



SUSTANA COOLING INDIA FUND

INSTRUMENT ANALYSIS
SEPTEMBER 2024



Sustana Cooling India Fund

LAB INSTRUMENT ANALYSIS

September 2024

DESCRIPTION & GOAL

India's first blended capital equity fund focused on cooling. Fund investments help de-risk early-growth enterprises in India and attract additional capital.

SECTOR

Energy: Energy Efficiency

Sustainable Cities: Buildings, Industry & Manufacturing

FINANCE TARGET

USD 100 million equity fund with a focus on investing in early growth-stage companies

GEOGRAPHY

For pilot phase: India

In the future: Other emerging markets

The Lab identifies, develops, and launches sustainable finance instruments that can drive billions to a low-carbon economy. The 2024 Lab cycle targets four thematic areas (mitigation, adaptation, high-integrity forests, and sustainable agriculture and food systems) and five geographic regions (Brazil, East & Southern Africa, India, Latin America & the Caribbean, and the Philippines).

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SUMMARY

As the world warms, heatwaves are becoming more frequent, severe, and prolonged. In India, heat severely impacts economic output, productivity, health, and food security. Currently, the penetration of cooling technologies in India is low. However, with increasing incomes, population, and urbanization, the demand for cooling is projected to increase by eight times (ICAP, 2019). In a business-as-usual scenario, this could increase emissions by 10% in India (Sharma et al, 2017). To ensure that this growing demand does not hinder progress on emissions reduction, it is crucial to scale efficient and sustainable cooling solutions. Achieving this would require an increased investment in the cooling segment in India.

The **Sustana Cooling India Fund** aims to provide catalytic early-stage venture capital for promising cooling technologies with flexible deployment and return terms that align with commercial expectations. It will be structured as a blended capital equity fund whose investors include private sector entities, development finance institutions, impact investors, and philanthropies, each with distinct return targets. Investees will utilize this equity infusion to accelerate growth, attract additional capital, and deliver greater cooling access. The fund will be drawn down for five years after the first close – i.e., until 2029. The initial focus on India will serve as a model for tailored sub-funds in other regions.

The fund meets the key Lab criteria:

- **Innovative:** As the first private sector venture capital fund focused solely on cooling, the fund is uniquely positioned to assist startups in the cooling space to scale up.
- **Actionable:** Sustana has developed a deep pipeline of investible startups that this fund can support. The Sustana team has extensive experience in climate investing. The team plans to close the fund over 12 months and draw it down for five years.
- **Financially Sustainable:** The fund focuses on early- and growth-stage startups with a revenue stream looking to scale up. The cooling sector requires patient capital as scale-up cycles are longer than investments in other technologies. It is a nascent sector for startups, and failure rates are unknown. Hence, a concessional/first loss tranche is introduced into the fund structure to attract private-sector capital. This will reduce risk and make the fund more sustainable. Once the fund crowds in private capital and establishes the feasibility of investing in this sector, subsequent funds will have less need for concessional capital.
- **Catalytic:** The fund is expected to attract more private venture capital for heat adaptation and mitigation by demonstrating the viability of investing in the cooling sector – specifically in startups that bring new technologies or new business models to the market. This will, in turn, boost adaptation financing in India. The fund is also expected to be replicated in other parts of the world threatened by rising heat.

Sustana is in the process of fundraising and is looking at a first close of USD 50 million and a final close of USD 100 million for a fund focused on India. The fund will focus on adaptation and mitigation and aims to support 15-30 companies. Investments in cooling applications, including space cooling and cold supply chains, generate broader adaptation benefits, including improved health outcomes and reduced methane from food wastage, further amplifying their positive climate impact.

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CONTEXT

Cooling is a vital developmental need and a key element of climate action for India, offering an investment opportunity of USD 1.5 trillion.

As the world warms, heat waves are becoming more frequent, severe, and prolonged. In South Asia, including India, extreme heat events are now 45 times more likely ([World Weather Attribution, 2022](#)). Estimates suggest that with a 2°C global temperature rise, heatwaves in India will increase 15-fold over the next 30 years ([Frontier, 2023](#)).

Heat has adverse impacts on health, productivity, and food security in India, necessitating urgent and immediate adaptation action. Extreme heat events are estimated to shave off 4.5% of India's GDP by 2030 ([DDMA, 2024](#)). The country loses about USD 14.3 billion annually due to post-harvest food losses because of heat ([CLASP, 2023](#)). Additionally, India loses 25% of vaccines and 20% of temperature-sensitive medical products due to a lack of reliable cold chain, leading to losses of USD 313 million annually (Dearman, 2015).

Scaling cooling solutions to address heat in India would increase energy consumption and emissions, posing a challenge for India's 2070 Net Zero target. Currently, only 10% of households own an air-conditioning unit; 24% use an evaporative cooler, and 4% of fresh agricultural produce is covered by cold chain facilities (IEA, 2023). However, rising temperatures and frequent heatwaves have increased the demand for cooling solutions, driving electricity consumption. Data shows that with every 1°C increase in the average daily temperature above 24°C, there is a corresponding 2% rise in electricity demand. In 2024 alone, electricity consumption increased by 15% due to heat and the use of cooling appliances ([Economic Times, 2024](#)).

The government of India (GoI) recognizes cooling as a crucial development need, closely linked with mitigation and adaptation action. The country has implemented several plans and policies to address the impacts of heat, promote energy efficiency, and support sustainable cooling. These include the Standard & Labelling Program (2006), the Energy Conservation Building Code (2017), Heat Action Plans (HAPs) encouraged by the National Disaster Management Authority (2019), and the India Cooling Action Plan (ICAP) (2019).

The cooling market in India could provide investment opportunities of over USD 1.51 trillion while abating 291 million tons of CO₂ equivalent (World Bank, 2022). Projected to grow eight times by 2038, there is an unprecedented opportunity to scale sustainable cooling in India (ICAP 2019; World Bank 2022). Despite government initiatives and the potential for growth in the market, financing for sustainable cooling solutions remains a challenge. Current cooling solutions are inefficient and could lead to a 10% increase in total emissions in India or be too expensive for households and businesses (Sharma et al, 2017). For example, less than 14% of households own a 4 or 5-star air conditioner (AC), and only 3% use energy-efficient fans, largely due to budgetary constraints (Bhasin et al, 2021; [IEA, 2023](#)). Therefore, much more must be done to attract private investment and encourage innovative business models to augment India's government initiatives.

The **Sustana Cooling India Fund** aims to bridge the gap in financing sustainable cooling solutions in India. It is a USD 100 million blended capital equity fund to support early-growth companies delivering innovative cooling applications. The fund will be essential to de-risk and crowd in more commercial capital for scaling cooling technologies, addressing climate

adaptation, mitigation, and several sustainable development goals. This will, in turn, help build innovative products and business models to expand the provision of cooling in India in an energy efficient manner.

Table 1: Investment potential in the cooling sector in India

Sector	Investment Potential by 2040 (USD)
Space cooling - residential (including passive cooling materials)	1.25 trillion
Space cooling - commercial	228 billion
Cold storage devices	29 billion
Cooling devices - fans and air coolers	338 million by 2030
Cold chain	45 billion by 2028

CONCEPT

1. INNOVATION

Sustana's Cooling India Fund tackles key barriers to scaling energy-efficient cooling by providing targeted capital, driving business model innovation, and fostering a collaborative ecosystem.

1.1 **BARRIERS ADDRESSED: LACK OF CAPITAL FOR SCALING COOLING TECH INNOVATION**

Sustana Cooling India Fund addresses several barriers to scaling up energy-efficient cooling technologies in India. By addressing these barriers, the fund aims to create a more supportive environment for the growth and innovation of cooling technologies and business models, ultimately contributing to a more sustainable and efficient cooling sector.

1.1.1 COOLING TECH INVESTMENTS ARE ASSET-HEAVY AND TAKE LONGER TO SCALE

Investments in cooling technology are typically asset-heavy, requiring significant upfront capital expenditure (capex). These investments also have longer pathways to scale, meaning it takes more time and resources to achieve substantial growth and market penetration. This sector is currently underserved by the existing crop of private equity (PE) and venture capital (VC) firms, which often prefer quicker returns on investment and less capital-intensive ventures. **To address this barrier, the fund will specifically target the scaling up of innovative cooling technologies.** By providing the necessary capital and support, the fund aims to bridge the gap left by traditional PE/VC firms, enabling these technologies to reach their full potential and contribute to a more sustainable and efficient cooling sector.

1.1.2 LACK OF CAPITAL FOR BUSINESS MODEL INNOVATION

The demand for cooling must be met not just by traditional business models but also by new business models such as leasing services and cooling-as-a-service (CaaS). New business models require capital to scale. **To address this gap, the fund will offer the financial leeway for early-stage growth** of small and medium-sized enterprises (SMEs), startups, and other enterprises that innovate in their business models. This will foster a more dynamic and competitive market, supporting new business models to drive growth and efficiency in the cooling sector.

1.1.3 LACK OF AN ECOSYSTEM APPROACH

Cooling technology and solutions are part of a broader ecosystem that involves multiple stakeholders across the value chain. This includes manufacturers, suppliers, service providers, and end-users, all crucial in developing and deploying effective cooling solutions. However, the sector lacks a cohesive and collaborative ecosystem, hampering innovation.

The fund will help build the ecosystem by investing in multiple stakeholders across the value chain. The cooling value chain can be seen as multiple complementary sub-segments.

Investment in these multiple sub-segments can help foster synergies. For example, investing in cooling-as-a-service startups can help drive energy efficiency in the cooling space. The impact can be magnified if investments in refrigerant innovation and passive cooling technologies complement this investment.

1.2 INNOVATION: SUSTANA'S FUND IS UNIQUE IN BEING A PRIVATE SECTOR FUND FOCUSING SOLELY ON COOLING SOLUTIONS

Sustana's fund stands out in the market because it focuses on using venture capital for cooling solutions. This specialization allows for a more targeted approach to addressing the unique challenges and opportunities within the cooling sector. By focusing resources and expertise, the fund can drive significant advancements and innovations in technologies and business models, ultimately contributing to a more sustainable and efficient cooling ecosystem.

Globally, the only other instruments that focus on cooling solutions are those capitalized by multilateral development banks (MDBs) and development finance institutions (DFIs) (Table 2). No dedicated thematic funds in the private sector focus exclusively on cooling solutions in India. Sustana's fund fills this void by providing a private-sector alternative specifically tailored to the needs of the cooling industry. This dedicated focus allows for more agile and responsive investment strategies, fostering innovation and growth in the sector.

Another unique aspect of Sustana's fund is its dual focus on adaptation and mitigation objectives. Sustana recognizes the interconnected nature of these goals. Most existing funds and financial instruments tend to prioritize mitigation efforts, such as reducing greenhouse gas emissions. Sustana's approach supports the development of resilient cooling solutions and ensures that businesses and communities can better cope with the changing climate and address extreme heat. For example, Sustana will focus on adaptation investments such as expanding cooling solutions to vulnerable populations, increasing farmer incomes, and expanding vaccine coverage. This holistic approach ensures that investments in the cooling sector contribute to immediate and long-term climate goals, creating a more comprehensive and effective strategy for addressing climate change.

Table 2: Instruments on cooling solutions by MDBs and DFIs

Similar Instruments	Region	Status	Comparison with Sustana
World Bank/GCF Cooling Facility - USD 157 million from GCF and USD 722 million co-financing from World Bank focused on space cooling and supply chain cooling	Multiple countries including El Salvador, Kenya, Panama	Implementation has commenced – however, only USD 1 million deployed as on January 2024	Unlike Sustana, it is not a venture capital investment facility for direct investments in startups. It aims to assist governments develop market infrastructure, financing mechanisms, policies and regulations for deploying cooling at scale.
ARCH Cold Chain Solutions East Africa Fund - USD 100 million equity fund focussed on cold supply chain	East Africa	Fund deployment has commenced with an investment in a cold storage facility in Nairobi, Kenya	Focused on cold chain solutions unlike Sustana which will focus on other additional sectors such as space cooling, passive cooling, phase change materials etc.

By addressing these unique value propositions, Sustana's fund positions itself as a pioneering instrument in the cooling sector. Its exclusive focus on cooling solutions, emphasis on adaptation financing, dual objectives of adaptation and mitigation, and status as a private sector alternative to MDB/DFI-funded projects make its offering unique. This innovative

approach supports the development of innovative cooling technologies and contributes to broader climate resilience and sustainability goals.

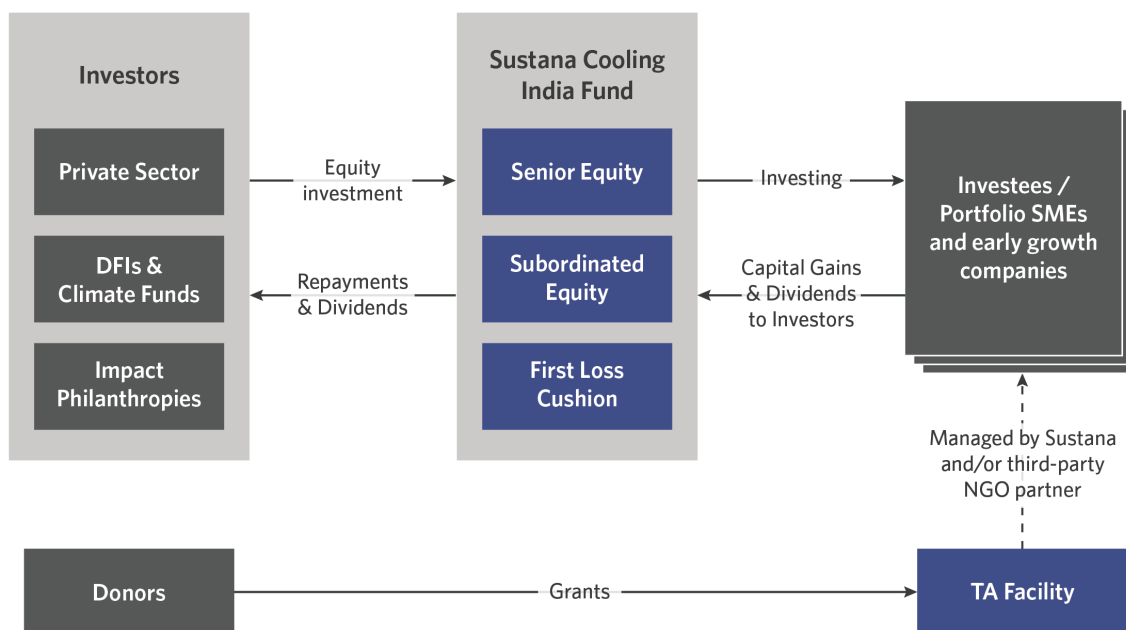
2. INSTRUMENT MECHANICS

The fund combines senior and subordinated equity with a first loss cushion to attract investors in the cooling sector and includes a technical advisory facility for investee companies.

Sustana Cooling India Fund is structured as a venture capital vehicle offering senior and subordinated equity. The senior equity tranche, capitalized by private sector investors, has a higher expected return rate. The subordinated equity tranche, capitalized by DFIs and climate funds, offers returns that meet DFI's expectations concerning early-stage returns.

A key feature of this fund is the provision of a first loss cushion, which impact investors and philanthropies would capitalize. By taking on the highest risk, the first loss cushion encourages more risk-averse investors to participate in the fund. This mechanism helps to partially de-risk the private sector investment into the fund and attract senior equity from private investors, thereby increasing the fund's overall capital base.

Figure 1: Instrument Mechanics



This fund's beneficiaries are startups and small and medium-sized enterprises (SMEs) operating in the cooling sector. These companies require capital to grow but often lack access to traditional funding sources. The fund fills this gap by providing equity venture capital investments to support their development and scale-up.

In addition to the equity fund structure, the mechanism provides technical advisory (TA) services to investee companies. This TA facility will be capitalized via donor grants and managed by a third-party non-governmental organization (NGO) partner or the fund

manager. The TA facility will support portfolio companies through assistance on market assessments, improving business processes, refining the business model, and training and skills development for staff. This arrangement ensures the funds are used effectively and responsibly, focusing on achieving the best possible outcomes for the investee companies.

The fund represents a comprehensive and innovative approach to investment. Providing a partial first-loss cushion attracts a diverse range of investors and supports SMEs and early-growth companies in the cooling sector. Its provision of equity investments, grants, and technical assistance helps these companies grow and succeed, generating market returns for investors and contributing to economic development.

2.1 POTENTIAL CHALLENGES TO INSTRUMENT SUCCESS

Potential challenges to Sustana's success as an instrument include the limited diversification potential for an equity fund focused on cooling, the potential of establishing a first loss cushion, and the financial risks associated with the dual mitigation and adaptation focus. Mitigation strategies for each are detailed below.

Table 3: Risks and their mitigation

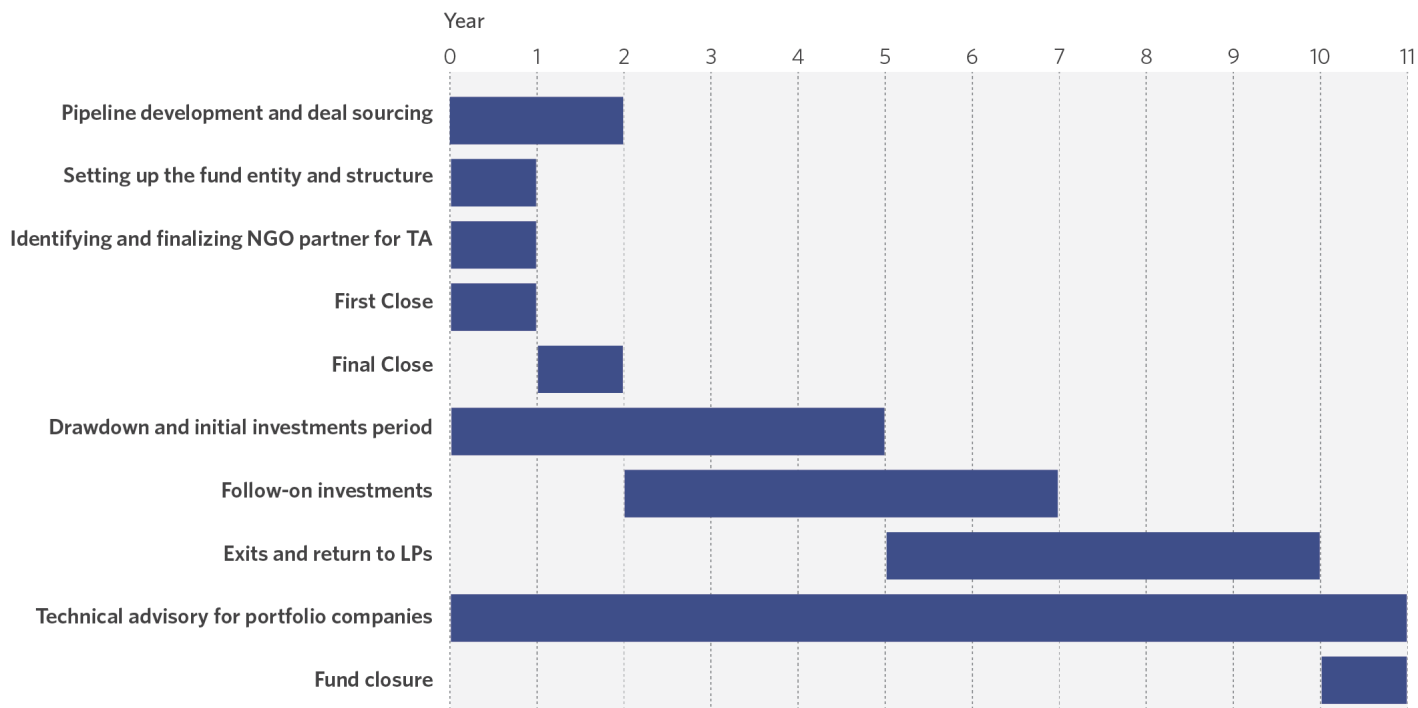
Risk	Mitigation
Limited diversification in a venture fund focused solely on cooling	The market for cooling solutions is expected to grow rapidly in India, and investor interest in the sector will grow in tandem. Targeting multiple segments of the cooling value chain—such as commercial and industrial cooling, cold supply chains, residential space cooling, and new cooling technologies, including material technologies and passive cooling materials—can help mitigate the diversification challenge.
Establishing a first-loss cushion	Philanthropies and impact investors have invested concessional equity in private sector funds or startups. Hence, this risk is manageable, given the precedence. An example is the Catalytic Capital Consortium initiative of the MacArthur Foundation, which has deployed USD 120 million of catalytic capital, including catalytic equity capital, in ten different funds. This first loss cushion will crowd in private sector investment, mitigating the risk of not attracting enough private capital.
Financial risk due to additionality focus	There is a correlation between populations which cannot afford cooling solutions and those with low incomes. The focus of the fund on creating additional impact in adaptation would mean a focus on low-income groups. Private sector-led cooling solutions for low-income groups faces a greater revenue risk and cash-flow risk among other financial risks. The fund can manage this risk at a portfolio level by diversifying their investments into startups focusing on different customer segments. Investee companies can mitigate this risk by ensuring the right product-market fit and diversifying their customer segments.

MARKET TEST AND BEYOND

3. IMPLEMENTATION PATHWAY AND REPLICATION

The fund will follow a classic venture capital investment philosophy, providing capital to startups with high growth potential while offering technical assistance to the portfolio.

Figure 2: Implementation Pathway



The fund structure and legal incorporation will be completed in the first year. Sustana already has a pipeline of around 40 potential investee companies, especially in the cold chain and space cooling sectors, which will be expanded. Additionally, the fund will evaluate many startups for funneling into the funding stage.

The first raise will involve capital from different investors with varying return requirements. Invested companies can secure patient equity capital from the fund, allowing them to generate returns over the longer time horizon required for scaling up in this sector. Successfully bridging this gap will demonstrate these solutions as high-potential technologies with traction and help them unlock further pools of risk equity capital at scale – in the form of commercial equity capital and commercial debt – essential for scaling companies and capital assets.

The fund aims to secure a first close by securing commitments over the first year, while the final close will be by the second year. Fundraising will focus on private investors, including family offices and development finance institutions for senior and subordinated equity tranches. Additionally, DFIs will help crowd more private sector investment into the fund. Impact investors and philanthropies can capitalize the first loss tranche.

Concurrently, the drawdown and investments will continue for five years. Follow-on investments will be made in portfolio firms that show promise and grow rapidly. After the initial round of investments, exits will be planned for optimal returns to Limited Partners. The fund's lifecycle is a decade with up to two additional one-year extensions.

In parallel, a TA facility will be capitalized with grants, and an NGO partner will be selected to provide TA for portfolio firms. TA can help augment a startup's capabilities by providing advice on strategy, product development, market opportunities, implementation, etc., which will improve its effectiveness.

4. FINANCIAL IMPACT AND SUSTAINABILITY

4.1 QUANTITATIVE MODELING

The Sustana Cooling India Fund is an India-focused venture capital fund with a target size of USD 100 million and a first close of USD 50 million. The fund aims to provide significant returns to investors while addressing India's cooling needs through strategic investments in various sectors. Concessional equity will be blended with the fund to lever the equity returns for private sector investors, and to provide a partial first loss cushion. This will help to crowd in more private-sector investment into the fund. The details of the fund parameters considered for the financial model are given in Table 4.

Table 4: Fund parameters considered for the financial model

Parameter	Details
Deployment period	5 years from the first close
Average investment size	USD 5 million
Number of deals	20
Average investment period	6 years
Management fee	2%
Organizational expenses	1%
Operational expenses	0.25%
Blended USD to INR conversion rate	INR 93 per USD
Investment period end	2030
Fund termination	2035 (with a possible period of up to 2 one-year extensions)

The fund's investment portfolio is designed to target the “missing middle” in funding rounds for startups focused on cooling. The missing middle refers to the startups in initial traction to early growth between pre-Series A/B stages. The sample portfolio includes commercial and industrial cooling investments, cold supply chains, residential space cooling, and new technologies and materials. The deals are projected to be undertaken sequentially, with pre-Series A deals in the first two years, Series A deals in years two to four, and Series B deals in years four and five. The fund's financial model also considers the impact of foreign exchange rates on returns, drawdown schedule, return on capital, and preferred return outflows.

The financial model has shown that by including concessional equity as a partial lever, the fund can generate a return of 18.04% in USD terms for LPs.

4.2 PRIVATE FINANCE MOBILIZATION AND REPLICATION POTENTIAL

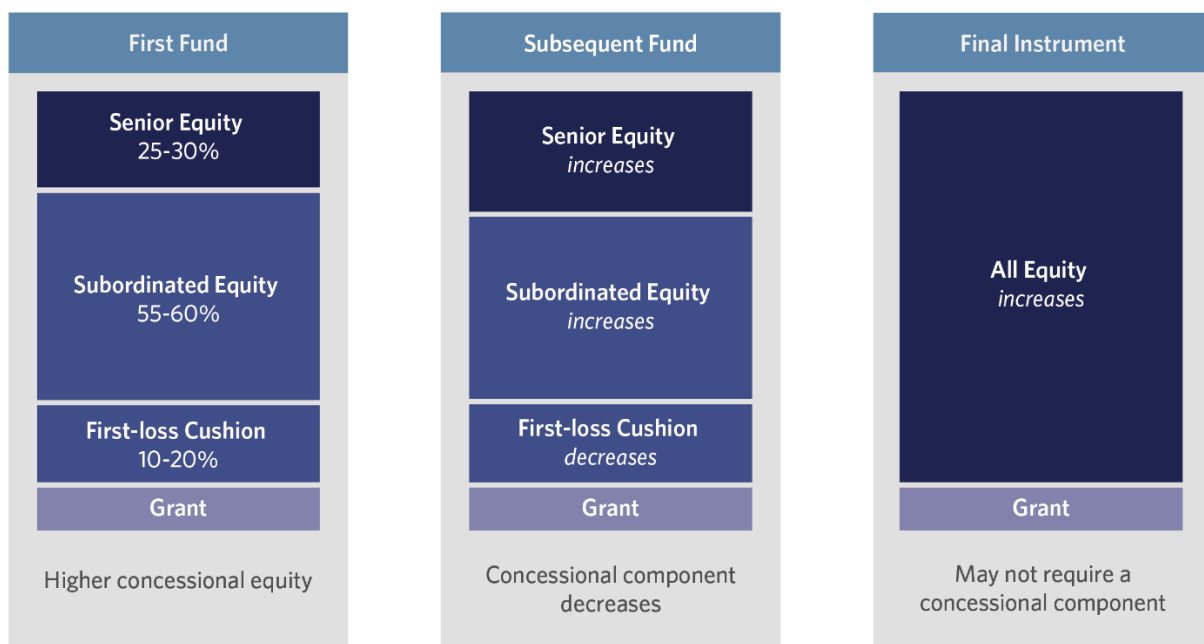
Mobilizing private finance will rest on two pillars: interest from private investors in the cooling sector and market-linked returns from the fund.

There will be robust demand for cooling solutions in India. The market will grow, and private investor interest is expected to grow. An analogy for this is the development of the solar energy market in India which was initially underwritten by public funding but with the right policies and increased demand for energy saw private investors enter.

Sector-specific funds that build the ecosystem from the ground up for a nascent segment are not novel for the climate finance industry. One such successful example is Circulate Capital, which started investing in plastic recycling about six years ago when other funds did not consider it an investible segment. Many companies that Circulate invested in have grown into significant and scaled-up businesses.

The concessional “first-loss” tranche will provide a partial cushion for private investors to get market-linked returns on their equity investments. This is critical to crowd-in private investors. Between 2010 and 2020, in lower-middle-income countries (including India), the IFC provided concessional equity to 14.2% of all the projects for which it had provided concessional finance (IFC, 2021).

Figure 2: Financial sustainability of the fund



MDBs and DFIs can offer concessional financing for several reasons, including promoting sustainable development, reducing poverty, and addressing market failures, especially when they blend their capital with donor funding. These institutions aim to support projects with significant social, environmental, or economic benefits but may not attract sufficient private-sector investment due to perceived risks or lower financial returns. By providing concessional financing, MDBs and DFIs lower the cost of capital for these projects, making them more viable and attractive to other investors. Additionally, concessional financing helps to leverage additional funding from private and public sources, thereby maximizing the impact of development initiatives. This approach also enables MDBs and DFIs to support innovative and high-impact projects that align with their development goals and priorities.

As investors gain confidence after the capital raise of the first fund, subsequent funds raised focusing on cooling solutions will be less dependent on concessional equity (Figure 2). The box on the left of Figure 2 represents the structure of the first fund, which, once raised, will not change. The other two boxes in Figure 2 represent the phase-out of concessional equity in potential subsequent funds.

5. ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACT

Cooling is a crucial development that is linked to food security, public health, and productivity.

In India, cooling is closely linked with development and economic growth and is crucial for food security, public health, and productivity. Currently, India has a low penetration of cooling technologies. However, with rising temperatures, increasing per capita income, and rapid urbanization, the demand for cooling in India is expected to increase 8-fold, leading to a 435% increase in emissions from the sector over the next two decades (ICAP, 2019).

A shift towards sustainable cooling is required to minimize growth in emissions while simultaneously making progress on SDGs. The Sustana Cooling India Fund aims to scale sustainable cooling technologies in India and ensure sustainable growth, with the following potential impacts:

- Reliable cold supply chains can help maintain quality, increase shelf life, reduce food wastage, and improve farmers' incomes.
- Uninterrupted and reliable cold supply chain can also reduce the wastage of vaccines and critical medicines.
- Cooling can reduce heat-related health issues and improve productivity.
- Efficient and best-in-class cooling technologies can ensure that the increasing demand for cooling is met sustainably without significantly increasing the electricity load and emissions.
- Scaling sustainable cooling technologies (including passive cooling) can ensure India's urbanization is more sustainable.

Table 5: SDG targets of the instrument

SDG	Sub-indicators/ targets
SDG 2 Zero hunger	<ul style="list-style-type: none"> • Target 2.1 Universal access to safe, nutritious and sufficient food • Target 2.3 Double the productivity and incomes of small-scale food producers
SDG 3 Good health and well-being	<ul style="list-style-type: none"> • Target 3.b Support research, development and access to affordable vaccines and medicines
SDG 7 Affordable and clean energy	<ul style="list-style-type: none"> • Target 7.3 Double the improvement in energy efficiency • Target 7.5 Promote access, technology and investment in clean energy
SDG 8 Decent work and economic growth	<ul style="list-style-type: none"> • Target 8.4 Improve resource efficiency in consumption and production
SDG 9	<ul style="list-style-type: none"> • Target 9.4 Upgrade all industries and infrastructures for sustainability

Industry, innovation, and infrastructure	<ul style="list-style-type: none"> Target 9.A Facilitate sustainable infrastructure development for developing countries
SDG 11 Sustainable cities and communities	<ul style="list-style-type: none"> Target 11.6 Reduce the environmental impacts of cities Target 11.B Implement policies for inclusion, resource efficiency and disaster risk reduction
SDG 12 Responsible consumption and production	<ul style="list-style-type: none"> Target 12.3 Halve global per capital food waste
SDG 13 Climate action	<ul style="list-style-type: none"> Target 13.1 Strengthen resilience and adaptive capacity to climate-related disasters Target 13.2.2 Total greenhouse gas emissions per year
SDG 17 Revitalize the global partnership for sustainable development	<ul style="list-style-type: none"> Target 17.7 Promote sustainable technologies to developing countries

5.0 ENVIRONMENTAL IMPACT

As cooling demand grows, it is estimated that it will account for almost 50% of the increase in peak electricity demand in India by 2030 (IEA, 2023). Therefore, improving the energy efficiency of cooling systems and shifting to cleaner refrigerants presents an opportunity to reduce energy use and GHG emissions while delivering cost savings and improved air quality, comfort, and productivity. Table 6 presents example metrics for assessing the fund's environmental impact.

Table 6: Environmental metrics for the investments

Impact	Metrics
Energy efficiency	Cumulative annual energy savings due to energy efficiency measures when compared to the base case – 660 billion kWh per annum
	Emissions abated due to the adoption of energy-efficient cooling solutions (MtCO ₂ e) – annually and cumulatively during the lifetime of the fund
	Emissions avoided by reducing cooling needs through passive cooling strategies or renewable energy solutions – 8 million tCO ₂ e
Adoption of novel technologies and innovative business models	Incremental square footage covered by energy efficient cooling, novel technologies like thermal energy storage, cleaner refrigerants or other new technologies that are more energy efficient – 81 million square feet
	Private capital mobilized by the fund for energy efficient sustainable cooling Ratio of private capital to concessional capital
Global warming potential of refrigerants	Reduce use of refrigerant materials with increased passive cooling and increased use of low Global Warming Potential (GWP) refrigerants

5.1 SOCIAL AND ECONOMIC IMPACT

Cooling technologies have a significant positive impact on public health and productivity. Access to space cooling reduces heat stress, while clean cold chains improve vaccine distribution, reducing wastage and lowering vaccine-preventable deaths.

These technologies also provide an opportunity to transform India's agriculture sector. About 65% of the Indian population is employed in agriculture and allied or adjacent activities ([PIB, 2023](#)). The lack of reliable cold chains in developing countries leads to a loss in farmers' incomes and an increase in food prices ([Birmingham Energy Institute, 2022](#)). Increasing access to cold chain technology can improve food security and enhance farmers' incomes.

The table below presents example metrics for assessing the social and economic impacts of the fund, highlighting both primary and secondary impacts on environmental and social outcomes.

Table 7: Social and economic impact metrics of the investment

Impact	Metrics	Second order impacts
Improvement in health, livelihood and incomes	Number of people with access to cooling	<p><i>For residential and commercial space cooling and cold chains: number of people with increased resilience to climate change – 0.7 million</i></p> <p><i>For cold chain: no. of farmers whose produce is protected from spoilage – 0.3 million</i></p> <p>Out of the 1 million people with incremental access to cooling because of the fund, women will comprise 400,000</p>
	Increase in square footage having novel or energy-efficient cooling coverage	Increase in productivity or reduction in absenteeism on peak temperature days
	Reduction in vaccine doses wasted	Annual reduction in losses of vaccine doses due to incremental increase in cold chain coverage
	Tonnes of agricultural produce wastage reduced	<p>0.1 million tonnes wastage will be reduced</p> <p><i>(A related metric which would be developed is the increase in average household income of farmers (especially women farmers), FPOs or cooperatives)</i></p>

NEXT STEPS

The critical path for the fund is fundraising, and Sustana is actively working on this. Private investors, MDBs, DFIs, impact investors, and philanthropies are being approached to capitalize the fund, with some already showing interest. Simultaneously, donors need to be approached to fund the TA facility. Specific metrics for sub-segments are being developed, and tailored TA interventions must be created for portfolio companies.

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