41. The iTAP recommends that the annex 3 model, the FP and the term sheet be consistent concerning returns and hurdle rates.
42. The overall iTAP assessment of the project's efficiency and effectiveness is medium to high.

II. Overall remarks from the independent Technical Advisory Panel

43. The iTAP recommends that the Board approve this funding proposal with the condition set out below.
 - (a) To introduce into the FAA the following covenants to ensure that Project investments (Sub-Projects) do not result in the reduction of freshwater availability in Namibia:
 - (i) "The AE shall contractually require that the CI3 Global Fund and relevant EEs ensure or contractually require (as applicable) that:
 - (1) Sub-Projects with material water demand in Namibia will furnish their water demand from renewable energy-powered desalination plants, wastewater recycling and/or closed-loop circular water-use systems built alongside the production facilities, seawater, or brackish groundwater;
 - (2) freshwater will not be used and there shall be no abstraction from fossil aquifers; and
 - (3) Compliance of the Sub-Projects and Project Companies with items (1) and (2) above must be confirmed, in relation to each Sub-Project with material water demand in Namibia, by an independent third-party hydrological study approved by the Fund before investment approval for the relevant Sub-Project pursuant to the Key Fund Documents. All independent studies/assessments shall be updated and reissued where abstraction rates, wellfields or aquifer conditions materially change;
 - (ii) The AE will ensure that the impact Measurement, Reporting and Verification (MRV) methodology will establish the minimum requirements for projects with material water demand or groundwater dependency."

Response from the accredited entity to the independent Technical Advisory Panel's assessment (FP314)

Proposal name:	Southern African Industrial Decarbonisation Facility (SIDF)
Accredited entity:	Development Bank of Southern Africa
Country/(ies):	Namibia, South Africa
Project/programme size:	Large

Impact potential

The AE acknowledges the additionality and double claiming concerns related to carbon credits. The AE would like to note that the GCF commitment will not support arrangements that result in the same emission reductions being claimed simultaneously towards host-country targets and as offsets against domestic or international compliance obligations. Case-by-case assessment will be undertaken to ensure consistency with applicable standards and where considered acceptable, appropriate adjustments will be made to the ex-post impact calculations at the sub-project-level.

Paradigm shift potential

The AE would like note that CI3 Global and the Underlying Funds are expected to support a diversified and balanced portfolio of 30 to 40 infrastructure projects, across different stages of the lifecycle, for industrial decarbonisation in hard-to-abate sectors and enabling infrastructure including selected investments in green hydrogen and its derivatives. Therefore, the paradigm shift potential lies in CI3's ability to move beyond isolated project financing toward a programmatic approach and creating a streamlined financing option for 'whole of the lifecycle' of the project.

The AE would like to highlight that the replicability and mobilisation potential of the 'Climate Investor' model. Since the launch of Climate Investor One (CI1), FP099, in 2017, the model has been adapted and expanded through the EE's subsequent vehicles demonstrating its ability to mobilise capital for different climate sectors while maintaining the same core fund structuring principles.

Sustainable development potential

The AE agrees that the project does not account for 'net' job gains from energy transition through a 'labour modelling' approach. However, the AE will explore opportunities to harness synergies with Just Transition Financing Mechanisms and other similar initiatives in South Africa.

Needs of the recipient

This is well noted.

Country ownership

The AE would like to note that Figure 2 and Figure 3 in this section sourced from the Funding Proposal contain commercially sensitive and confidential information. Accordingly, these figures should not be included in any publicly disclosed version of the iTAP assessment. The AE kindly requests that both figures be redacted from the public version of the iTAP assessment.

Efficiency and effectiveness

The AE would like to note that the returns and pricing figures for the different tiers (Tier 1, Tier 2, and Tier 3) referenced in paragraphs 39 and 41 constitute commercially sensitive and confidential information. Accordingly, these details should not be included in any publicly disclosed version of the iTAP assessment. The AE kindly requests that the relevant returns and pricing figures be redacted from the version intended for public dissemination.

The feedback is well noted and Section C.1(a)(iii) of the Funding Proposal is amended to align with the Term Sheet.

Overall remarks from the independent Technical Advisory Panel:

The AE agrees with most of the iTAP remarks and thanks iTAP for the recommendation. However, the AE would suggest adding the following definitions in the covenants for clarity during implementation such as

1. Material operational demand means “a level of water abstraction, consumption, or dependency that is significant in relation to the baseline water availability, scarcity, competing uses, and/or ecological requirements of the watershed in which an activity operates, such that it may create, exacerbate, or be exposed to water-related environmental, social, or operational risks.”.
2. Freshwater means “naturally occurring surface water and groundwater resources with low salinity, including rivers, streams, lakes, wetlands, reservoirs, and aquifers, excluding marine and brackish waters.” and/or the USGS definition of “water containing less than 1,000 mg/L of dissolved solids.”

In addition, with respect to the remark on commission of the independent third-party hydrological study for ensuring compliance of the proposed covenants, the AE would like suggest commissioning of “hydrogeological study” specifically as it is the hydrogeological (groundwater) conditions that need to be assessed in most cases rather than hydrological although this may be relevant in some limited cases.

Gender Assessment and Action Plan

Southern African Industrial Decarbonisation Facility

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Executive summary

The Southern African Industrial Decarbonisation Facility (SIDF) is being developed by CFM as a blended finance vehicle to support industrial decarbonisation and green industrial development in developing countries, with a focus on South Africa and Namibia. The Fund is expected to invest in low-carbon industrial solutions, including green hydrogen and renewable energy infrastructure, green ammonia, fertilizers, steel, methanol, commercial and industrial renewable energy, battery storage, and carbon capture, utilisation and storage. This Gender Assessment has been prepared as an annex to SIDF's funding proposal to the Green Climate Fund and identifies the main gender-related constraints, risks and opportunities relevant to the Fund's investment strategy.

The assessment finds that South Africa and Namibia both have relatively strong legal and policy commitments to gender equality, but that these commitments coexist with persistent structural inequalities in economic participation, labour market access, leadership, unpaid care responsibilities, gender-based violence risks, and limited access to productive resources. In both countries, women's lower participation in higher-value industrial sectors is not primarily explained by gaps in basic education. Rather, it reflects systemic barriers to entry, retention and advancement, including occupational segregation, hiring biases, weak school-to-work transitions, limited access to technical career pathways, and workplace cultures that remain strongly male-dominated. These constraints are particularly relevant for SIDF because the sectors in which the Fund is expected to invest draw heavily on engineering, construction, industrial operations, and technical management roles where women are currently underrepresented.

The core problem identified by the assessment is that women are systematically excluded from economic opportunities in the sectors most relevant to green hydrogen and industrial decarbonisation, while at the same time bearing a disproportionate share of the climate, energy and water access burdens that these industries are intended to address. Without deliberate gender-responsive measures, emerging green industrial value chains risk reproducing the exclusionary workforce, ownership, procurement and governance patterns of existing industrial sectors. This risk is especially important because many of the Fund's potential investments will involve long-lived assets and early-stage sector formation, meaning that workforce norms and benefit-sharing practices established now may shape these sectors for decades.

The problem analysis identifies four mutually reinforcing root causes: structural labour market barriers and sectoral exclusion; women's disproportionate unpaid care and domestic work burden; persistent gender norms and power imbalances, including gender-based violence; and unequal access to assets, resources, finance, and decision-making. These root causes manifest differently across SIDF's investment areas. The assessment also recognises that women are not a homogenous group and that intersecting factors such as disability, age, geography, poverty and Indigenous or traditional community affiliation may create additional barriers and vulnerabilities.

At the same time, the assessment identifies several practical gender opportunities for SIDF and its investees. These include active recruitment partnerships with engineering faculties, technical colleges and vocational programmes to reach qualified women candidates; mentorship and retention support for women in technical and operational roles; gender-responsive workplace policies and safe, accessible grievance mechanisms; GBV response and prevention measures during construction and operations; procurement approaches that support and develop women-owned suppliers where feasible; and project-level consultation processes that enable women in project-adjacent communities to influence the design of benefit-sharing, water, energy and environmental management arrangements. The assessment also recognises that community-level benefits

from improved water and energy reliability can be particularly important for women, especially where interruptions increase unpaid work burdens or constrain small-scale and home-based economic activity.

The Gender Action Plan translates these findings into four outcome areas: integrating gender-responsive systems at fund and project level; establishing inclusive workforce and skills pathways; implementing gender-responsive community engagement and benefit-sharing; and promoting safer and more inclusive workplaces and communities. Key actions include strengthening Fund Manager capacity, applying gender considerations throughout the investment process, requiring project-level Gender and Social Inclusion Action Plans, supporting investees with gender integration materials, promoting women's recruitment and skills development, establishing gender-responsive workplace and grievance systems, engaging women meaningfully in community governance, supporting women's economic empowerment through procurement and training where feasible, and monitoring gender-disaggregated results over the investment lifetime.

Overall, the assessment concludes that SIDF has a clear opportunity to support a more gender-responsive and socially inclusive industrial decarbonisation transition in South Africa and Namibia. If implemented effectively, the proposed measures can help ensure that women have more equitable access to employment, skills, procurement, decision-making and community benefits arising from SIDF-supported investments, while reducing the risk that climate finance reinforces existing gender inequalities.

1 Introduction and purpose

The Southern African Industrial Decarbonisation Facility (SIDF) is being developed by CFM as a blended finance vehicle to support industrial decarbonisation and green industrial development in developing countries. The Fund is expected to invest in projects that accelerate the deployment of low-carbon industrial solutions, including renewable energy, green hydrogen and related industrial applications, and other technologies that reduce greenhouse gas emissions in hard-to-abate sectors. In doing so, SIDF seeks to contribute to climate mitigation while supporting broader economic development, industrial transformation, and resilience outcomes in the markets where it invests.

This Gender Assessment has been prepared as an annex to SIDF's funding proposal to the Green Climate Fund. It responds to the Green Climate Fund requirement that funding proposals include a gender analysis or assessment and a corresponding Gender Action Plan, with gender considerations integrated into the design, implementation, monitoring, and evaluation of the proposed programme. The Green Climate Fund positions gender mainstreaming as a core element of climate finance, recognising that climate change affects women and men differently and that climate interventions are more effective when they take account of gender-differentiated needs, constraints, risks, and opportunities.

The purpose of this assessment is to identify the main gender-related constraints, risks, and opportunities relevant to SIDF's proposed investment strategy, with a focus on South Africa and Namibia as initial target markets. The assessment examines how existing gender inequalities intersect with the sectors in which the Fund is likely to invest, including green hydrogen production and renewable energy infrastructure, green ammonia and green steel, commercial and industrial renewable energy, battery storage, and carbon capture, utilisation and storage. It also considers how women and men may be differently affected by the climate, energy, water, labour market, and community-level dynamics associated with these investments.

The assessment is intended to serve three related purposes. First, it provides a contextual analysis of gender inequality in the target countries and sectors, including labour market participation, access to skills and employment, leadership and decision-making, unpaid care responsibilities, gender-based violence risks, and climate vulnerability. Second, it identifies the root causes and effects of gender inequality in relation to SIDF's investment areas, including the risk that emerging green industrial value chains reproduce the exclusionary patterns of existing industrial sectors if no deliberate action is taken. Third, it informs the design of the Gender Action Plan by identifying practical entry points through which SIDF and its investees can promote women's economic participation, strengthen gender-responsive safeguards, and ensure that climate and development co-benefits are delivered more equitably.

The assessment is not intended to present a standalone gender programme separate from SIDF's investment strategy. Rather, it identifies how gender equality and women's empowerment can be integrated into the Fund's investment processes, investee engagement, community consultation, environmental and social risk management, and monitoring framework. In this way, it supports SIDF in meeting Green Climate Fund expectations while also strengthening the Fund's ability to deliver gender inclusive and durable climate outcomes.

2 Country and sector context

2.1 South Africa

South Africa presents a complex gender landscape characterized by strong legal commitments to gender equality alongside persistent structural inequalities in economic participation, employment, and access to opportunities and high levels of gender-based violence. While progress has been made in education, health, and political representation, gender disparities remain pronounced in the labour market and in access to higher-value economic sectors.

Socioeconomic and demographic indicators

South Africa has achieved notable improvements in key development indicators over time. Maternal mortality has declined significantly to approximately 118 deaths per 100,000 live births in 2023 from 180 deaths in 2013.¹ Infant mortality has decreased from 32 to 24 deaths per 1,000 live births between 2013 and 2024.² Life expectancy has improved, with women living longer than men, approximately 70 years for women compared to 63 years for men.³ These trends reflect improvements in healthcare access and service delivery.

Educational outcomes indicate gender parity. Girls have higher completion rates in secondary education than boys (91% to 85%), and adult literacy rates are high and nearly equal between women and men (91%).⁴ This indicates that gender disparities in South Africa are not primarily driven by gaps in basic education, but rather by structural barriers that emerge later in economic participation. While men dominate the numbers in the tertiary STEM and technical vocational qualifications, the share of women with such qualifications employed in physical, mathematics, and engineering fields over the decade to 2024 rose from 22% to nearly 30%,⁵ reflecting a slow but measurable improvement in the pipeline of women entering technical careers.

Despite these gains, poverty remains widespread, with a significant share of the population living below the national poverty line. Female-headed households, representing a large proportion of all households (42%), particularly in rural areas (48%), face heightened vulnerability due to lower income levels, limited access to assets, and reduced economic opportunities.⁶

¹ Maternal mortality ratio (modeled estimate, per 100,000 live births) – South Africa, World Bank Development Indicators <https://data.worldbank.org/indicator/SH.STA.MMRT?end=2023&locations=ZA&start=2002>

² Mortality rate, infant (per 1,000 live births) - South Africa, World Bank Development Indicators <https://data.worldbank.org/indicator/SP.DYN.IMRT.IN?locations=ZA>

³ Life expectancy at birth, female / male – South Africa, World Bank Development Indicators <https://data.worldbank.org/indicator/SP.DYN.LE00.FE.IN?locations=ZA>
<https://data.worldbank.org/indicator/SP.DYN.LE00.MA.IN?locations=ZA>

⁴ South Africa Profile, World Bank Gender data Portal <https://genderdata.worldbank.org/en/economies/south-africa>

⁵ Statistics South Africa (2024) *Gender Gaps Persist in SA Labour and Leadership Roles*. 29 August. Available at: <https://www.statssa.gov.za/?p=17597>

⁶ According to Statistics South Africa's Income and Expenditure Survey 2022/23, female-headed households had an average annual income of R158,481 compared to R239,590 for male-headed households, a gap of over 33%. <https://www.statssa.gov.za/?p=17995>

Furthermore, Statistics South Africa's Marginalised Groups Indicator Report 2024 (Table 3.5.1) reports that female-headed households were more likely to experience hunger, reporting a hunger incidence of 14.1% compared to 11.5% for male-headed households. <https://www.statssa.gov.za/publications/03-19-05/03-19-052024.pdf>

Labour market dynamics

The labour market is one of the main sites of gender inequality in South Africa. Women experience lower labour force participation, higher unemployment rates, lower employment levels compared to men.

Recent data indicates that women's labour force participation remains significantly below that of men, while unemployment among women is consistently higher. These gaps have persisted over time, reflecting structural barriers to entry and retention in the labour market. According to Stats SA Labour Force Survey Q1 2026 data,⁷ 64% of working-age men were participating in the labour force compared to 54% of women: a gap of 10 percentage points that translates into millions of women remaining outside the economy. Notably, over a decade this gap has narrowed by only 2.2 percentage points. The unemployment rate for women stood at 36%, compared to 30% for men. Among young women aged 15–24, the NEET rate (the share not in employment, education, or training) was 39.2%, increased by 1.7 percentage points year-on-year. The equivalent rate for young men was 36%, a decrease of 0.7 percentage points over the same period, meaning the youth gender gap is actively widening rather than narrowing.

South Africa's labour surveys show that the overwhelming majority of those outside the labour force citing homemaking responsibilities are women: in the Q2 2025 survey, 2.4 million people cited "homemaker" as their reason for not being in the labour force, of whom 2.1 million (88.2%) were women.⁸ This indicates a structural constraint reflecting the disproportionate burden of unpaid care and domestic work, compounded by inadequate childcare infrastructure. These deeply entrenched gender role norms were confirmed by the Commission for Gender Equality's (CGE) 2024 report on women in the South African economy.⁹

The South African economy exhibits strong gender-based occupational segregation. Women's employment remains heavily concentrated in a narrow set of sectors. In Q1 2026, women accounted for 62% of employees in community and social services, with significant additional concentrations in trade and finance, and the vast majority of private household (domestic) workers (74% of total). By contrast, women's representation remains low: in mining (19%), construction (10%), utilities (19.5%), and manufacturing (33.5%).

Leadership disparities further reinforce inequality. In the private sector women make up 25% of private sector top management and 36% of senior management roles, according to the Commission for Employment Equity Annual Report 2022–2023.¹⁰ Women remain significantly underrepresented in top management across key industrial sectors, accounting for around 19% of top management in construction, 20% in mining and quarrying, and 21% in manufacturing, with somewhat higher representation in utilities-related sectors (26%).

Legal framework

South Africa has one of the more progressive legal frameworks for gender equality in Africa and globally, ranking 18th out of 146 countries on the World Economic Forum's 2024 Global Gender Gap Index.¹¹ Section 9

⁷ Quarterly Labour Force Survey, Quarter 1:2026. Stats SA
<https://www.statssa.gov.za/publications/P0211/P02111stQuarter2026.pdf>

⁸ Statistics South Africa (2025) *Gender Gaps Persist in South Africa's Labour Market*. Data Story, 12 August 2025. Pretoria: Statistics South Africa. Available at: <https://www.statssa.gov.za/?p=18668>

⁹ Commission for Gender Equality (2024) *Women in the South African Economy 2024*. Johannesburg: Commission for Gender Equality. [CGE Report Women in the South African Economy.pdf](#)

¹⁰ Commission for Employment Equity (CEE) 2023, *23rd Commission for Employment Equity Annual Report 2022–2023: Transformation Makes Business Sense*, Department of Employment and Labour, Pretoria, South Africa [23rd Annual CEE Report.pdf](#)

¹¹ World Economic Forum (2024). *Global Gender Gap Report 2024*. Geneva: World Economic Forum. [Global Gender Gap Report 2024 | World Economic Forum](#)

of the Constitution guarantees that everyone is equal before the law and prohibits the state from unfairly discriminating, directly or indirectly, on grounds including gender and sex. Complementary legislation, including the Employment Equity Act, the Promotion of Equality and Prevention of Unfair Discrimination Act (PEPUDA), and the Domestic Violence Amendment Act, reinforces this constitutional commitment and provides legal recourse for women experiencing discrimination in employment and other spheres.

In addition to gender-specific legislation, South Africa's Broad-Based Black Economic Empowerment (B-BBEE) framework seeks to address historical patterns of economic exclusion stemming from apartheid. Through incentives linked to ownership, management participation, skills development, enterprise development and procurement, the framework promotes the inclusion of historically disadvantaged groups in the economy. Black women are recognised as a priority beneficiary group, with specific provisions intended to strengthen their participation in business ownership, management, skills development and economic opportunities.

Despite this enabling legal framework, implementation challenges remain. Women continue to face barriers in access to productive assets, including land and property, particularly in some rural and customary contexts where social norms and customary practices can limit the effective realization of statutory rights.¹² These constraints can affect women's ability to participate fully in entrepreneurship, access finance, and benefit from emerging economic opportunities.

More broadly, these barriers illustrate a persistent gap between the legal protections available to women and their ability to exercise those rights in practice. This gap is evident not only in unequal access to economic opportunities and productive assets, but also in the continued prevalence of gender-based violence (GBV), which remains one of the most significant obstacles to women's safety, economic participation, and social mobility in South Africa. The country has one of the highest rates of gender-based violence globally. Over 42,000 rapes were reported in 2022/23, equivalent to more than 115 cases per day.¹³ Underreporting means the true prevalence would likely be higher. Femicide is a critical concern: approximately three women were killed every day by an intimate partner during 2020–2021, corresponding to an intimate partner femicide rate of 5.5 per 100,000 women – among the highest rates globally.¹⁴ Entrenched gender power imbalances underpin these patterns: survey data indicate that 7 in 10 men believe women should obey their husbands, reflecting social norms that reinforce GBV risks and limit women's ability to report or exit violence.¹⁵

An additional dimension around gender risk relates to the broader social impacts of the just energy transition itself. Stakeholders consulted during the preparation of this assessment highlighted that the transition away from carbon-intensive industries could create economic disruption for workers, many of whom men, and communities that currently depend on these sectors for employment. Where livelihood losses are not accompanied by adequate reskilling, upskilling, social support, or access to alternative economic opportunities,

¹² Gaddis, I., Lahoti, R., & Li, W. (2018). *Gender gaps in property ownership in Sub-Saharan Africa* (Policy Research Working Paper No. 8573). World Bank. [World Bank Document](#)

¹³ UN Women (n.d.) *Data on Reported Rape Cases 2022/2023: South Africa*. Global Database on Violence against Women and Girls. Available at: [Measures Details | UN Women Data Hub](#)

¹⁴ UN Women (2024) *Tackling femicide in South Africa through laws, policies, and better policing*. UN Women, 22 November. Available at: [Tackling femicide in South Africa through laws, policies, and better policing | UN Women – Headquarters](#) and UNODC and UN Women (2024) *Femicides in 2023: Global Estimates of Intimate Partner/Family Member Femicides*. Vienna: United Nations Office on Drugs and Crime. Available at: [Femicide Brief 2024.pdf](#)

¹⁵ United Nations South Africa (2024) *From Tradition to Transformation: Accelerating Gender Equality in South Africa*. United Nations in South Africa, 8 August. Available at: [From Tradition to Transformation: Accelerating Gender Equality in South Africa | United Nations in South Africa](#)

household-level economic stress may increase. Evidence suggests that financial insecurity and unemployment can exacerbate existing household tensions and vulnerabilities, including risks of gender-based violence.¹⁶ This dynamic is particularly relevant in South Africa given the scale of the coal sector workforce transition anticipated under the Just Energy Transition Investment Plan. This highlights the importance of ensuring that industrial decarbonisation pathways are accompanied by inclusive workforce development and transition measures. The gender implications of the transition therefore extend beyond labour influx and project-site risks to include the wider socio-economic impacts experienced by workers, households and communities affected by structural economic change.

Political participation

Women's political representation in South Africa is relatively high compared to global standards. Women hold a substantial share of seats in the National Assembly positions (45% in 2024), reflecting strong national-level inclusion.¹⁷ However, representation is lower at local government level where in 2021, 39% of senior positions were held by women, and only 25 out of 257 municipalities meeting the 50% target. This indicates that decision-making power remains unevenly distributed across governance levels.¹⁸ Decisions on land use, community benefit distribution, and infrastructure permitting are made predominantly at the municipal level, meaning the governance bodies closest to project sites and project-affected communities remain the least gender-equitable.

Climate vulnerability and gender

Gender intersects with climate vulnerability in important ways in South Africa, with women, particularly those in low-income and rural households, disproportionately exposed to climate-related risks through three interconnected pathways. The most relevant angles for this assessment concern energy insecurity, water access, and the reliance on climate-sensitive livelihoods and limited adaptive resources.

South Africa's prolonged electricity crisis has had gender-differentiated impacts that extend well beyond industrial productivity. South Africans experienced 335 days of load-shedding in 2023 – the worst year on record – before partial improvement to 83 days in 2024.¹⁹ Women working in informal and self-employed livelihoods, sectors where women are overrepresented, are disproportionately affected, as income losses from power outages cannot be recovered through backup systems or insurance that larger employers can access.

Water insecurity has a strong gender dimension in South Africa. Women, particularly in rural areas, bear a disproportionate share of responsibility for securing and managing household water supplies. This burden can limit time available for education, income-generating activities and participation in community life, while

¹⁶ The World Bank's coal-sector just transition analysis notes that when unemployment rises among male miners, women may experience higher levels of domestic violence, food insecurity, and declining social status. World Bank (2022) *Just Transition for All: A Feminist Approach for the Coal Sector*. Washington, DC: World Bank. Available at: <https://www.worldbank.org/en/topic/extractiveindustries/publication/just-transition-for-all-a-feminist-approach-for-the-coal-sector>

¹⁷ Equality in Justice and Society (EJS) Center (2024) *#SADecides2024: Is Progress on Women's Representation in South Africa Stalling?* Available at: <https://ejscenter.org/sadecides2024-is-progress-on-womens-representation-in-south-africa-stalling/>

¹⁸ Futurelect (2025) *The Gender Gap in Political Leadership Ends Here: Futurelect Calls Women to the Frontlines of Political Power ahead of Local Elections in 2026*. 30 May. [The Gender Gap in Political Leadership Ends Here: Futurelect Calls Women to the Frontlines of Political Power ahead of Local Elections in 2026](https://futurelect.org/insights/articles/the-gender-gap-in-political-leadership-ends-here-futurelect-calls-women-to-the-frontlines-of-political-power-ahead-of-local-elections-in-2026)

¹⁹ FTI Consulting (2025) *Out of the Darkness: The Lasting Economic Costs of Load-Shedding*. Available at: <https://www.fticonsulting.com/insights/articles/out-darkness-lasting-economic-costs-load-shedding>

unequal access to water resources continues to constrain women's economic opportunities and social mobility. Women remain significantly underrepresented in water governance and control of water resources, holding only 10.5% of water licences compared with 89.5% held by men.²⁰ Research on the gendered effects of water scarcity on rural livelihoods in South Africa finds that women bear a disproportionate share of the costs of water insecurity, including intensified unpaid labour burdens, reduced income-generating opportunities, and increased exposure to health and wellbeing risks.²¹ Climate change is expected to compound this burden: a study published in *Nature Climate Change* (2024) found that a 1°C temperature rise historically increased daily water collection times by approximately four minutes, and projects that daily collection times for women without household water access could increase by 30% globally and up to 100% in some regions by 2050 under high-emission scenarios.²² A study of female-headed rural households in South Africa's Limpopo and Eastern Cape provinces found that water interruptions significantly reduce food security, with a measurable indirect effect operating through reduced energy access.²³

²⁰ Phakathi, S., Sinyolo, S. and Ndinda, C. (2023) *Gender and Water Access in South Africa: Status, Trends and Policy Implications*. HSRC Policy Brief. Pretoria: Human Sciences Research Council. https://hsrc.ac.za/wp-content/uploads/2024/08/16-PB_Gender-and-water-access-in-SA.pdf

²¹ Makhanya, M. et al. (2025) *Gendered effects of water scarcity on rural livelihoods in South Africa: a feminist political ecology perspective*. *Gender & Behaviour*. Available at: <https://www.ajol.info/index.php/gab/article/view/303697>

²² Carr, R., Kotz, M., Pichler, P.-P., Weisz, H., Belmin, C. and Wenz, L. (2024) 'Climate change to exacerbate the burden of water collection on women's welfare globally', *Nature Climate Change*, 14, pp. 700–706. Available at: <https://doi.org/10.1038/s41558-024-02037-8>

²³ Mazenda, A. and Nkwana, H.M. (2025) 'Water, sanitation, and energy as determinants of food security among rural women-led households', *Discover Sustainability*. Available at: <https://doi.org/10.1007/s42108-025-00368-6>

Key takeaways and implications for the Fund

- *Significant share of women in South Africa are educated as men but face higher unemployment, lower participation, and concentration in low-value sectors.* They are not strongly represented in the industrial and technical sectors which are the focus of this Fund. This suggests that gender-neutral hiring practices at investee level are unlikely to produce equitable outcomes, and that the Fund's pre-investment screening and agreements with investees would be an important lever to encourage more deliberate approaches to recruitment and workforce development.
- *Energy insecurity and water scarcity impose a disproportionate economic and time cost on women in informal livelihoods and rural households.* The Fund's investments in renewable energy and water treatment infrastructure co-located with hydrogen production can help address these burdens, provided that community distribution mechanisms are designed with women as intended beneficiaries rather than assumed incidental recipients.
- *Despite strong national representation, fewer than 10% of South African municipalities meet the 50% women in senior positions target, and land use, permitting, and community benefit decisions are made at this level.* While this is beyond the Fund's direct influence, it underscores the importance of gender-responsive community engagement at the project level to help ensure women's interests are represented in local decision-making processes that affect project-adjacent communities.
- *South Africa has extremely high rates of gender-based violence a documented association between large industrial labour influx and elevated GBV incidence in project-adjacent communities.* This means that GBV prevention and response is a material project risk across the full investment lifecycle of the Fund.

2.2 Namibia

Namibia presents a complex gender picture: strong performance on education and political representation coexists with persistent structural inequalities in labour market access, economic participation, and climate vulnerability, particularly for rural women.

Socioeconomic and demographic indicators

Namibia's 2023 Population and Housing Census records a population of 3 million, with women representing 51% and men 49%. The country remains almost evenly split between rural (50.5%) and urban settlement (49.5%) with approximately 756,300 households with an average size of 3.8 persons.²⁴ This urban-rural balance matters for gender analysis: rural livelihoods, household service access, and climate exposure differ substantially in these areas. Poverty remains highly gendered and geographically concentrated. Namibia's 2021 Multidimensional Poverty Index found 43% of the population multidimensionally poor, with rural poverty at 59% compared to 25% in urban areas (OPHI, 2021). Poverty incidence is higher in female-headed households (46%) than male-headed households (41%), and is especially severe among certain linguistic communities,

²⁴ Namibia Statistics Agency (2024) *2023 Population and Housing Census Main Report*. Windhoek: Namibia Statistics Agency. [2023 Population and Housing Census Main Report - Namibia Statistics Agency](#)

including Khoisan-speaking populations (93%), Rukavango-speaking populations (68%), and Zambezi-speaking populations (54%).²⁵

Health outcomes show gradual improvement but continued risks, particularly in reproductive health. Maternal mortality declined from 402 deaths per 100,000 live births to 139 over a 10-year period up till 2023 (latest available data),²⁶ while adolescent fertility stood at 66 births per 1,000 girls aged 15–19 (down from 79 a decade ago), indicating that even though there is progress, reproductive health constraints continue to affect young women's educational and economic trajectories.²⁷ Life expectancy has recovered strongly: in 2023, women's life expectancy was 71 years compared to 63 years for men, up from a total of 61 years in 2013.²⁸

Education is a strongest gender-equality area in Namibia and stands in contrast to the pattern seen in South Africa. Girls outperform boys at every level of the education system: primary completion rates stand at 89% for girls versus 74% for boys, lower-secondary at 59% versus 44%, upper-secondary at 37% versus 30%, and women account for 66% of tertiary graduates compared to 34% for men.²⁹ Adult literacy is near parity, with women at 87% and men at 88% in 2023.³⁰

Labour market dynamics

Namibia's labour market is characterised by low absorption, high unemployment, youth detachment, and a persistent gender participation gap.

The 2023 Population and Housing Census Labour Force (PHCLF) module recorded an official unemployment rate of 37% among 867,247 people in the labour force. Gender differences in participation are pronounced: 51% of men versus 42% of women were active in the labour market in 2023, a gap of 9.2 percentage points.³¹ World Bank estimates for 2025 show the same pattern persisting, with female labour force participation at 55% versus 63% for men.³² The participation gap is compounded by geography: urban participation stood at 56.3% versus approximately 33% in rural areas, as per the 2023 PHCLF. Youth outcomes are especially concerning. The same report records youth unemployment at 44%, while 42% of youth aged 15–24 were not in

²⁵ Namibia Statistics Agency (2021) *Namibia Multidimensional Poverty Index (MPI) Report 2021*. Windhoek: Namibia Statistics Agency. [Namibia Multidimensional Poverty Index \(MPI\) Report 2021 | OPHI](#)

²⁶ World Bank (2025) *Maternal mortality ratio (modeled estimate, per 100,000 live births) – Namibia (Indicator SH.STA.MMRT)*. World Development Indicators. Washington, DC: World Bank. Available at: <https://data.worldbank.org/indicator/SH.STA.MMRT?locations=NA>

²⁷ World Bank (2025) *Adolescent fertility rate (births per 1,000 women ages 15–19) – Namibia (Indicator SP.ADO.TFRT)*. World Development Indicators. Washington, DC: World Bank. Available at: <https://data.worldbank.org/indicator/SP.ADO.TFRT?locations=NA>

²⁸ World Bank (2025) *Life expectancy at birth, female (years) – Namibia (Indicator SP.DYN.LE00.FE.IN)*. World Development Indicators. Washington, DC: World Bank. Available at: <https://data.worldbank.org/indicator/SP.DYN.LE00.FE.IN?locations=NA>

²⁹ African Development Bank (2025) *Brief on Gender Equality and Women Empowerment: Namibia*. February 2025. Abidjan: African Development Bank Group, Africa Gender Index. Available at: https://agi.afdb.org/sites/default/files/country/gender/2025-03/250213-GenderBrief-Namibia_En.pdf

³⁰ World Bank (2025) *Literacy rate, adult female (% of females ages 15 and above) – Namibia (Indicator SE.ADT.LITR.FE.ZS)*. World Development Indicators. Washington, DC: World Bank. Available at: <https://data.worldbank.org/indicator/SE.ADT.LITR.FE.ZS?locations=NA>

³¹ Namibia Statistics Agency (2025) *2023 Population and Housing Census Labour Force Report*. Windhoek: Namibia Statistics Agency. Available at: <https://nsa.org.na/document/2023-phc-labour-force-report/>

³² World Bank (2025) *Labor force participation rate, female (% of female population ages 15+) (modeled ILO estimate) – Namibia (Indicator SL.TLF.CACT.FE.ZS)*. World Development Indicators. Washington, DC: World Bank. Available at: <https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS?locations=NA>

employment, education, or training (NEET). AfDB's 2025 Gender Brief reports sex-disaggregated youth unemployment of 41% for young women versus 38.5% for young men, a gap that mirrors the pattern observed in South Africa and points to systemic barriers at the school-to-work transition stage.

Women's economic participation is not only lower than men's but also more precarious in quality. In 2023, half of employed women were in the informal economy compared to 43% of men, while vulnerable employment (defined as own-account and contributing family workers without formal protections) stood at 39% for women versus 25% for men.³³

As in South Africa, Namibia exhibits strong gender-based occupational segregation, with women concentrated in services and significantly underrepresented in industry. On the positive site, AfDB reports that women account for 52% of managers, professionals, and technicians in Namibia. However, under a third of firms have a female top manager, and under half have women participating in ownership.³⁴ Furthermore, women employment is concentrated in services (72% of employed women compared to 52% of employed men), and underrepresented in industry (8% of women versus 25% men).³⁵

Afrobarometer's 2024 Namibia findings show broad public support for gender equality.³⁶ Nevertheless, significant intra-household and structural barriers persist. Around 19% of respondents report that women are often or always prevented from taking paid employment by spouses or other family members. Identified barriers to workforce entry include lack of relevant skills and qualifications, employer preference for hiring men, and lack of flexible or remote work arrangements. The latter are widely connected to family and childcare responsibilities. Namibia has no available national data for the SDG indicator on time spent on unpaid domestic and care work disaggregated by gender. However, qualitative and policy sources consistently identify care and household responsibilities as gendered: Namibia's National Gender Policy highlights women's unpaid household work and subsistence farming as part of the care economy, and notes that daughters fetch water in 36% of rural households compared to sons in 15%.³⁷

Legal framework

Namibia has a comparatively strong legal framework for gender equality. Article 10 of the Constitution establishes equality before the law and prohibits discrimination on grounds including sex; Article 23 permits affirmative action for women who have suffered historical discrimination; and Article 95 directs the state to promote equal opportunity for women to participate fully in all spheres of society. Complementary legislation includes the Married Persons Equality Act, the Affirmative Action (Employment) Act, the Communal Land Reform Act, the Combating of Domestic Violence Act, and Labour Act protections on maternity and workplace discrimination.³⁸ According to the World Bank's Women, Business and the Law 2026 assessment, Namibia

³³ AfDB Gender Brief, 2025

³⁴ *ibid*

³⁵ *ibid*

³⁶ 74% of citizens support equal employment access for women and men, even when jobs are scarce. Keulder, C. and Stoman, L. (2024) *AD880: Namibians support equal access to jobs but say more needs to be done to protect women and girls from discrimination and harassment*. Afrobarometer Dispatch No. 880, 14 October 2024. Accra: Afrobarometer. Available at: [AD880-Namibians-call-for-protection-from-gender-discrimination-and-harassment-Afrobarometer-14oct24.pdf](#)

³⁷ Ministry of Gender Equality and Child Welfare (Republic of Namibia) (2010) *National Gender Policy 2010–2020*. Windhoek: Ministry of Gender Equality and Child Welfare. Available at: [NATIONAL GENDER POLICY NAMIBIA \(ZERO DRAFT RC 23 02 08 \)](#)

³⁸ UN Women (2025) *Namibia: Constitution of the Republic of Namibia 1990, as amended to 2014*. Global Database of Gender Equality and Constitutions. Available at: [Namibia](#)

performs strongly in areas related to marriage, assets and pension rights, but gaps persist in areas affecting women's economic participation, including pay, workplace protections, parenthood and entrepreneurship. The report highlights shortcomings in measures supporting work-family balance and identifies continuing weaknesses in frameworks that promote equal economic opportunities for women.³⁹

The institutional framework is evolving. Namibia's Third National Gender Equality and Equity Policy 2025–2035 sets objectives across twelve thematic areas, including economic empowerment, education, health, and legal affairs, through an action plan addressing poverty, harmful gender norms, and gender-based violence.⁴⁰

Despite the strength of Namibia's legal and institutional framework on paper GBV remains one of the most visible indicators of this gap between formal commitments and lived experience. There are over 5,000 cases reported annually,⁴¹ though, as in South Africa, underreporting is likely understating the magnitude of the issue. Approximately 33% of women aged 15–49 have experienced physical violence since age 15, and numbers of intimate partner violence are raising.⁴²

Political participation

Women's political representation in Namibia is among the strongest in the region. Nandi-Ndaitwah became Namibia's first female president and was sworn into office in March 2025. Women's representation at the executive level is also high, with women holding 57% of ministerial positions in the current Cabinet.⁴³ In the National Assembly, women held 40.6% of seats following the November 2024 election, remaining well above regional averages despite a decline from the previous legislature.⁴⁴ Notably, women's representation at local government level stands at 45% of elected seats. However, Afrobarometer's 2024 findings suggest that high levels of women's representation in political institutions do not necessarily imply universal support for gender equality in public life. While 72% of Namibians support equal opportunities for women to be elected to public office, the survey also highlights the persistence of discriminatory social norms and barriers affecting women's participation and voice. These findings suggest that inclusive participation at community level should not be assumed solely on the basis of national representation figures.

Climate vulnerability and gender

Namibia is one of the most climate-vulnerable countries in Africa despite contributing less than 0.03% of global greenhouse gas emissions. The country is among the driest on the continent, with annual rainfall ranging from 25mm to 700mm. Climate change is projected to reduce groundwater recharge by 30–70% under worst-case

³⁹ World Bank (2026) *Women, Business and the Law 2026*. Washington, DC: World Bank. Available at: [Women, Business and the Law 2026](#)

⁴⁰ Government of the Republic of Namibia (2025) *Third National Gender Equality and Equity Policy 2025–2035*. Windhoek: Ministry of Gender Equality, Poverty Eradication and Social Welfare. Available at: [UNFPA Namibia | Third National Gender Equality and Equity Policy for Namibia \(2025-2035\)](#)

⁴¹ The Namibian (2024) *Over 5 000 GBV cases reported in Namibia annually*. The Namibian. Available at: [Over 5 000 GBV cases reported in Namibia annually - Top Story 3 - The Namibian](#)

⁴² UNFPA Namibia (2024) *Hope shines bright as EU and UNFPA join forces to combat GBV in Namibia*. United Nations Population Fund (UNFPA) Namibia. Available at: [UNFPA Namibia | Hope shines bright as EU and UNFPA join forces to combat GBV in Namibia](#)

⁴³ Guchu, W. (2025) *Nandi-Ndaitwah shifts gears in Namibia's women-in-power journey*. Mail & Guardian. [Nandi-Ndaitwah shifts gears in Namibia's women-in-power journey](#)

⁴⁴ Inter-Parliamentary Union (IPU) (2025) *Namibia National Assembly November 2024 Election: Election Results*. IPU Parline Database. Available at: [Namibia National Assembly November 2024 Election | Election results | Namibia | IPU Parline: global data on national parliaments](#)

scenarios, reduce Kunene River flow by up to 25%.⁴⁵ These trends would likely affect hydropower, irrigation, and rural drinking water supplies that large portions of the population depend on.

As with South Africa, gender intersects with this climate vulnerability through three interconnected pathways most relevant to this Fund.

- *Energy access:* Namibia's energy vulnerability is primarily driven by limited rural electrification. Overall electrification stood at 57% in 2023, but only 34% in rural areas,⁴⁶ with some estimates suggesting fewer than 10% of rural households have reliable access.⁴⁷ While loadshedding is not as grievous a problem as in South Africa, Namibia still experiences substantial amount and duration of outages, that have only increased in the last decade.⁴⁸ In the absence of grid electricity, rural households rely predominantly on biomass for cooking, heating, and lighting – a burden that falls disproportionately on women and girls, who are culturally assigned firewood collection and household energy management. Climate change compounds this burden directly: as environmental degradation reduces nearby biomass availability, women must travel longer distances for firewood, increasing time-poverty and exposure to indoor air pollution from biomass combustion.
- *Water access and collection burden:* Women and girls are primary providers of household water in rural Namibia, as previously reported in this section. Climate change directly extends this burden: reduced groundwater availability and more erratic rainfall increase the time and distance rural women must travel to secure water, compounding time-poverty in communities that are already labour-constrained. Namibia's recent drought, described by UN reporting as one of the worst in more than a century, affecting more than half a million people, illustrates the acute manifestation of a long-standing structural vulnerability to climate shocks. Women and girls, including nursing and teenage mothers, women farmers, were disproportionately identified among those most severely affected.⁴⁹
- *Livelihood and food security:* Agriculture employs over 70% of Namibia's rural population and is the primary livelihood for a significant share of rural women. Cereal production is projected to decline by 10–20% by 2050, and long-term agricultural productivity could fall by up to 50% under current climate trajectories.⁵⁰ Women in informal agricultural and subsistence livelihoods – already in the more

⁴⁵ Shikalepo, H. (2025) *Strengthening Dialogue on Climate Change, Gender Equality, and Livelihoods in Namibia: An Overlooked Nexus?* United Nations Development Programme (UNDP) Namibia, 27 May 2025. Available at: [Strengthening Dialogue on Climate Change, Gender Equality, and Livelihoods in Namibia: An Overlooked Nexus? | United Nations Development Programme](#)

⁴⁶ World Bank (2025) *Access to electricity, rural (% of rural population) – Namibia (Indicator EG.ELC.ACCS.RU.ZS)*. World Development Indicators. Washington, DC: World Bank. Available at: [Access to electricity, rural \(% of rural population\) - Namibia | Data](#)

⁴⁷ International Trade Administration (2024) *Namibia – Energy*. Country Commercial Guide. Washington, DC: U.S. Department of Commerce. Available at: [Namibia - Energy](#)

⁴⁸ While no official data exists on outages for household, a proxy metric is the outages experienced by firms, as reported by the World Bank. In 2014, 27% of firms reported experiencing electrical outages, while that number stood at 54% in 2024. For small and medium firms, that varies between 50 and 63% of the firms. World Bank (2025) *Firms experiencing electrical outages (% of firms) – Namibia*. World Development Indicators. Available at: World Bank (2025) *Firms experiencing electrical outages (% of firms) – Namibia*. World Development Indicators. Available at: <https://data.worldbank.org/indicator/IC.ELC.OUTG.ZS?locations=NA>

⁴⁹ United Nations Sustainable Development Group (UNSDG) (2025) *Namibia's Drought Crisis: Building Resilience for Women and Girls*. 30 January 2025. Available at: [Unsdg | Namibia's Drought Crisis: Building Resilience for Women and Girls](#)

⁵⁰ UNDP 2025

vulnerable segments of the labour market as documented above – face the most direct and least-buffered exposure to these productivity losses, with limited access to insurance, savings, or alternative income sources to absorb climate-driven shocks.

Key takeaways and implications for the Fund

- *Namibia has a strong female educational attainment and professional representation but the industrial sector gap remains a binding constraint.* Women account for 66% of tertiary graduates and 52% of managers, professionals, and technicians: a deeper talent pool than South Africa's figures. However, women's employment in industry – where the Fund is likely to be generating jobs – stands at under 8%. Active recruitment and pipeline partnerships, as well as likely trainings and skills development programs (rather than passive hiring) would be needed to capture this talent for green hydrogen, green ammonia, green steel, renewables and other industrial projects. Any recruitment and training efforts should account of the practical barriers that prevent women from accessing sector opportunities, such as childcare, transport, scheduling flexibility, intra-household constraints.
- *Water scarcity and limited electrification present an acute climate-gender nexus for Namibia, and the Fund's excess electricity sharing and water desalination can be responsive to it.* Groundwater recharge is projected to decline by 30–70%, rural women bear the primary water collection burden, and recent droughts illustrate the acute form of a chronic structural vulnerability. In parallel, fewer than one in three rural Namibians has reliable electricity access, with women disproportionately carrying the biomass energy burden. Water treatment infrastructure co-located with green hydrogen production and renewable energy powering industrial operations could contribute to addressing both burdens for communities near project sites. Realising these co-benefits requires deliberate distribution mechanisms designed to reach rural women in project-adjacent communities, rather than assuming proximity to infrastructure translates automatically into access.
- *Namibia has relatively stronger local government representation of women, but community-level gender inclusion cannot be assumed from national figures alone.* Women hold 45% of local government elected seats, implying an enabling environment for gender-responsive engagement at project sites. However, discriminatory social norms persist, and community consultation processes should be designed to actively create space for women's voices rather than relying on representative structures to do that work automatically.
- *A third of Namibian women have experienced physical violence and a quarter – intimate partner violence.* The high prevalence of GBV, compounded by labour influx during construction in rural and peri-urban communities that already have limited social support infrastructure, creates a risk for women in project-adjacent areas that requires attention from the Fund across both construction and operational phases.

3 Problem analysis

In accordance with GCF guidance on gender mainstreaming and the terms of reference for this assessment, a problem tree analysis was conducted to identify the root causes and downstream effects of gender inequality in the context of green hydrogen and industrial decarbonization in South Africa and Namibia.

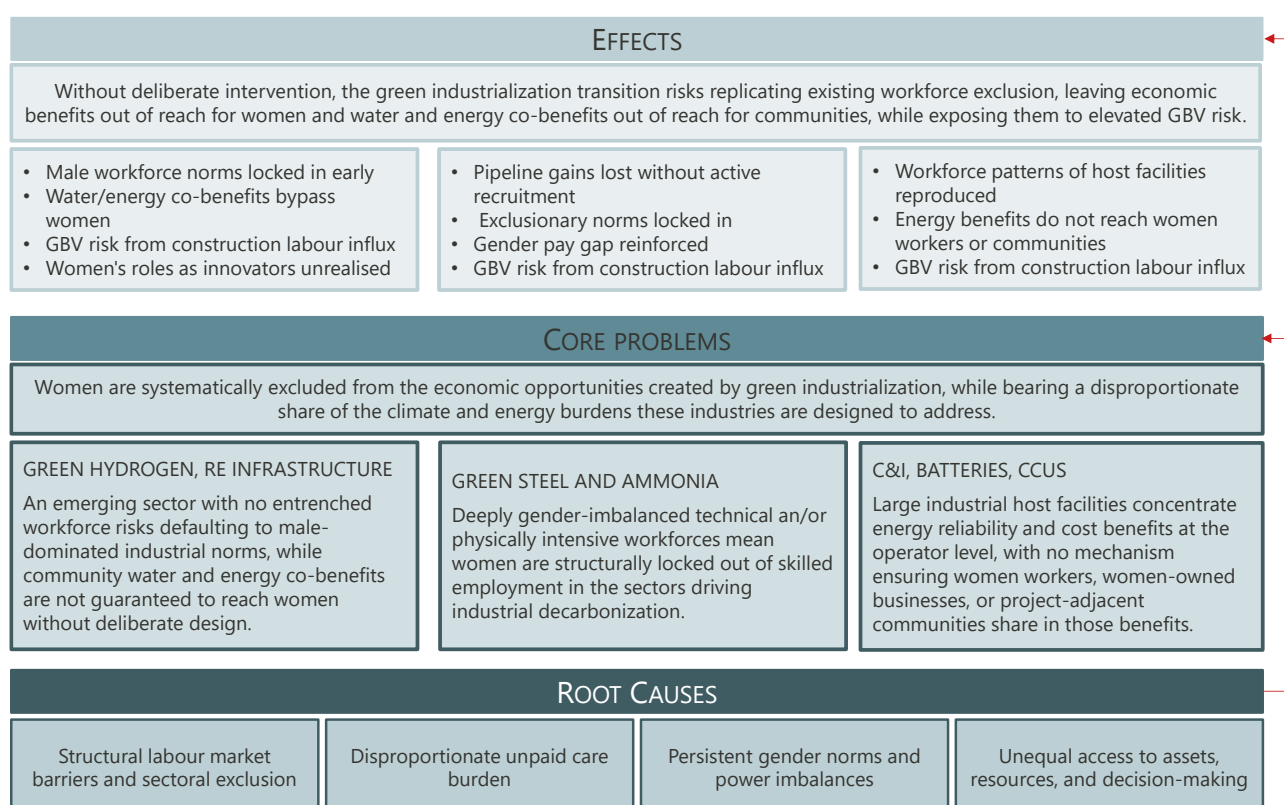


Figure 1: Overview of the main findings of the analysis

3.1 Root causes

The gender inequalities documented in Section 2 across South Africa and Namibia share a common set of structural drivers that cut across all sectors relevant to the Fund's investment portfolio. Four mutually reinforcing root causes underpin the sector-specific problem analyses that follow:

1. **Structural labour market barriers and sectoral exclusion:** Women's lower participation in the labour market is not necessarily driven by education gaps. Women in both countries participate and in and graduate at secondary and tertiary level similar or above the levels of men. The root cause issues are systemic barriers to entry, retention, and advancement in higher-value sectors, including occupational segregation, hiring biases, limited access to technical career pathways, and weak school-to-work transitions, particularly for young women.
2. **Disproportionate unpaid care burden:** across both countries, women bear a disproportionate share of unpaid care and domestic work, which directly limits their availability for paid employment, training, and community participation. This burden is reinforced by limited childcare infrastructure, inflexible work arrangements, and intra-household decision-making norms.
3. **Persistent harmful gender norms and power imbalances:** deeply entrenched social norms continue to shape gender roles, limit women's economic agency, and underpin gender-based violence. GBV both reflects and reinforces women's constrained participation in economic and public life, and creates material risks at project sites through labour influx effects during construction and ongoing power imbalances during operations.

4. **Unequal access to assets, resources, finance, and decision-making:** despite strong legal frameworks in both countries, women face practical barriers to accessing land, finance, water, and economic infrastructure, and remain underrepresented in governance structures that control land use, resource allocation, and community benefit distribution, particularly at the local level in South Africa. Stakeholders highlighted that decarbonization projects frequently affect marginalised and indigenous communities who bear disproportionate environmental and social risks without receiving proportionate benefit. Women within these communities face a compounded disadvantage: they are often excluded from community-level negotiations and governance processes, and are the least likely to benefit from compensation and benefit-sharing arrangements even where these are formally in place.

Across these root causes, gender inequality is likely to intersect with other forms of disadvantage. Project-affected women and men may face different barriers depending on factors such as land tenure status, disability, Indigenous or minority identity, migrant status, rural poverty, reliance on customary or insecure resource use, and access to formal documentation. These factors can influence whether individuals are able to access construction and operational employment opportunities, participate in procurement and supplier-development initiatives, engage meaningfully in consultation and decision-making processes, receive compensation or livelihood restoration where land or resource access is affected, benefit from community development initiatives, or access grievance and protection mechanisms in practice. The significance of these intersecting constraints will vary across investments and locations and should therefore be assessed further through project-level assessments and stakeholder engagement.

Overall, these root causes manifest differently across the Fund's investment sectors, and at varying intensities. The subsections below set out how they translate into sector-specific problems and effects.

3.2 Core problem

Women are systematically excluded from economic opportunities in both markets. The same holds for the employment, skills development, entrepreneurship opportunities (to be) created by green hydrogen and industrial decarbonization in South Africa and Namibia. At the same time, women, especially in rural areas, bear a disproportionate share of the climate and energy access burdens that these industries are designed to address. Without intentional gender interventions, the green industrialization transition risks replicating the exclusionary workforce and ownership patterns of the industrial sectors it seeks to transform, at scale and over long asset lifetimes.

3.3 Sector-specific problem analysis

The following sub-sections describe how the shared root causes manifest specifically in each sector and what the downstream effects would be if the issues are left unaddressed. The section focuses on the three most concrete clusters of potential investments.

Green hydrogen production and renewable energy infrastructure

Green hydrogen and the renewable energy infrastructure powering it represent an emerging sector with no deeply entrenched workforce in either country. Without deliberate intervention, hiring will default to the patterns of adjacent industrial and engineering sectors, where women's representation is consistently below 20% in both South Africa and Namibia. At the community level, women in project-adjacent areas bear primary responsibility for water and fuel collection, a burden that hydrogen-linked desalination and grid-connected renewable energy could help address, but only if distribution mechanisms are designed with women as

intended beneficiaries rather than assumed incidental recipients. Construction phases carry a specific additional risk: labour influx into remote or peri-urban project locations in both countries introduces elevated GBV exposure into communities where rates of violence against women are already among the highest in the world.

Effects if unaddressed:

- The emerging green hydrogen sector establishes male-dominated workforce norms before they can be challenged, foreclosing the early-mover opportunity that currently exists and locking in exclusionary patterns over long asset lifetimes
- Community water and energy co-benefits do not reach rural women in project-adjacent communities, leaving the Fund's adaptation outcomes undelivered for the population most exposed to water and energy access burdens
- Labour influx during construction elevates GBV risk in communities with limited social support infrastructure, compounding documented country-level vulnerabilities
- Women's potential as owners, innovators, technicians, and community stakeholders in the green hydrogen value chain goes unrealised, reducing the overall inclusivity and effectiveness of the transition

Green ammonia and steel

Green ammonia (as well as other potential projects such as green fertilizers and methanol) production draws on chemical and process engineering workforces that are among the most gender-imbalanced in both countries. Despite a gradually improving STEM educational pipeline (particularly in South Africa), these gains have not yet translated into equitable representation at the plant operations and senior technical levels where green ammonia projects will recruit. The recruitment and retention challenge is real but addressable: it requires active intervention rather than an assumption that pipeline improvements will translate automatically into gender-responsive employment outcomes.

Green steel represents a substantially more entrenched challenge. A century-long male-dominated, patriarchal workforce culture, physical working conditions, cultural norms, and the geographic remoteness of many facilities compound structural barriers in ways that go significantly beyond the pipeline issue in green ammonia. These problems require sustained engagement across the investment period and realistic expectations about the achievable pace of change.

Both sectors involve significant construction phases, introducing labour influx GBV risks analogous to those described for green hydrogen, particularly where facilities are sited in or near rural or peri-urban communities.

Effects if unaddressed:

- Pipeline gains for women in STEM do not translate into employment in green ammonia without active recruitment and retention mechanisms at the investee level
- Green steel reproduces the most entrenched form of capital-intensive sector gender exclusion in a new value chain, with asset lifetimes of thirty or more years locking in exclusionary workforce norms
- Women's share of skilled technical and management employment remains disproportionately low relative to educational attainment, reinforcing income inequality in economies where the gender pay gap is already documented as widening

- Construction-phase labour influx elevates GBV risk and exploitation in project-adjacent communities in both countries without proactive prevention mechanisms

C&I renewables, battery storage, and CCUS

As the sector analysis showed, large existing industrial facilities in both South Africa and Namibia – where the Fund’s investments in this segment are likely to be focused – have deeply male-dominated workforces, particularly in operational and technical roles: women account for approximately 19% of mining workers and 10% of construction workers in South Africa, and industry overall employs only 8% of working women in Namibia. Renewable energy and storage installations at these facilities will generate construction and operational employment that, without active intervention, will follow the same sectoral patterns. CCUS is additionally a nascent sector in both countries with no sex-disaggregated workforce data currently available, meaning gender inequality is structurally present but invisible in measurement terms. At the community level, potential construction of new facilities could be associated with labour influx effects that elevate GBV and exploitation risk in project-adjacent communities, compounding existing vulnerabilities documented in Section 2.

Effects if unaddressed:

- Construction and operational employment generated by C&I renewable and storage installations at large industrial sites reproduces male-dominated workforce patterns, with women concentrated in administrative and support functions rather than technical and operational roles
- The energy reliability and cost reduction benefits of C&I-plus-storage accrue to industrial operators without generating gender-differentiated outcomes for women owners, workers, suppliers, or project-adjacent communities
- Construction-phase labour influx elevates GBV and exploitation risk in project-adjacent communities without proactive mitigation, compounding documented country-level vulnerabilities in both South Africa and Namibia

4 Gender Opportunities

Recruitment and workforce development

The improving STEM educational pipeline in both countries creates a genuine opportunity for the Fund's investees to access a growing pool of qualified women candidates that passive hiring through established networks will not reach. Active recruitment partnerships with engineering faculties and technical colleges targeting women graduates, combined with structured mentorship and retention support, offer investees the opportunity to access talent that their competitors are not yet systematically pursuing, while supporting progress toward greater gender balance where feasible: a business case argument that complements the gender equity rationale. Creating an inclusive working environment also requires attention to workforce health, safety and wellbeing considerations, including measures related to workplace culture, harassment prevention, appropriate facilities, safe transport and accessible reporting and grievance mechanisms.

Beyond direct hiring, there is an opportunity to contribute to the broader green skills pipeline in project-adjacent communities by supporting or co-funding technical training programs for women that extend beyond the investee's own workforce needs. Existing vocational qualifications and scholarship program provide institutional frameworks that investees can align with and strengthen, generating a contribution to national workforce development that also supports the Fund's paradigm shift narrative.

Gender policies and grievance mechanisms

Large industrial investees that implement gender-responsive workplace policies (such as anti-harassment policies, accessible grievance mechanisms, maternity leave provisions meeting or exceeding legal minimums, and safe facilities for women) create working environments where women who are hired are more likely to stay, progress, and perform. The opportunity here is retention and advancement as much as recruitment: the Fund's investment relationships create a channel through which good practice on workplace gender policy can be introduced into sectors where it is currently underdeveloped.

Given the documented rates of GBV in both countries, there is also a specific opportunity to require GBV prevention and response provisions across all investment clusters for both construction (where relevant) and operational phases: worker codes of conduct, women-accessible grievance channels, and community awareness programs. Establishing these mechanisms proactively and timely (e.g. before construction begins) is significantly more effective than responding to incidents after the fact, and protects both the community and the investee from reputational and operational risk. Stakeholders consulted during this assessment emphasised that the design of grievance mechanisms is as important as their existence. A grievance channel that women do not trust or feel safe using provides limited protection in practice. Key considerations include strong confidentiality protections, survivor-centred handling of GBV-related complaints, and meaningful female representation in grievance and decision-making structures. Regular engagement with workers and communities can further strengthen awareness, trust and uptake of available grievance mechanisms.

Staff engagement programs and dedicated gender-champion that equip male managers and supervisors to actively support women's inclusion offer a complementary opportunity that is often more effective in deeply male-dominated industrial environments than women-targeted programs alone. In sectors like green steel where cultural norms are deeply entrenched, shifting the behaviour of gatekeepers may be as important as expanding the pipeline of women candidates.

SIDF adopts a zero-tolerance approach to sexual exploitation, abuse and harassment (SEAH), with prevention, reporting and response measures integrated into project-level management systems and community engagement processes.

This assessment notes that the high prevalence of GBV in South Africa and Namibia is an important contextual factor for SIDF, as it reflects wider gender power imbalances, the normalisation of violence, and barriers to reporting that might affect workers and project-affected communities. However, country-level GBV prevalence should be distinguished from project-related sexual exploitation, abuse and harassment (SEAH) risk. While national GBV trends help to inform the overall risk context, project-related SEAH risk is also shaped by project-specific factors, including workforce composition, contractor and subcontractor arrangements, workplace hierarchy and supervision, interactions between workers and communities, security arrangements, worker accommodation and transport, and control over access to employment, procurement opportunities, compensation or community benefits. These factors could create risks that are not captured by country-level GBV indicators alone and therefore require project-specific assessment. The detailed assessment and management of SEAH risks are addressed through the SIDF Environmental and Social Management System (ESMS), including project-level screening, due diligence and mitigation measures.

Procurement and supply chain

Local procurement requirements that direct a defined share of construction and operational contracts toward women-owned suppliers (in catering, cleaning, security, transport, waste management, and community services) create an opportunity to generate economic benefits for women-owned businesses that does not depend on women entering the technical industrial workforce directly. These are sectors where women-owned SMEs are realistically present in both South Africa and Namibia, and where procurement covenants are straightforward to monitor through standard contract management processes. These examples are illustrative rather than exhaustive, and where opportunities exist, projects should also consider approaches that support the participation and development of women-owned enterprises in higher-value technical, operational and supply-chain activities.

Women-owned enterprises may face several practical constraints in accessing SIDF-related procurement opportunities. These can include limited access to working capital and finance to meet contract requirements, difficulties obtaining required certifications or maintaining formal registration, gaps in technical capacity or prior experience with industrial supply chains, tender packages that may be too large or specialised for smaller local suppliers, payment terms that create cash-flow pressures, and limited access to timely information on upcoming procurement opportunities. These constraints may be particularly relevant for construction and operational procurement, where women-owned businesses are often more visible in lower-value service categories but may be less able to compete for larger or more technical supply packages without targeted supplier development support.

Stakeholders cautioned that ideally procurement approaches should go beyond low-value service contracts where women-owned businesses are already present. These entry points are a legitimate and realistic particularly given that women-owned businesses with the capacity to participate in substantial supply chain roles for large industrial facilities may be scarce in the areas where the Fund's projects are likely to be located. However, stakeholders suggested that the aspiration should be to progressively expand women's procurement participation where supplier capacity exists or can be developed. Where investees have supplier development programs, these represent an opportunity to actively build the capacity of women-owned local businesses over the investment period rather than treating procurement as a static target to be met at the point of contract award.

Project-level procurement actions should therefore consider how women-owned enterprises can be identified early, informed of upcoming opportunities, supported to meet relevant requirements where feasible, and

progressively included in supplier-development initiatives rather than being considered only for lower-value contracts.

Engagement of women in project design and knowledge generation

Standard community consultation processes tend to surface male voices disproportionately. Women are often present in community meetings but less able to speak freely or influence outcomes due to entrenched norms around gender and public decision-making. Women in project-adjacent communities represent an underutilised source of knowledge and expertise that can meaningfully improve project design and outcomes. Their direct experience managing household water access, energy use, and community resources gives them practical insight into local conditions, use patterns, and distribution constraints that technical project designers working from the outside often lack. Actively engaging women in the design of water treatment distribution mechanisms, community energy access structures, and environmental monitoring processes creates an opportunity to improve the effectiveness of these investments. Purpose-designed engagement processes with women's focus groups, women community liaison officers, or partnerships with local women's organisations create the conditions for women's knowledge and priorities to genuinely inform project design rather than being recorded as consultation attendance and set aside. Consultation and engagement processes should recognise that some groups could face additional barriers to participation, access to information, compensation, employment opportunities or project benefits. Depending on the project context, this may include persons with disabilities, Indigenous or minority communities, migrant populations, people affected by land or resource-access changes, individuals lacking formal documentation, and households experiencing rural poverty. Engagement approaches should be adapted to support their meaningful participation.

Beyond design, there is a clear opportunity to ensure women are not just consulted but recognised as co-beneficiaries with a meaningful role in project governance: represented in community liaison committees, environmental monitoring bodies, and benefit trust fund structures in sufficient numbers to influence decisions over time. Where this is achieved, women's continued engagement throughout the investment lifecycle helps ensure that benefit distribution mechanisms remain responsive to community needs, creating a feedback loop between community experience and project management that improves outcomes for all stakeholders.

Water and energy access for communities

While workforce participation, skills development, procurement and women's participation in project decision-making represent the Fund's primary gender pathways, certain investments may also create opportunities for indirect gender benefits through improvements in water and energy reliability. These benefits are expected to be highly project-specific and will depend on technical design, regulatory arrangements and local infrastructure conditions. Given the Fund's mitigation focus and the uncertainty regarding the extent to which such benefits may materialise across the future portfolio, they are not treated as a core Fund-level gender outcome.

Selected green hydrogen, renewable energy and associated infrastructure projects within the Fund's portfolio create an opportunity to contribute to improved water and energy security in communities located near project sites. While the primary purpose of these investments is to support industrial decarbonisation and green industrialisation objectives, some projects may include associated renewable energy generation, desalination facilities, water treatment assets, transmission infrastructure, or other utility systems capable of generating broader community benefits beyond the immediate needs of the industrial facility.

The most credible pathway is through improving the reliability, resilience and effective affordability of existing services for rural and peri-urban communities that have historically been underserved. Communities located near industrial investment sites in South Africa and Namibia often have some level of access to electricity and water infrastructure, yet service disruptions remain common, as the analysis in Section 2 has highlighted. In

both markets, electricity outages have imposed substantial costs on households and small businesses, many of which rely on expensive diesel generators or other backup solutions. With high diesel prices, the electricity generation cost related to such generators is much higher than grid electricity prices. Women operating home-based, informal or small-scale enterprises are often particularly exposed to these costs and disruptions. Similarly, interruptions to water supply increase the time and labour required to secure water for household needs, responsibilities that continue to fall disproportionately on women.

Renewable energy generation and water treatment infrastructure associated with the Fund's investments can contribute to reducing these reliability and affordability constraints for connected communities. Women are expected to benefit disproportionately from the resulting improvements. Reduced dependence on expensive alternative energy sources can support the productivity and resilience of women-owned enterprises, while improved water reliability can reduce unpaid care burdens and free time for education, employment and income-generating activities. These benefits may be particularly relevant in drought-affected or water-stressed regions where several green hydrogen developments are expected to be located, and can contribute to reduced time poverty, enhanced livelihood resilience and improved adaptive capacity among women in project-adjacent communities.

5 Gender Action Plan

Impact statement

SIDF aims to contribute to a gender-responsive and socially inclusive industrial decarbonization transition in South Africa and Namibia. It seeks to enhance women's equitable access to economic opportunities and benefits arising from climate investments across green hydrogen and hard-to-abate industrial sectors, including employment, skills development, procurement opportunities, and improved access to water and energy services at the community level.

Over time, the Fund is expected to support more inclusive and resilient communities by expanding women's participation in the green industrial economy and ensuring that climate mitigation investments are implemented in a manner that does not exacerbate existing gender inequalities.

Outcome statement

1. Gender-responsive systems integrated at fund and project level: Gender considerations are integrated into fund-level governance, investment processes, and project-level environmental and social management systems.
2. Inclusive workforce and skills pathways established: Women are supported to access employment, training, procurement and skills development opportunities across construction and operational phases of industrial decarbonization projects.
3. Gender-responsive community engagement and benefit-sharing implemented: Women participate meaningfully in project stakeholder engagement, community decision-making processes, and benefit-sharing mechanisms, and are supported to access project-related benefits.
4. Safer and more inclusive workplaces and communities promoted: GBV risks associated with project development, construction and operation are identified and addressed, and women have access to safe, accessible and gender-responsive grievance mechanisms.

Output statements

1. Gender-responsive investment and project development procedures and Fund manager level established and applied.
2. Project-level Gender and Social Inclusion Action Plans (GAPs) developed and implemented for investee companies.
3. Gender integration guidance materials and capacity-building support provided to Fund staff and investee companies.
4. Gender-responsive recruitment, workforce development and retention measures implemented by investee companies.
5. Gender-responsive workplace policies, GBV prevention measures and grievance mechanisms established and operational.
6. Technical training, skills development and workforce development initiatives accessible to women.
7. Procurement and local economic participation initiatives that support women's economic empowerment implemented where feasible.

8. Gender-responsive stakeholder engagement processes implemented and women represented in relevant community engagement and governance structures.
9. Community development initiatives informed by gender-responsive needs assessments implemented in project-adjacent communities.
10. Gender-disaggregated data collected and reported through Fund monitoring and evaluation systems.

See the Complete Gender Action Plan overview on the next page.

Phase	Component / Activity	Description	Indicator	Baseline, target, MoV	Timeline	Responsibility
1. Programme Policy and Arrangements						
Fund Manager	1.1 Capacity strengthening	Fund Manager staff with responsibilities for investment screening, due diligence, investment review and approval, ESG oversight, and portfolio monitoring is trained on the Fund's gender approach, gender-responsive investment practices, and GCF gender requirements. New staff will receive training as part of onboarding, and refresher training will be provided periodically as required.	Number of staff trained (disaggregated by gender)	Baseline: To be established by the Fund Manager upon proposal approval, through an assessment of existing gender capacity among relevant staff. Target: 100% of relevant staff receive training on the Fund's gender approach and GCF gender requirements. MoV: Training attendance records disaggregated by function	Within 12 months	CFM ESG team

Phase	Component / Activity	Description	Indicator	Baseline, target, MoV	Timeline	Responsibility
	1.2 Gender considerations across the investment process	The Fund Manager will consider gender risks and opportunities throughout the investment process, including at the stages of screening, due diligence, investment decision-making, contracting, and portfolio monitoring. Material gender and social inclusion risks and opportunities identified during screening and due diligence will be assessed prior to investment approval and, where relevant, translated into project-level Gender and Social Inclusion Action Plans, ESAP actions, project design measures and/or contractual commitments. Each investee company will be required to develop and implement a project- GAP, through which project-level gender commitments, indicators, and responsibilities will be specified.⁵¹	Number of investments for which gender considerations are documented at key stages of the investment process; number of project-level GAPs developed and implemented for investee companies	Baseline: no project-level GAPs available at fund launch Target: All investments MoV: Project-level GAP documents, investee agreement provisions	Applied from first investment; gender assessment conducted for all investments during screening and due diligence. Project-level GAPs developed for all investees and integrated into ESIA processes per investee	CFM ESG team
	1.3 Gender integration support materials for investees	The Fund Manager provides investee companies with gender integration support materials, including guidance on gender-responsive workplace policies, GBV prevention, stakeholder engagement, grievance mechanisms, and gender reporting templates, to support the development and implementation of	Number and percentage of project companies with whom the CFM Group gender support package is shared	Baseline: materials not yet made available to investees	From first financial close	CFM ESG team

⁵¹ Where investments involve land acquisition, leases, rights of way, restrictions on access to land or natural resources, compensation processes, livelihood impacts, or community benefit-sharing arrangements, project-level due diligence, environmental and social assessment and GESI assessment processes will assess the potential implications for women and vulnerable groups. This will include consideration of formal and informal land use, customary resource access, participation in decision-making, eligibility for compensation and access to project benefits, as relevant to the project context. Corresponding actions will be incorporated into project-level management plans and Gender and Social Inclusion Action Plans where required.

Phase	Component / Activity	Description	Indicator	Baseline, target, MoV	Timeline	Responsibility
		project-level GAPs. Materials will be adapted to the specific context of the Fund and shared with investees as part of the onboarding process following financial close. Separately, gender screening, due diligence and project-level GAP development guidance will be available during project assessment and investment decision-making to inform project assessment, investment terms and action planning.		Target: materials made available to 100% of investees MoV: distribution records, investee onboarding documentation		
2. Project-Level Gender Integration						
Project Development & Construction	2.1 Recruitment of women in Fund-supported projects	Investee companies promote equitable access to suitable and safe construction employment opportunities, and women's access to technical, operational, supervisory and management roles. Investees communicate jobs via channels accessible to women and vulnerable groups, pursue active recruitment partnerships with relevant institutions targeting women, and implement retention support for women in technical and operational roles. Training and skills-development activities supported by investee companies will be captured in project-level GAPs, with indicators covering relevant outcomes beyond enrolment (such as completion, certification, placement, and retention) agreed between the Fund Manager and	Number and percentage of female employees across the workforce, disaggregated by employment level	Baseline: Workforce baselines will be established through project-level gender assessments and due diligence processes, including assessment of workforce composition, local labour market conditions, skills availability and barriers to participation.	Baselines and project-specific targets established prior to commencement of material recruitment activities; implementation and monitoring throughout construction and operational phases, as applicable.	CFM ESG team; Investee HR Director

Phase	Component / Activity	Description	Indicator	Baseline, target, MoV	Timeline	Responsibility
		each investee at the project-level GAP stage.		Target: Project-specific workforce participation targets will be proposed by investees and documented in project-level Gender Action Plans. Targets will be reviewed and approved by the CFM ESG Team, taking into account country and sector benchmarks, occupation type, construction and operational workforce requirements, local skills availability, existing workforce composition, and identified barriers to participation. Where proposed targets are not considered commensurate with the identified opportunities or project context, the CFM ESG Team will require further		

Phase	Component / Activity	Description	Indicator	Baseline, target, MoV	Timeline	Responsibility
				justification and/or revision prior to approval. Progress against targets will be reviewed annually.⁵² MoV: Workforce records and HR reports (disaggregated by sex and employment level); recruitment and hiring records; project-level GAPs; annual workforce monitoring reports; training and skills-development records (including completion, certification and retention data, where applicable).		

⁵² Workforce participation targets apply to direct employees of investees. Contractors and subcontractors are expected to comply with relevant labour and gender provisions under the ESMS.

Phase	Component / Activity	Description	Indicator	Baseline, target, MoV	Timeline	Responsibility
	2.2 Gender-responsive workplace policies and GBV prevention	Investees implement gender-responsive workplace policies (gender policy, gender-responsive HR policy, anti-harassment policies, survivor-centred grievance mechanisms, and safe facilities for women) and there are GBV prevention provisions covering construction and operational phases.	Number and percentage of investee companies with documented gender-responsive workplace policies, grievance mechanisms and GBV/SEAH prevention measures	Baseline: Availability of workplace gender responsive policies will be documented per investee at due diligende stage Target: 100% of investees with documented gender-responsive workplace policies and GBV prevention provisions in place prior to construction commencement. MoV: Policy documents submitted to Fund Manager; grievance mechanism records.	Prior to construction commencement	CFM ESG team; Investee HR Director

Phase	Component / Activity	Description	Indicator	Baseline, target, MoV	Timeline	Responsibility
	2.3 Gender-responsive community engagement	Community and multi-stakeholder dialogue informs gender and social inclusion activities as part of project ESIA's, with purpose-designed processes to ensure women's knowledge and priorities inform project design. Women, youth, vulnerable and marginalised groups are included in stakeholder engagement, ESIA/ESMP processes and community feedback mechanisms. Where relevant to the project context, this includes consideration of barriers affecting persons with disabilities, Indigenous or minority communities, migrant populations, people affected by land or resource-access changes, individuals lacking formal documentation, and households experiencing rural poverty. Beyond consultation, investees ensure women are meaningfully represented in formal project governance structures with agency to influence decisions.	Number and percentage of women participating in stakeholder engagement activities; Number and percentage of women-only FGDs; Number and percentage of women in formal project governance structures where established. Project-level GAPs will include indicators evidencing women's effective participation, including documentation of issues raised by women, project responses, and resulting decisions.	Baseline: To be established per investee through ESIA process, informed by local community context and documented in the project-level GAP. Target: Gender-responsive consultation documented for 100% of investees with community-facing activities. MoV: Stakeholder engagement records; attendance registers and participant lists; records of women-only FGDs; stakeholder engagement reports; project grievance and feedback records; project governance committee records;	Baselines and project-specific indicators will be confirmed prior to construction commencement. Engagement takes place prior to construction commencement and throughout project implementation, as applicable.	CFM ESG team; investee community liaison officers

Phase	Component / Activity	Description	Indicator	Baseline, target, MoV	Timeline	Responsibility
				ESIA/ESMP documentation; project-level GAP monitoring reports documenting issues raised, project responses and resulting decisions.		
	2.4 Women's economic empowerment initiatives	Investee companies consider opportunities to engage women-owned or led ⁵³ suppliers and support technical and skills-development initiatives for women in project-adjacent communities, where feasible and appropriate. Additional supplier-development activities and targets will be considered where project-level assessments identify procurement opportunities for women-owned enterprises but barriers to participation remain. The nature of any supplier-development support will be determined based on the identified barriers and the project's ability to influence them, taking into account factors such as market awareness, technical capacity, certification	Number and value of contracts awarded to women-owned enterprises, reported separately for community and support services, and for technical, operational and supply-chain contracts; number of women attending skills-based training courses supported by Fund investees	Baseline: Procurement opportunities and barriers to participation by women-owned enterprises will be assessed through project-level due diligence and gender assessments. Target: 100% of investees report annually on the number and value of contracts	From construction phase per investee, monitored annually	CFM ESG team; Investee procurement team

⁵³ We refer to the IFC's definition of a women-owned or led enterprise as one that meets either of the following criteria: (i) at least 51% owned by one or more women; or (ii) at least 20% owned by one or more women, with at least one woman in a senior executive role (e.g. CEO, COO, President or Vice President) and at least 30% female representation on the board, where a board exists.

Phase	Component / Activity	Description	Indicator	Baseline, target, MoV	Timeline	Responsibility
		requirements, procurement readiness and access to supply-chain opportunities.		awarded to women-owned suppliers. Where supplier development programmes exist or opportunities are identified in the assessment, investee companies establish project-specific targets to increase participation of women-owned enterprises over time and report on these annually. MoV: Annual procurement reports; contract registers; supplier databases; project-level GAP monitoring reports; supplier-development programme records, training participation records.		

Phase	Component / Activity	Description	Indicator	Baseline, target, MoV	Timeline	Responsibility
	2.5 Community water and energy access	Where feasible, projects include water treatment, desalination, or renewable energy infrastructure that enables access to water and electricity for local communities. Access mechanisms are designed and governed in a gender-responsive manner.	Number of community beneficiaries with improved water access (disaggregated by gender); number of community beneficiaries with improved energy reliability (disaggregated by gender)	Baseline: project-level gender assessments to establish the applicability, baseline, barriers, intended benefit pathway Target: project-specific beneficiary targets and monitoring arrangements will be established during project design and documented in the project-level GAP prior to implementation. MoV: mid-term review	Applicability, baseline, targets and budget confirmed during project design and documented prior to implementation Implementation monitored annually during operations	CFM project team / Investee

Phase	Component / Activity	Description	Indicator	Baseline, target, MoV	Timeline	Responsibility
	2.6 Community development programs	Investee companies undertake community development initiatives in project-adjacent areas that prioritise women and vulnerable groups as primary beneficiaries, focused on improving livelihoods and informed by gender-responsive community needs assessments. These initiatives are additional to, and should not be used as a substitute for, impact mitigation measures, compensation obligations, livelihood restoration requirements, or other legal and regulatory commitments. Community benefit mechanisms are designed and governed in a gender-responsive manner.	Number of community development initiatives established by Fund investees; number of direct beneficiaries (disaggregated by gender and vulnerability status)	Baseline: community needs assessments and project-level gender assessments will establish the scope of programs, baseline beneficiaries, implementation approach. Target: established and documented in project-level GAP based on needs assessment and gender assessment. MoV: mid-term review, community development programmes annual monitoring trackers	Applicability, targets and implementation arrangements confirmed during project design and prior to implementation. Implementation results monitored annually thereafter.	CFM ESG team / Investee
3. Monitoring and Evaluation						
Investment Lifetime	3.1 Review of performance against GAP and gender-responsive indicators	A mid-term review will assess performance against the GAP and gender-responsive indicators. Investee companies will report to the Fund Manager on performance against gender indicators on a routine annual basis.	Number of project companies annually reporting gender performance	Baseline: 0% of portfolio reviewed at Fund launch. Target: One mid-term review completed; 100% of	Mid-term; annually from Year 1	CFM / AE

Phase	Component / Activity	Description	Indicator	Baseline, target, MoV	Timeline	Responsibility
				investees reporting annually MoV: Annual investee gender performance reports; mid-term review report submitted to GCF.		
	3.2 Grievance mechanism monitoring	Gender-related complaints and grievances reported and monitored as part of the Fund's portfolio monitoring framework, tracked as a separate category within routine performance monitoring of investee companies.	Number and share of operational grievance mechanisms meeting ESMS requirements, including gender-responsive and survivor-centred provisions; number of complaints (disaggregated by gender) raised through grievance mechanisms; number and percentage of complaints with evidence that grievances are managed in accordance with established procedures and response timelines	Baseline: N/A (no portfolio yet). Grievance mechanism maturity and alignment with ESMS requirements will be assessed during project-level due diligence for each investee and used to identify any required actions prior to implementation. Target: 100% of investees maintain and report annually on grievance mechanisms meeting ESMS requirements.	Annually from Year 1	CFM ESG team / Investee

Phase	Component / Activity	Description	Indicator	Baseline, target, MoV	Timeline	Responsibility
				MoV: GRM records, incident logs, monitoring reports, corrective action records		

Portfolio-level monitoring and project-level indicators

The indicators presented in this GAP represent the core gender indicators that will be aggregated and reported at SIDF portfolio level. Portfolio reporting will consolidate investee-reported data by country and will include relevant disaggregation, where applicable, construction and operational phases, occupational level, and the number and value of contracts awarded to women-owned enterprises.

These portfolio indicators will be supplemented by project-specific indicators established through project-level gender assessments, due diligence processes and project GAPs, reflecting the material risks, impacts and opportunities of each investment.

Financing of GAP implementation

Gender activities will be financed through a combination of Fund Manager operating resources, project development and due diligence budgets, and project-company implementation budgets, depending on the nature of the activity. Project-specific budgets for assessments, implementation measures, monitoring, training, stakeholder engagement and grievance management will be established during project preparation and incorporated into relevant project budgets and plans prior to implementation. Budget adequacy will be reviewed through routine project oversight, and additional resources may be allocated where material risks, opportunities or implementation needs are identified.

Human resource and expertise arrangements

Implementation of the GAP will be led by the Fund Manager's ESG function (Head of Impact and ESG) and integrated within existing investment, due diligence, monitoring and reporting processes. Project-level assessments, GAPs and related actions will be reviewed and approved through established ESG and investment governance processes. Additional specialist support, including gender, social inclusion and SEAH expertise, will be engaged where required based on project characteristics, identified risks and the complexity of the investment. CFM and investee companies will work with qualified gender and social inclusion specialists, including local experts where appropriate, to support project-level assessments, implementation, monitoring and capacity building. Relevant personnel, including ESG and community-facing staff, will receive gender training commensurate with their responsibilities.

Appendix A: Methodology

A.A.1 Approach

This r assessment was conducted in accordance with the Green Climate Fund's Gender Policy (2023) and the GCF Gender Assessment and Action Plan template (Form 09 / Annex 8 to Funding Proposals). The assessment follows a structured analytical approach moving from country-level gender context to sector-specific problem analysis and opportunity identification, designed to ensure that gender considerations are grounded in evidence, connected to the Fund's specific investment thesis, and translatable into actionable commitments in the Gender and Social Inclusion Action Plan.

The assessment adopts a gender lens while recognising that gender inequality intersects with other dimensions of disadvantage, particularly geography and age, that shape women's experiences and opportunities in both countries. Where data allows, these intersecting dimensions are reflected in the analysis.

A.A.2 Data sources and methods

The assessment draws primarily on secondary data sources, given the early-stage nature of the Fund and the timeline of proposal preparation. Primary data collection will be deepened during fund implementation as investee projects are developed and community-level baseline surveys become feasible.

Secondary sources consulted include:

National statistical sources:

- Statistics South Africa — Quarterly Labour Force Survey Q1 2026 (P0211); Q2 2025 (P0211); Gender Series Volume XI (2014–2024); Non-Financial Census of Municipalities 2021; Income and Expenditure Survey 2022/23; Marginalised Groups Indicator Report 2024
- Statistics South Africa — Gender Gaps Persist in South Africa's Labour Market, Data Story, August 2025
- Namibia Statistics Agency — 2023 Population and Housing Census Labour Force Report

International and multilateral sources:

- World Bank Gender Data Portal — Namibia and South Africa indicator series (2025)
- World Bank Women, Business and the Law 2024 and 2026
- African Development Bank — Gender Brief: Namibia (2025)
- UN Women — Country data and gender profiles for South Africa and Namibia (2024)
- UNDP — Namibia climate vulnerability and gender analysis (2024/2025)
- OPHI — Namibia Multidimensional Poverty Index 2021
- IPU Parline — Parliamentary representation data (2024)
- WEF — Global Gender Gap Report 2024
- IFC — Energy2Equal initiative documentation

Policy and institutional sources:

- South Africa Department of Women, Youth and Persons with Disabilities — policy and programme documentation
- South Africa Commission for Gender Equality — Annual Report 2024
- South Africa Commission for Employment Equity — Annual Report 2022–2023
- South Africa JET Investment Plan documentation
- Namibia Third National Gender Equality and Equity Policy 2025–2035
- Namibia Youth for Green Hydrogen (Y4H2) programme documentation
- Women in Green Hydrogen (WiGH) Africa Chapter — launch documentation, 2024

Academic and sector sources:

- Nature Climate Change (2024) — water collection time projections
- Frontiers in Water (2025) — gendered water scarcity in South Africa
- Springer Nature (2025) — female-headed households, water and food security
- MDPI Economics (2026) — renewable energy investment and female labour force participation in South Africa
- Afrobarometer — Namibia Survey Round 10 (2024)
- HSRC — gender attitudes survey data, South Africa (2024)
- South African Police Service — Crime Statistics 2022/23
- South African Medical Research Council — femicide data
- Namibian Police Force — GBV statistics 2022
- Namibia Demographic and Health Survey — latest available
- UN Women / UNIDO — Gender Equality and the Sustainable Energy Transition (2023)
- IISD — Why Gender Inclusion Must Drive the Just Energy Transition (2025)
- Gender Links — Namibia gender analysis publications (2023)

The analysis triangulates across sources where possible, prioritising primary national statistical sources for quantitative claims and multilateral or peer-reviewed sources for sector-specific and thematic analysis. Where data conflicts or gaps exist, these are noted explicitly in the relevant sections.

A.A.3 Stakeholder engagement

Primary stakeholder engagement was undertaken to complement the desk review and gather practical perspectives on gender equality, inclusion, workforce participation, procurement opportunities, GBV and stakeholder engagement considerations relevant to green hydrogen and industrial decarbonisation investments. Given the fund-level nature of the assessment and the absence of identified subprojects, consultations focused primarily on *gender specialists, development finance institution specialists, social inclusion practitioners, women's networks active in the green hydrogen sector, and sustainable development practitioners*, rather than project-affected communities. Outreach was also undertaken to relevant *policy stakeholders*, although consultations could not be completed within the timeframe available for the assessment. Community-

level consultations, including engagement with women and vulnerable groups, will be undertaken during project preparation and environmental and social assessment processes for individual investments.

Stakeholders were selected based on their expertise in gender equality, women's economic empowerment, sustainable industrial development, green hydrogen, social inclusion and development finance. Consultations were conducted through semi-structured interviews and focused on barriers to women's participation in green industrial value chains, opportunities for gender-responsive investment, workforce development, procurement, community engagement and GBV risks. Consultation findings were used to validate and refine the opportunity analysis and Gender Action Plan.

Consultation coverage was weighted towards South African and regional stakeholders and did not include direct consultations with affected communities, labour representatives, organisations of persons with disabilities, women-owned enterprise networks, GBV service providers, Namibia-based stakeholder organisations, or policy stakeholders. This reflects the fund-level nature and early stage of the programme, as well as the limited timeframe available for stakeholder engagement prior to submission. These perspectives will be incorporated through project-level stakeholder engagement and due diligence processes.

The following organisations were engaged:

1. Liezelle Kumalo, DBSA, Gender specialist. DBSA
2. Thakane Setlaba-Tsiane, Gender specialist. DBSA
3. Thevan Naidoo, Consultant: Social Transformation. National Business Initiative (NBI) South Africa.
4. Ayanda Mvimbi, Programme Specialist. UN Women South Africa
5. Elizabeth Blewudzi, Energy Expert, Women in Green Hydrogen.
6. Elsie Gamor, Legal Expert, mentor at Women in Green Hydrogen

The following core questions guided stakeholder interviews:

1. In South Africa and Namibia, what work is being done to promote gender equality in the green hydrogen, renewables, and industrial decarbonization sectors, by government, industry, and civil society?
2. What is the role of your organization in this space? What actions have you taken, what has worked, and what has not?
3. Which other organizations are active in promoting gender equality in these sectors in South Africa and Namibia, and what are their roles?
4. At the household and community level, what factors support or prevent women from accessing employment and economic opportunities in these sectors, and how do these differ between urban and rural contexts?
5. Are there policies, regulations, or incentive structures in South Africa or Namibia that specifically support or hinder women's participation in green industrialization, and are these being effectively implemented?
6. What are, in your view, the biggest opportunities and bottlenecks to promoting gender equality and women's economic empowerment in the green hydrogen, renewables, and industrial decarbonization sectors?

7. Any other comments or recommendations?

Key consultation findings

Stakeholders highlighted the continued underrepresentation of women in technical, operational and leadership positions across industrial, engineering and energy-related sectors, despite improvements in educational attainment and the growing pipeline of women entering STEM-related fields. Stakeholders emphasised the importance of targeted recruitment, mentorship, training and skills-development pathways that link directly to employment opportunities rather than providing standalone training.

Stakeholders also noted that women-owned enterprises continue to face barriers to participation in industrial supply chains, including limited access to finance, experience and procurement opportunities. Several stakeholders emphasised the need to move beyond lower-value service contracts and progressively support women-owned enterprises to participate in higher-value supply-chain opportunities through supplier-development and capacity-building measures.

Stakeholders stressed the importance of meaningful participation of women in project planning, consultation and decision-making processes, particularly in relation to community benefits, water resources, environmental management and local development priorities. Stakeholders also highlighted the need for community investments and skills-development initiatives to respond to locally identified needs and opportunities.

Stakeholders further emphasised the importance of accessible and survivor-centred grievance mechanisms, gender-balanced grievance processes, and proactive measures to address GBV and related risks associated with large-scale industrial developments.

These findings informed the opportunity analysis and Gender Action Plan. Investment-specific issues relating to workforce composition, procurement opportunities, land and compensation, community benefits, stakeholder representation and project-level GBV risks will require further assessment through project-level due diligence, stakeholder engagement and Gender and Social Inclusion Action Plans.

Stakeholder category	Key issue or opportunity raised	How reflected in SIDF design	Further project-level assessment required
Gender specialists, development finance institutions and social inclusion experts	Women remain underrepresented in technical, operational and leadership positions in industrial and energy sectors despite improvements in educational attainment. Skills development should be linked to employment pathways and not delivered as a standalone intervention.	Reflected in GAP activities on recruitment, workforce participation, skills development and retention of women in technical and operational roles.	Assessment of project-specific workforce requirements, skills gaps and recruitment opportunities.
Gender specialists, social inclusion experts and women's networks	Women-owned enterprises face barriers to participation in industrial value chains, including limited access to finance, experience, information and larger procurement opportunities. Supplier development may be needed in addition to procurement targets.	Reflected in the procurement opportunity analysis and GAP activity on women's economic empowerment and supplier participation.	Assessment of local supplier opportunities, women-owned enterprise participation and capacity-building needs for individual investments.
Gender specialists, development finance, and women's networks	Consultation processes should move beyond attendance and support meaningful participation of women and vulnerable groups in project design, community benefit arrangements and decision-making processes.	Reflected in the opportunity analysis on women's participation in project design and GAP activity 2.3 on gender-responsive community engagement.	Identification of project-affected stakeholders, participation barriers and locally appropriate engagement approaches.
Gender specialists and social inclusion practitioners	Community development initiatives should be informed by local needs assessments and respond to community priorities rather than predefined activities.	Reflected in the community development and benefit-sharing actions included in the GAP.	Determination of community priorities, beneficiaries and implementation approaches through project-level engagement.
Gender specialists, development finance institutions and social inclusion experts	GBV and related risks require accessible, trusted and survivor-centred grievance mechanisms, with appropriate representation and safeguards for reporting and response.	Reflected in the assessment's discussion of GBV risks, gender-responsive grievance mechanisms and GBV prevention measures. Detailed SEAH arrangements are addressed through the ESMS.	Project-specific assessment of SEAH risks, referral pathways, grievance arrangements and mitigation measures.
Women's networks and social inclusion practitioners	Capacity building, mentoring and practical exposure to emerging green industrial and green hydrogen sectors may help increase women's participation in future employment and business opportunities.	Reflected in the workforce development, training and capacity-strengthening opportunities identified in the assessment and GAP.	Identification of project-specific skills needs and training opportunities.