November 2022

THE INDIA CLIMATE FINANCE REPORT

Climate Capital Network

Contents

Introduction 3

About Us 4

A Horizontal View 5

Section 1: **What's Happened So Far?** 6
Guest Article: The State of Indian Climate Tech – India Impact Investors Council

Section 2: **Who and How?** – How do climate funders break down by capital type and mandate? 8
Guest Article: Catalysing Climate Action in India – India Climate Collaborative 10

Section 3: What and How Environmental Impact Is Being Measured? – Sectoral and sub-sector nuances around funding flows, and what funders are measuring 12
Guest Article: The Role of Climate Funding – Rainmatter Foundation 16

Section 4: What's Missing and What Keeps Funders up at Night? – Gaps, barriers & risks 18 19
Guest Interview: Climate (debt) Capital needs to support diffusion of innovation till the J-curve is achieved – cKers Finance 21
Guest Interview: I'm excited and frightened at the same time – Sundaram Climate Institute

Section 5: What Are We Tracking? What Are We Exploring? And What Do We Want to Learn More About? 23

Conclusion: All capital does not have the same colour 27

Interviewees/ Guest Contributors 28

Introduction

Climate finance is a critical lever for climate innovation to scale and mainstream.

We (Green Artha) launched the Climate Capital Network (CCN) in October 2021 with a view to facilitating a greater flow of climate capital, more insights and greater collaboration. Given the nascency of the climate innovation (and climate finance) ecosystem in India, we were very intentional in our coverage across the capital spectrum – from philanthropic grant funding, through debt and equity – the returns spectrum – impact-first through to fully commercial – and across the breadth of climate sectors – far beyond energy and mobility.

> Every one of these mandates and approaches is necessary for the climate innovation ecosystem to progress and thrive.

Through this, the first annual CCN Report, we have tried to understand the direction of climate finance in India, uncover funding opportunities and funding gaps, and showcase insights from organisations who are using innovative approaches.

This survey was run in September 2022 with members and partners of the CCN. The universe of funders in India has grown significantly to encompass everyone from the Climate Committed (core mandate and/ or deploying in these sectors for a number of years) to the Climate Crossover (newly part of the mandate and starting to actively deploy/ refine thesis) to the Climate Curious (will opportunistically deploy, but no specific mandate at this point). We reached out to funders who are actively and strategically looking at climate right now. There were about 50 respondents across the surveys and interviews. The report doesn't include syndicates and family offices who are deploying in this space.

> Our focus with this report is definitely on the data as a way to provide context and background, but equally importantly on the insights and areas of emergence.

Our interviews and guest articles represent a very diverse set of perspectives, as seen from the vantage point of institutional funders, family offices, industry associations and ecosystem enablers. While our attempt was to be as comprehensive as possible, we are cognizant that there are likely interviewees we have inadvertently missed or insights we have overlooked.

We're grateful to the respondents for so generously sharing their views, and hope that this report is informative and helpful.

About Us

Green Artha works at the intersection of finance and climate innovation to catalyze adoption of the products and business models necessary to keep warming below 1.5-2 degrees and facilitate an equitable transition to a green economy. We unlock critical climate capital by investing in transformational technologies, leveraging opportunities to derisk technology and business models, developing and normalizing financial instruments and business models to increase capital efficiency, RoI and accelerate capital flows, and building networks to increase climate funding.

www.green-artha.com

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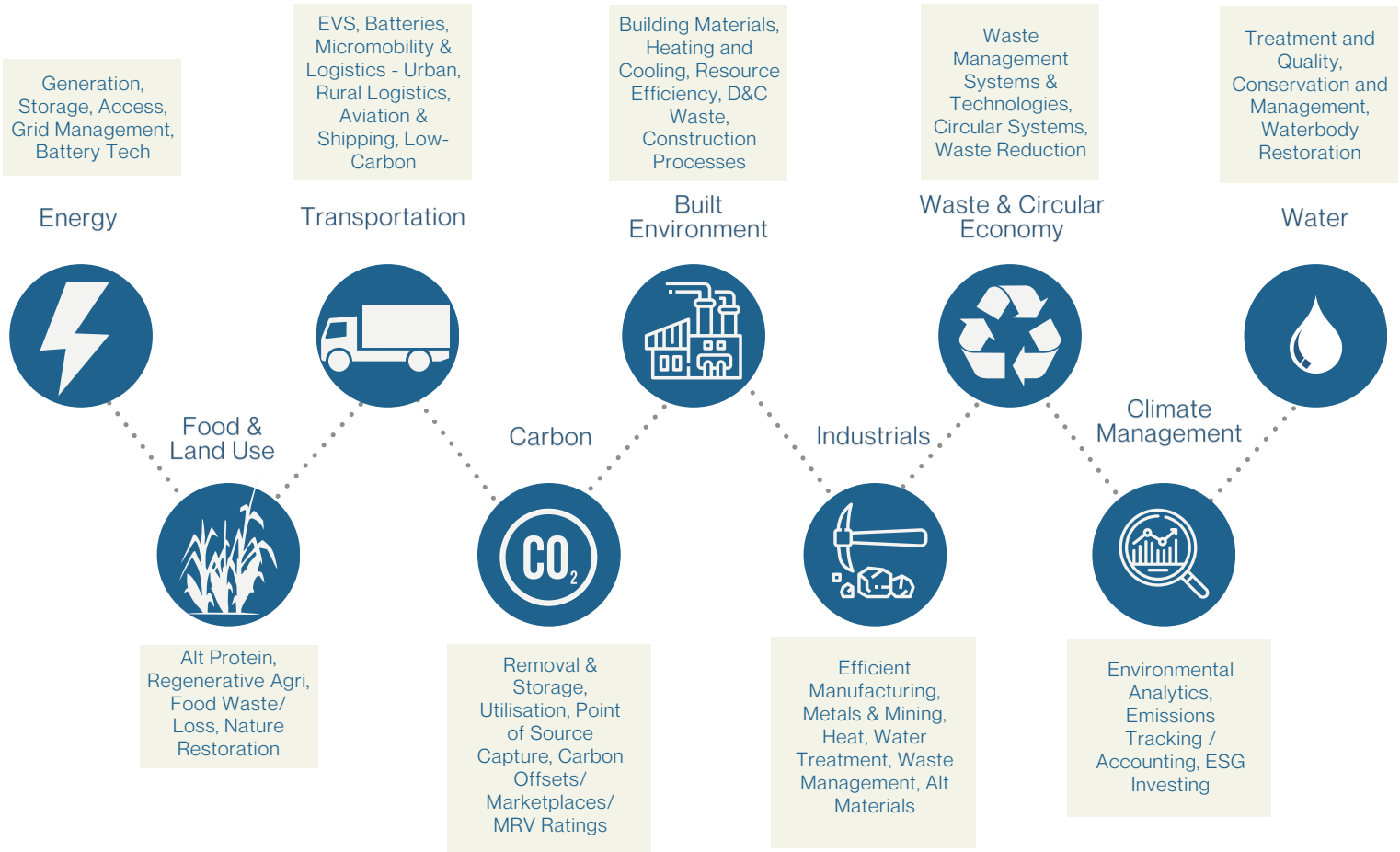
The Climate Capital Network (CCN) was seeded in October 2021 with a view to creating a platform for capital allocators across the climate ecosystem in India to connect, exchange ideas, discover areas of mandate alignment, share pipeline and build the continuum of capital. To date, this is the only Network in India for and by climate capital allocators. Network activities are broad and include investment showcases, thesis deep dives, sector deep dives, panel discussions on topics of emerging interest and member offline connects.

A Horizontal View

A brief digression here on what we mean when we say climate innovation – Climate is a horizontal, not a vertical; climate innovation and opportunities encompass all of the following, and increasingly, much more:



Section 1

What's Happened So Far?

We're grateful to our partners **India Impact Investors Council (IIC)** for helping us set the context for this report with their deep perspectives and granular historical data on equity funding.

Guest Article

The State of Indian Climate-tech

India Impact Investors Council (IIC)

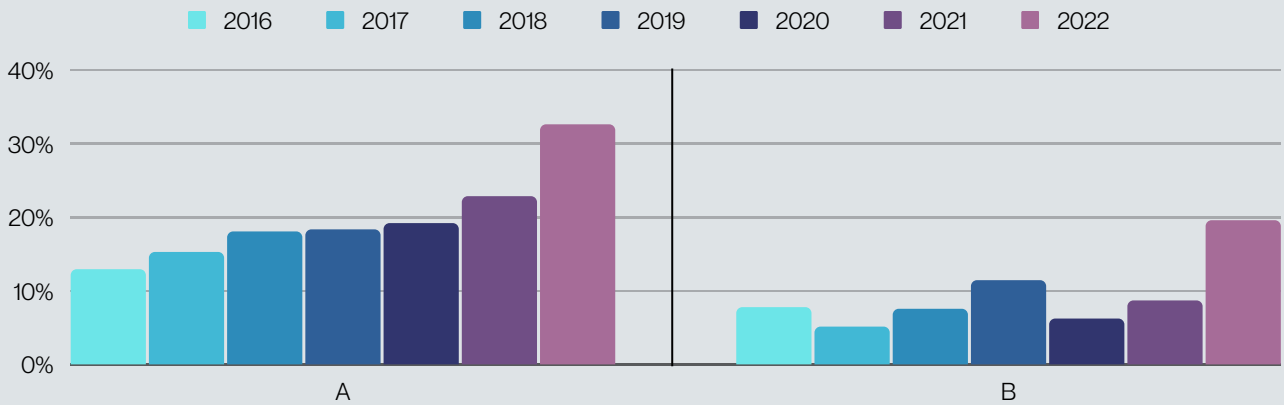
Climate change is on course to radically alter our planet's ecological and socio-economic landscape. According to the Global Climate Risk Index 2021, India is poised to become one of the world's worst-affected countries by rising global temperatures. Crop yields in the country can fall by as much as 30% by 2050, while almost 40% of Indians will be potentially living in water scarcity by the mid-21st century.

In such a scenario, asset owners and managers are increasingly realizing the critical role that they need to play in financing climate change mitigation, adaptation, and resilience. Analysis conducted by the Impact Investors Council (IIC) reflects this increasing flow of capital towards Indian climate-tech ventures. The analytical insights also underscore the pressing need to further support this nascent ecosystem so that it can truly scale-up innovative, home-grown solutions to tackle one of humanity's greatest challenges of the 21st century.

The Rise of Indian Climate-tech

265 Indian climate-tech enterprises have attracted ~$3 Billion in equity investments since 2016 and around half of this entire amount has been invested in 2021 and 2022 (up to August) itself. As delineated in the figure below, the share of climate-tech in India's equity impact investing market has more than doubled in the past 6 years. So far in 2022, 1/3rd of all equity impact deals have involved a climate-tech startup, while 1/5th of the entire impact capital invested has flown into the sector. This exponential growth has been driven by increasing early-stage innovation activity, which is reflected by the outsized share (65%) of Seed stage deals in the sector.

Sustainable mobility continues to be the most popular segment, accounting for ~2/3rd of the total investment into the sector. Furthermore, while other mainstay segments in the climate-tech space such as clean energy show consistent investor interest and activity, there is now an increasing share of capital flowing into nascent areas such as alternative proteins and carbon sequestration.

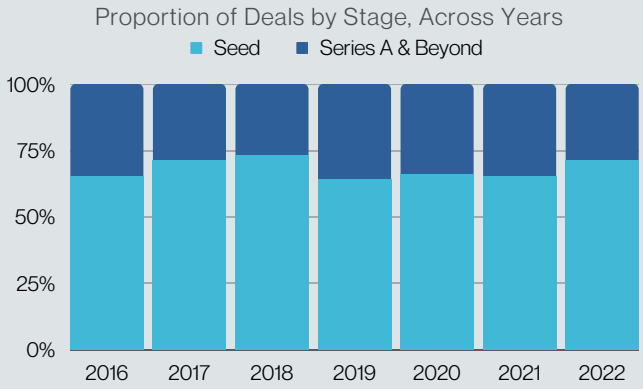


A - Climate-tech as % of Total Equity Impact Investing Amount B - Climate-tech as % of Total Equity Impact Investing Deals

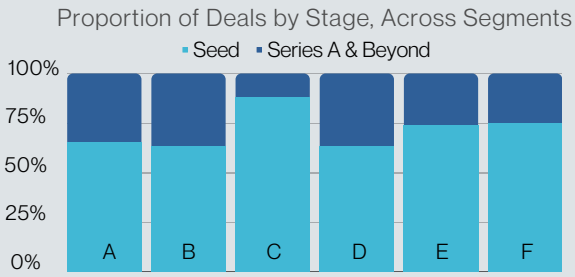
Graph Source: IIC Database; 2022 data is available upto August

Seed Stage Deals Dominate Climate-tech Ecosystem

Despite the large volume of capital invested into climate-tech ventures in the past few years, the majority of the deal flow continues to be focused on seed stage impact enterprises, as shown in the figure above. On one hand, this demonstrates a vibrant sunrise sector with high growth potential, on the other, it showcases the need for capital providers to help scale this ecosystem beyond the early stages of funding.



(Source: IIC Database; 2022 data is available up to August)



A - Climate-smart Agriculture & Food,
B - Energy, C - Environment & Natural Resources
D- Sustainable Mobility, E - Circular Economy
F - Others

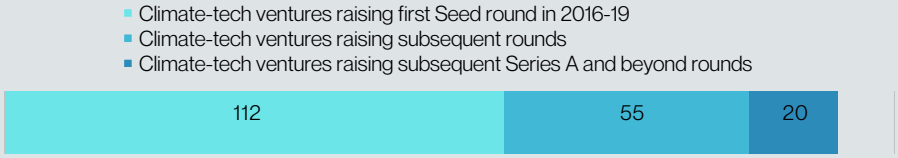
(Source: IIC Database; 2022 data is available up to August)

A segment-wise analysis of the investment stage data highlights that sectors with a higher representation of later-stage deal flow such as Sustainable Mobility, Energy and Climate focused Agriculture, are also those associated with proven and established business models. Going forward, as more and more consumers desire products and services that do not contribute to climate change, greater impact capital will flow towards enterprises that focus on, for example, the Circular Economy. This will facilitate a greater proliferation of Series A and beyond deals in the sector as a whole.

Less than 1/5th of Seed Stage Deals Graduate to Series A and Beyond

Of the 112 Indian climate-tech ventures that raised their Seed round of funding between 2016 and 2019, only ~50% have raised a subsequent round as of August 2022. Furthermore, only ~18% of such Seed stage enterprises have transitioned to stages Series A and beyond, highlighting that the majority of enterprises continue to remain in the Seed stage even 3 to 6 years post initial capital fusion.

As reflected in the chart below, the proportion (65%) of Indian climate-tech ventures that have raised only one round of funding is significantly higher compared to those that have raised multiple rounds of funding. Furthermore, only 9 enterprises have raised capital through 5 or more rounds, with the figure for one round being almost 20x higher at 171.



In conclusion, while the increasing focus and interest in climate-tech among various capital providers in recent years is promising, these green shoots of investment support need to be nurtured to help climate-tech investing become mainstream. As India looks to mobilise close to $1 trillion in investments by 2030 to meet its emission reduction targets and strives to achieve its 2070 net-zero pledge, it will be imperative to bring in diverse funders into the sector to support the scaling-up of climate-tech ventures across stages and segments. A larger flow of such capital to sustainable climate-tech innovations will not only deliver benefits to the environment, but also bolster India's ability to achieve its sustainable development goals (SDGs).

Section 2

Who and How?

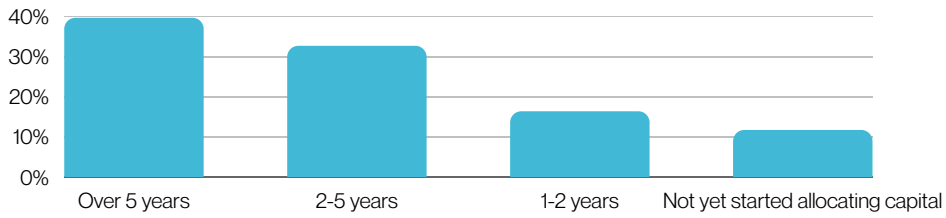
How do climate funders break down by capital type and mandate?

As the IIC data points out, capital toward climate innovation saw a significant and necessary uptick in the last 6 years. With that historical context in mind, it's informative to see where this emerging interest is coming from, and where it will flow.

All the way from Climate-Committed to Climate-Curious: Where the Funders are Situated

While climate is the core of the funding mandate for only 42% of those who are strategically deploying in this space, what is interesting is the number of sector-agnostic funds for whom climate has moved from the periphery to an area of active interest. This could be a reflection of some recent success stories and traction, the evolution of stronger business models, and the emergence of a new cohort of climate entrepreneurs; it could also reflect the growing sense that funding climate action is now critical.

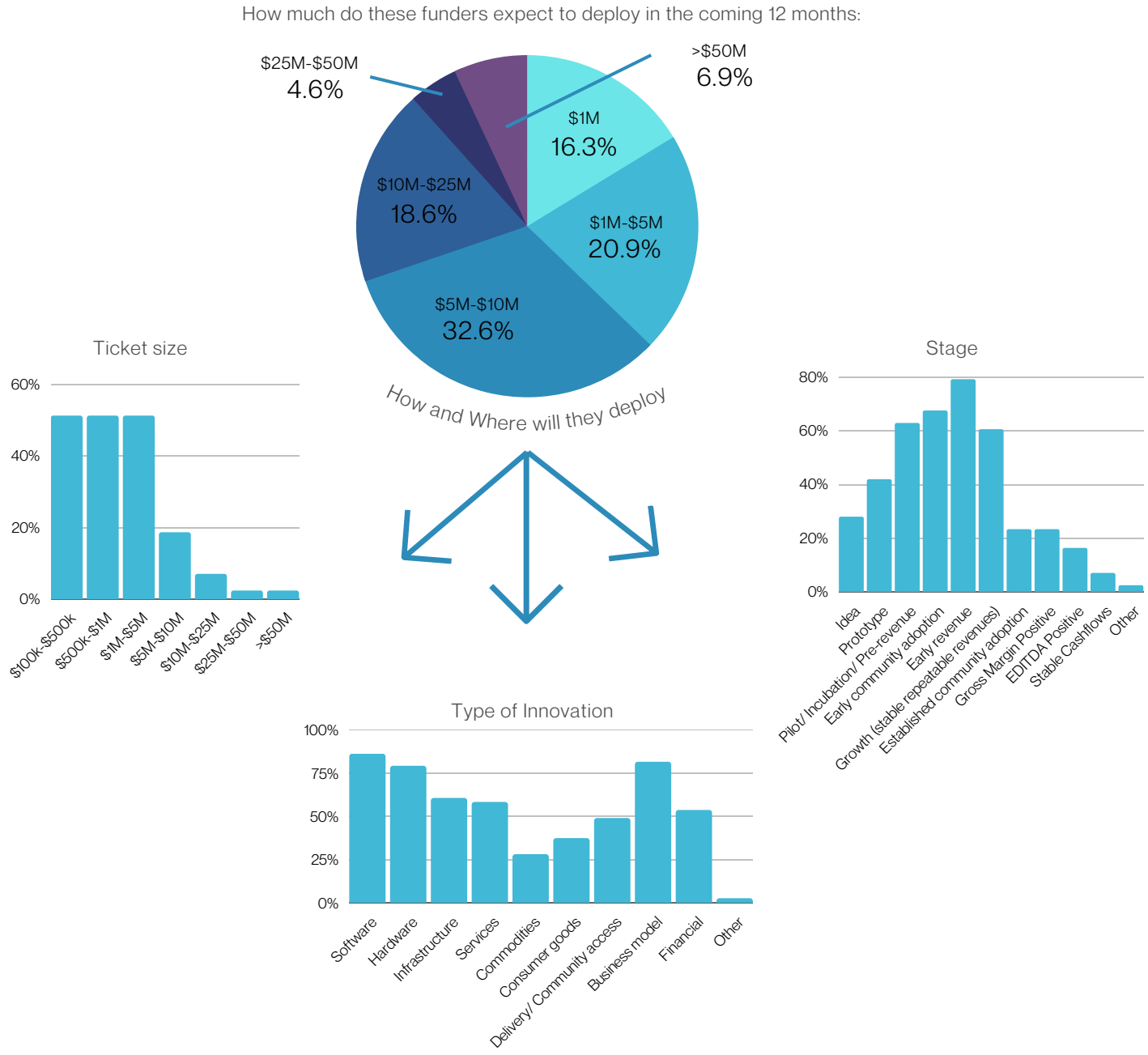
How long have organisations been funding in this space?



> What stands out here is not the quantum of new funders who have developed a mandate in the last 2-5 years, but also the distribution of these funders by capital type. An overwhelming 64% of those who have been funding for 5+ years are Foundations, Philanthropies and Impact Funders.

Clearly, their work has helped progress the sector, showcase models, and attract new, commercial-returns-focused equity capital.

> That said, it is also interesting to note that a very limited number of new grant and debt funders have emerged for climate in the most recent wave.



In keeping with historical trends, there is a clear clustering of equity (and a small number of debt) funders around the smaller ticket sizes and earlier stages.

At the earliest stages grant funding is more prominent and will continue to play an important role in supporting ideation, testing and prototype development; equity funding follows quite quickly after, indicating a relatively clear transition and continuum of support from Idea to Incubation/ Seed. Where this pathway breaks down though is at the mid and later stages.

> Not only is there a significant thinning of the number of funders, but also the types of private capital available.

Funding requirements at this stage in India are currently being met more by DFIs and public sector funders; there is a clear opportunity for more private funders – debt & equity– to participate and extend the pool of available and appropriate capital sources.

> Interest in funding software-led innovations probably stems from a historical comfort and deeper understanding of these types of business models.

As is expected, some of the less-established innovation models are supported at this point primarily by philanthropic and impact-led funding. While we anticipate this access to broaden as more commodities, services and delivery-innovations achieve momentum.

> We believe that philanthropic/ impact funding will always have a critical role to play in funding the building of infrastructure, access and other important but underserved areas.

Guest Article

Catalysing Climate Action in India

India Climate Collaborative

A few years ago, we were introduced to a young girl named Mayurika, who works with Mahila Housing Trust (MHT), a close partner of the India Climate Collaborative. Mayurika is helping build resilience to climate impacts in slum communities, for example, through cool roofs, which use materials like polystyrene and reflective paint to reduce heat stress in these areas. There are millions of people in communities and organisations around the world, just like Mayurika, who are working to solve the climate crisis - by building resilience to climate shocks, providing clean, renewable energy to their communities, protecting and restoring natural ecosystems, and transitioning farms to regenerative agricultural practices.

While philanthropic funding may seem insignificant in comparison to larger pools of private and public finance, it is uniquely placed to support individuals and communities like Mayurika.

> In the words of one of our founding members, Rohini Nilekani – to "distribute the ability to solve." It is flexible enough to be spent on a variety of interventions, from roadmaps and research to on-ground implementation, and is not regulated by as many constraints as public capital. It does not require a financial return on investment, unlike private capital; and is inherently compassionate in nature, prioritising the well-being of people and biodiversity.

So where does the Indian philanthropic ecosystem currently stand on climate action? Indian foundations and CSR (Corporate Social Responsibility) funders engage deeply with sectors such as agriculture, water, and livelihoods, and, therefore, certain solutions to climate change, especially those that relate to adaptation – or building resilience to climate impacts – are aligned with the existing work of Indian philanthropic portfolios. However, these projects aren't necessarily implemented with a climate lens – so we need philanthropy to climatise their existing investments, as well as invest in other kinds of climate solutions that may fall outside of the traditional, implementation-first focus of Indian philanthropy.

A new wave of Indian philanthropists emerging from the technology sector are beginning to engage with these other kinds of solutions. This includes support for innovation-focused, early-stage start-ups with the potential for significant climate impact, which carry the associated technology risks. For example, ACT Grants, a volunteer-led initiative by Indian entrepreneurs and venture capital funds, is raising ~₹500 crores in seed capital for solutions to problems in multiple sectors, including the environment. The Kamath brothers, founders of brokerage firm Zerodha, have launched the Rainmatter Foundation, committing $100 million over the next few years to fund entrepreneurs and organisations working on climate solutions.

While there has been a positive trend in domestic climate philanthropy, we have a long way to go in matching up to the scale and urgency of this crisis. To solve the climate challenge in the timeframe we have, we need to cultivate climate leadership that pushes for equitable models of climate-integrated development.

The culture of giving in India presents fertile ground to cultivate climate leaders who can represent the developmental and climate challenges of the Global South. For decades, governments in the Global South, including the Indian government, have insisted on climate-integrated development, so that climate action does not exacerbate socio-economic inequalities.

> Indian donors can become a leading voice for the Global South, which addresses the upcoming transition in a just manner.

Collaborative action is urgently needed to push such innovative models from research or policy to action, replication, and scale. Climate philanthropy has the potential to develop long-term sectoral roadmaps that foster transformative collaborations and can direct large funds toward the capacity-building of grassroots networks. Building climate leadership can thus accelerate inclusive climate solutions – while enabling distributed problem-solving.

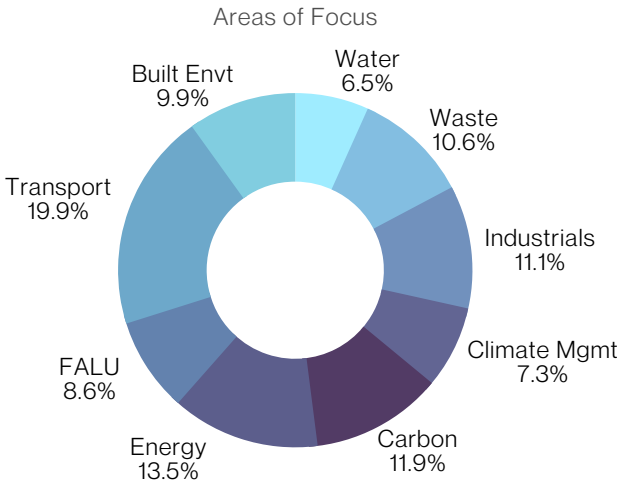
Climate change is a complex problem; no one player can solve for it alone. There are myriad approaches, geographies, and sectors that need attention and resources. To solve for all of these in the timeframe we have, we need to work together – to learn from each other, to leverage each other's strengths, and to inspire each other. The future holds a challenge; we invite India's leaders to rise to it.

Section 3

What and How Environmental Impact Is Being Measured?

Sectoral and sub-sector nuances around funding flows, and what funders are measuring.

Where is climate funding in India likely to go in the coming 12 months? Largely in the same directions as the last few years – Transport and Energy lead the pack, with Carbon showing up as a close third. No surprises there.



As highlighted by the IIC data as well, other areas are increasingly attracting capital, and some interesting nuances emerge in the analysis of how funding breaks up within these sectors and *what is driving this new funding focus.* (Please see the detailed areas in focus on the next page.)

Philanthropic capital continues to play a catalytic role in Energy Generation and Energy Access. Aside from those sub-sectors, commercial debt and equity funders (many of whom have been deploying for less than 5 years) have a high level of confidence around the opportunities in Transport, Energy and Carbon.

Regulatory and market tailwinds will continue to propel funding interest in Waste & Circularity (Plastic waste in particular) and Built Environment.

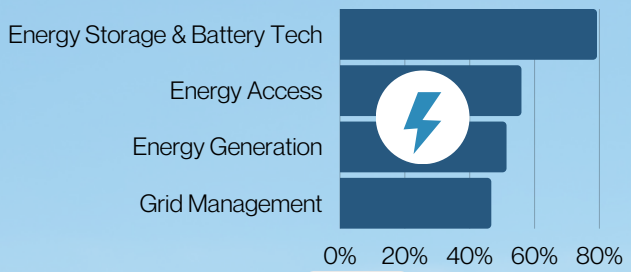
Agritech business models were already well established with a number of the newer and sector-agnostic commercial funders. The key evolution here is from marketplaces and platforms to sustainability, resilience and agrifood life sciences. Nature Restoration and Biodiversity are still almost completely the purview of philanthropic and impact funders; and will remain so until new business models emerge or are successfully demonstrated.

Waterbody restoration and Watershed management remain underfunded from a commercial capital perspective and the models are still unproven. In all other areas of water-related innovation, there is a slow but warming interest from newer equity funders.

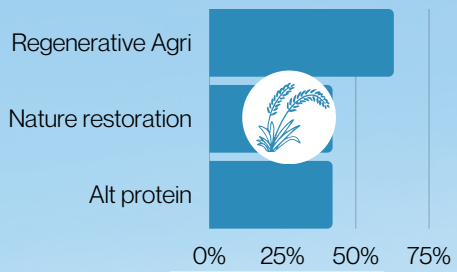
Industrials (particularly Alternative Materials, Efficient Manufacturing and Industrial Waste Management) are being embraced by a number of (mostly) new, equity funders. This speaks to a growing understanding of business opportunities within industrial decarbonisation.

> Across all these sectors, the new cohort of commercial capital allocators appear to be looking for strong business models and are ready to deploy if these can be demonstrated. This is an interesting inflection point and there is an opportunity here for catalytic capital to facilitate the de-risking of these business models and showcasing their transition to commercial capital.

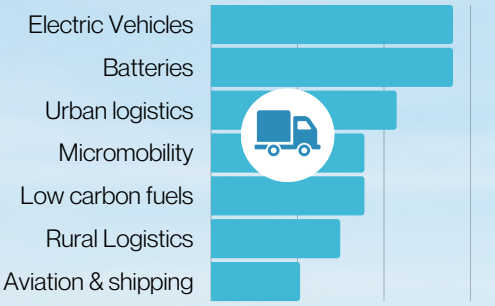
Areas of Focus - In Depth



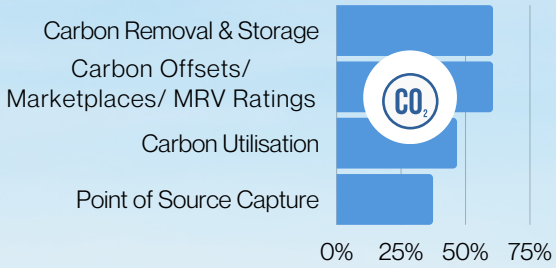
Energy



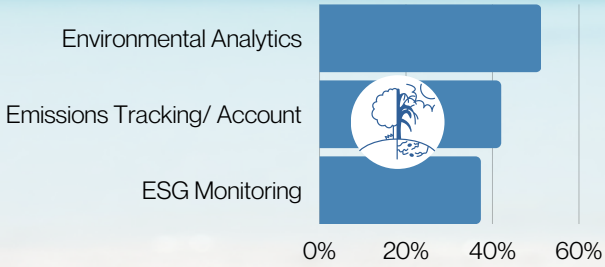
Food & Land Use



Transport

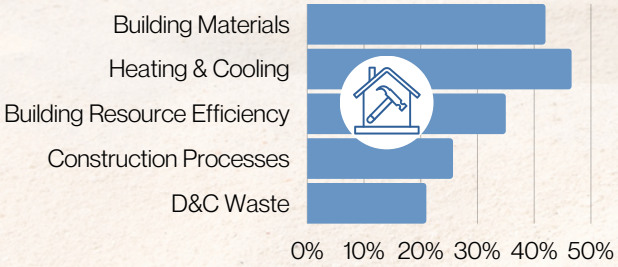


Carbon

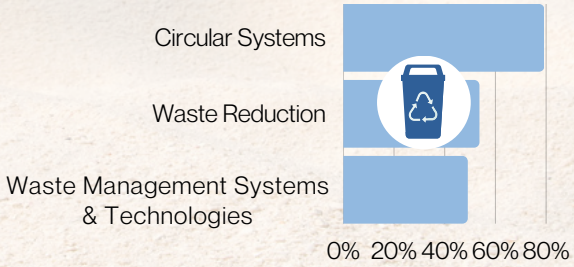


Climate Management

Industrials



Built Environment



Waste

Water

What is being measured?

Given how broad the scope of climate and environmental impact can be, it's useful to understand how other capital allocators measure their environmental outcomes.

Predictably, almost half of the participants talked about CO2, CO2E and GHG abatement as a key measurement indicator; historically and globally this has been the gold standard of measurement of climate impact and clearly India is no different. That said, funders in India are also showing a clear need to measure impacts that are more relevant to the specific climate challenges in the country. A number of other focus areas/ avenues of C&E work are emerging, such as water savings and quality, and waste diverted from landfills, oceans and firepits.

Increasingly, livelihoods and creation of green jobs are being tracked by capital allocators across both equity and grant funding, reflecting a strong focus on transitioning to a green economy.

Efficiency, optimisation and process improvement (Supply chain optimisation, resources efficiency and energy efficiency) is another distinct, emerging climate metric.

Some of the less common areas tracked were – Avoided use of rare earth metals, Learning & Emergence and Incorporation of Climate Data into decision-making.

For a good 12% of the (equity) funders, growth and scale of the business serve as an indicator of impact; 7% had no clear measurement guidelines, and another 7% said that their frameworks were still under development.

> All of this reflects a funding ecosystem that is evolving and still developing contextual taxonomies, but at the same time setting itself up to be distinct from global peers.

Project Frame

Recognising both the critical need for high-impact solutions and also the lack of historical guidance around assessment standards, a group of international climate investors came together to explore consensus standards – Project Frame, a nonprofit program led by Prime Coalition. This group is building the frameworks for climate investors to better assess the impact of investments on GHG emissions in the future. (https://projectframe.how/)

What is being measured?

A sampling of what is being measured at a more granular level:

- Metric Tons of CO2 reduced/ avoided
- MW increase in renewable energy generation
- Metric Tons of CO2 captured
- Kilo Litres of water saved
- Tons of waste avoided, managed, recycled
- Tons of plastic waste retained from the oceans
- Amount of GHG emissions reduced/ abated
- Litres of waste water recycled
- Tons of food wastage avoided
- Volume of climate data generated
- # of people entering climate jobs
- Kilo Metres of supply chain optimised
- # of direct & indirect green jobs created
- # of lives touched – Farmers, Women

Guest Article

The Role of Climate Funding

Rainmatter Foundation

Climate Change is by far the most pressing, and the largest challenge humanity has ever faced. Today, we realise the need to respond to it with everything we have in our bag of tricks. Our economies, industries and policies need to respond to this. And so do approaches, as well as motivations for investment.

Indeed, if we don't change these deeply enough, we face a fundamental, existential threat to not just them but to all our civilisational assumptions.

Problem, then Opportunity

My sense with a lot of current climate investing is that it is investing first, with climate almost as an afterthought, or force-fitted in. In fact, as I expressed recently in a tweet, there may be net harm from many of the solutions being funded and we could be better off not chasing them at all!

It's not as if there's not enough opportunity while looking at the problem; it may be that these organisations do not however fit the templates of entrepreneurship and funding borrowed from two decades ago. We're seeing social entrepreneurs do good work out there, and they're focused on more than hockey stick growth curves - after all the survival and health of the ecosystem is critical to their survival too. Akshayakalpa is one such example - their work at the level of the farm's assets - soil, water, fodder - creates long-term resilience for the farmer as well as glue for Akshayakalpa's relationship with them. The local positive fallout from this is far larger than the balance sheets alone reflect.

Impact is ROI.

Of course, these are longer term plays; that's another shift away from rushed, rapid series A-B-C cycles. And that also means that expectations of returns will need some tempering, overall. But isn't reimagining a world that fits within planetary boundaries part of the deal? Nothing on this planet suggests that earlier venture capital expectations of returns are tenable or sustainable at any decent scale; those can exist only in the exception. At this point, building models only around that exception and having everyone chase just those is akin to a game of Russian Roulette, but with most chambers loaded. Investors looking at the Climate issue need to account for other impacts as part of the RoI, irrespective of whether businesses at large are ready to account and pay for the externalised costs or their reversal at this point.

Systems Thinking. Complexity. Reality!

Looking at a triple bottom line, and more specifically adjacencies in the systems maps of the areas of influence and impact, and understanding the net impact along various dimensions (including accounting for unintended consequences) has to be part of the investment focus.

Climate investing necessarily needs to grapple with complexity - the problem was born because of the bad trade-offs our systems and choices are built around; the answers will not be found in silver bullets that do not challenge those, or worse, make a few more themselves.

Understanding ideas such as the Jevons Paradox (an increase in efficiency in resource use will generate an increase in resource consumption rather than a decrease), assessing multidimensional outcomes for not just the business, but the places and communities they operate in and with, are key to the change we need. It does make things tougher to decide on, but there's no escaping reality which is inherently interconnected and complex.

It's Not Just Energy & Transport.

The Climate conversation and solutioning has to go mainstream, beyond tinkering at the edges and focusing only on the impacts that the energy and transport transition represent. The changes we need in our food systems - production, value addition (and indeed the energy pathways for these) - the redesign of our cities, the circularity of materials and resources in all production, the pushing of energy efficiency to the extreme, the shortening of the supply chains and the regeneration of our soils, our biodiversity and the enhancement of the asset value that represents for every part of the world are all huge areas to bring innovation to, and much work remains. Together, these represent a fundamental shift - the perfect play for entrepreneurs and the investment that backs them to take on such problems!

Innovation in Entrepreneurship & Funding Models

As a starting point, if the idea is rooted in the business models of the last few decades, or worse, amplifies them, it is unlikely to lead to a solution for climate change. This will need us to look at new ways in which entrepreneurship will take off, and new ways of funding the same. We've already found many examples of SHGs taking on the roles of being both entrepreneurs as well as incubators for entrepreneurship, and are exploring how hub and spoke entrepreneurship models might evolve. We've experimented with hybrid models of funding that include grants as well as equity investment, and a lot more needs to happen in this space.

Someone had once mentioned in a conversation the idea of stock carbon as a peg for currency. In a rapidly deteriorating world, replenishing resources and carbon for the commons we all depend on might just turn out to be the most valuable form of entrepreneurship, and a new focus for investing. As entrepreneurs and investors, perhaps we can do what this set of folks has done in the past - imagine a completely new reality, and find the opportunities that help create it, but at a speed and scale rarely seen earlier and one that the world really, urgently needs.

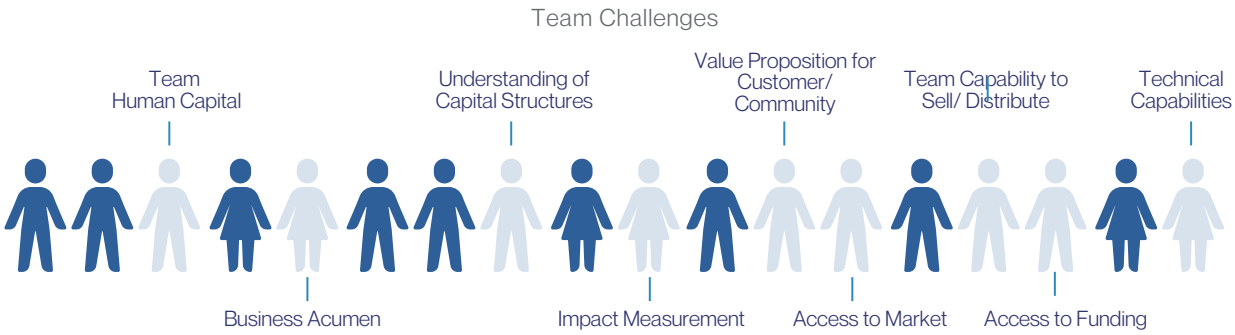
Section 4

What's Missing and What Keeps Funders up at Night?

Gaps, barriers and risks.

Capital allocators across the spectrum have called out Ability to Sell (46%) as a critical team gap; this is very closely followed by Business Acumen, Articulation of Customer Value Proposition and Access to Market.

> Importantly, less than 15% of funders called out a lack of Technical Capabilities.

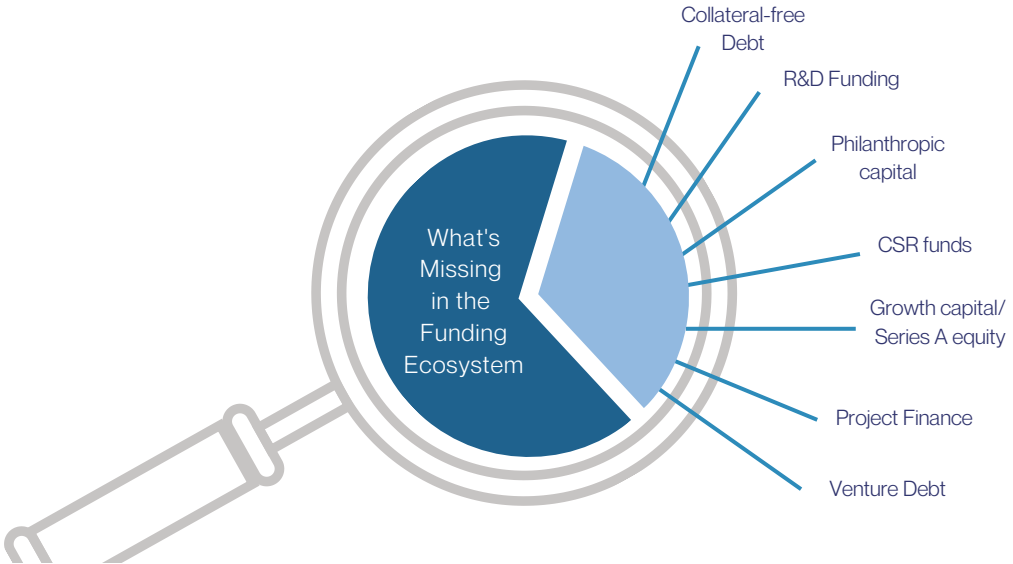


> What this makes clear is that the climate innovation market needs better pathways to commercialisation. Innovators, entrepreneurs and teams are not getting the business model and market access support that they need to scale and grow, and this in turn constrains their ability to raise financing.

Other key gaps are Access to Funding and its corollary, Understanding of Capital Structures; in other words, knowing the appropriate funding tools for different business needs (team, marketing, R&D, plant, scale) and where to raise it from.

The Funding Ecosystem Level

Front and centre was a call out for more strategic R&D funding (particularly in comparison to global comparables) with a view to India taking more of a leadership role in foundational technology. There was also a sense that Philanthropic capital and CSR funds were being inadequately tapped to seed and catalyse early-stage innovation, with much of the existing focus being on "more-established organisations and NGOs".



Several funders highlighted the need for more Growth capital/ Series A equity for “non-mainstream” and “disruptive” innovations/ businesses and business models.

At the same time, across the board, it was clear that debt – Project Finance, Venture Debt, Collateral-free Debt (in that order) – was a crucial missing tool in the tool kit. The business models, solutions and products in climate will need a broad and flexible set of debt instruments, and this part of the stack has large, gaping holes in terms of both access and understanding; this was reiterated by grant and equity funders, across stages and sectors.

> When it comes to financing climate innovation in India, it is apparent that the entire toolkit needs strengthening and contextualisation.

Guest Interview

Climate (debt) Capital needs to support diffusion of innovation till the J-curve is achieved

Jayant Prasad (Executive Director, cKers Finance)

CCN: Thanks so much for sitting down with us, Jayant. As someone who has been allocating capital in this space for a very long time (by India standards), we’d love to start off by understanding the cKers approach and where you work within the climate debt market.
JP: Our approach is based on certain hypotheses/ gaps identified in the debt market.

We were seeing that when it comes to newer models and technologies, a lot of financiers are (quite justifiably) delaying or sitting back from funding, and waiting for the risk discovery to happen through other sources of capital. This risk discovery just isn’t happening and most debt funders are taking balance-sheet based calls or property-backed calls. Cash-flow based funding calls are few and far between; the institutional capacity doesn’t exist for these, nor do the structures and the enforcement mechanisms.

We decided that we need to demonstrate where and how capital can flow in sectors in their early stage of development, and do that in a cash-flow based approach.

> We take a market-making approach, including active hand holding and bringing others into the market.

CCN: What gaps currently exist in climate debt funding in India?
JP: A lot of thinking needs to happen. While it’s great to celebrate the successes that we have, in our view the opportunity to deploy capital in those sectors is often 5x of what has been deployed.

Let me start by nuancing the landscape a bit, with “Private Demand” and “Public Demand” on either end of 1 axis and “At-the-Curve” technologies and “Ahead-of-the-Curve” technologies on either end of the 2nd axis. For example, Solar technologies are “At-the-Curve”, but EV 4-wheelers and EV Heavy Traffic Vehicles are “Ahead-of-the-Curve”. These are technologies that are needed, but not fully viable today.

> At this point (I am only speaking from a debt capital perspective) there is a crowding of debt to financing “At-the-Curve” technologies and Public Demand; limited allocation to Private Demand, “At-the-Curve” technologies; and near zero allocation to other areas.

Govt demand should account for half or less than half of debt allocation, across sectors and there is enough "At the curve" technology that can be adopted by SMEs, corporates and individual consumers from a Private Demand Perspective.

CCN: Can you talk a little bit more about where the focus is needed?
JP: Sure.

> For "At-the-Curve" technologies, funders need to be supporting the diffusion of innovation till the J-curve is achieved. Additionally, at the early stages of market adoption, we climate funders need to avoid the Penny Packet approach.

Take the example of solar pumpsets in India. The market in India is for 20 million diesel pumpsets. Climate funding towards solar pumpsets is under 100k. This is not sufficient to make a difference.

> Secondly, we need to focus more on the delivery capacity and where that is most appropriate.

Very often the delivery capacity for funding adoption of these technologies lies with NBFCs and regional/ boutique funders. Supporting these funders, rather than those who have no experience working with the target customer will be important.

> For "Ahead-of-the-curve" technologies, the focus should be on viability gap support.

Much of the private debt money that can address this gap continues to look at climate as a co-benefit, not a primary benefit. We need far larger amounts of climate primary money.

CCN: What are the sectors that you are excited about or see potential in?
JP: Electric Vehicles – all aspects, 2Wheelers, 3Wheelers, E-rickshaws, passenger cars, heavy trucks, swap models, rental models, NBFCs
Solar – SME, Rooftop, CNI, Institutional, embedded devices, cold chain, pumps. Pumps have scope to deploy at 20x, rooftop and SME can deploy at 5x current volume
Industrial energy efficiency and building energy efficiency – retrofits
Waste to Energy
Industrial waste water recycling – particularly projects with energy efficiency as well
Battery storage

We believe that solar has the capacity to absorb at least $3 Billion in India, $1 Billion to pumps. The EV sector has the capacity to absorb a large amount of capital, potentially from NBFCs first. Storage could play a role, though India has zero enablers for storage right now. Typical enablers would include an ancillary market on the grid and time-of-use/ time-of-day pricing. Everything else will be a smaller opportunity, including water.

CCN: What specific types of debt instruments would you like to see more of in India?
JP: Cash-flow backed debt, asset-backed debt
Distributed project financing does not exist in India for smaller projects.
There is no distributed project ownership at this point with appropriate risk management and regulation.

CCN: Any closing thoughts?

JP:

> By seeding the market at the 0-10% stage, climate debt funders have the opportunity to effectively and exponentially take future carbon pollution off the table, particularly in developing economies.

For example, between 2010 and 2015, there was significant Ahead of the Curve funding allocation to Rooftop Solar. Those benefits are being seen now in 2021/ 22. This Leverage effect of seeding at 0-10% is being missed by many climate funders.

What's keeping funders up at night?

The 3 most commonly articulated risks by funders are:

- Market size: While there's an overall confidence in the evolution of the market, in the immediate term, commercial funders are definitely concerned about the size of the total addressable market in India, pricing, margins and customer willingness to pay a green premium of any kind.
- Regulation: Uncertainty about evolving regulations and existing policies in agriculture for example, form the backdrop of all discussions on the potential risk to innovation.
- Availability of sufficient funding: Funding availability, of all types, at all stages of the innovation lifecycle and appropriate to the innovation process/ business model (particularly hardware solutions), is a real and repeated constraint.

Guest Interview

"I'm excited and frightened at the same time"

Mridula Ramesh (Founder, Sundaram Climate Institute, Author of "The Climate Solution" and "Watershed")

CCN: Mridula thanks so much for taking the time to sit down with us on this topic. You have been investing in climate for 7 years now. How have you seen the market evolve?
MR: I've seen tremendous growth and evolution in this space. When I started my funding journey, I used to see about one entrepreneur a quarter. Now I could easily see several in a week – and some really interesting, high-quality ones at that. There are a lot more founders, a lot more funders.

CCN: Can you tell us a little about your funding approach?
MR: When I started funding, my approach was one of "charity plus" – I was interested in models and returns, but was really looking to build the ecosystem. That has now evolved along with the companies and I see clear return profiles. My climate mandate is about sector choice; as long as a company falls within that sector, my focus is really on business fundamentals. This is a growing and evolving space, so if I find a solid founder who is thinking about the business model, I am less concerned about risk.

CCN: What is missing in the climate funding market?
MR: There is a real gap between "the cup and the lip".

> While there is a lot of talk about the importance of climate funding, the money isn't being directed in the quantum and size that is needed.

Corporate buyers and customers are not yet prioritising sustainability sufficiently, and LPs are definitely not putting action behind their words in terms of how much money they are putting into climate-centric funds. Return expectations – especially on return timelines – need to be recalibrated – climate tech is not e-commerce.

Then, there's too much of a focus on GHG mitigation funding and GHG mandates. I think we have a handle on meeting GHG reduction goals. GHG reduction needs a different type of capital. We already have scalable solutions and there is a need for a different kind of capital, not seed or venture capital. To me, it's not the place where we need innovation and riskier capital to come.

> Where we need help is adaptation and resilience funding.

Here, the bottleneck is policy and larger LP mandates. If all the climate funders got into a room, there is a fair bit of power. Instead of diversifying the power, we can concentrate on changing the policy in one city, for example, Bangalore (which is basically 2 Israels).

By creating evenly implemented policy, you can get meaningful business models, meaningful impact and meaningful livelihood creation.

CCN: What is needed from the perspective of the funding ecosystem?

MR:

> Collaboration between funders (across the funding spectrums) is critical.

Funders need to get together (grant & equity) to fund and value in a coordinated way. Grant and equity are on a spectrum and need to coexist. I often recommend that my startups use grant funding for doing certain activities like education, not expensive venture money. But working with different funders often means meeting very different reporting requirements and climate mandates.

> The last thing we want is for an entrepreneur to focus on reporting and a confused business model to meet all things for all funders. There will be no impact. If the founders have to focus on the problem, funders need to coordinate here as well.

Expectation management is key for an evolving space like this, both for funders and founders. This is not tech, this is not a mobile app. It is not going to scale that way. But it can be a very solid business, as long as you have realistic valuations and expectations. At the same time, founders need to have real and feasible valuation expectations as well.

> A lot of investors don't fully understand the links between various aspects of the business and climate. This is a big missing piece and there needs to be more investor education.

Without this education we run a big risk of people not being able to contextualise, thinking that the Silicon Valley model applies, and then we can easily ruin the market.

CCN: Which sectors excite you at the moment?

MR: Agriculture is going to be big, in all aspects – supply chain, cold chain, alt proteins, everything

I would like to see more opportunities and models in Forestry; I would like to actively put more funding in here

Water has always been my favourite, and maybe it's fortunate that we are seeing enough water catastrophes for more people to be paying attention and more startups to be emerging

Waste & Circular Economy is an area of abiding interest, but I seem to see more interesting models outside of India; these are companies that are approaching Waste & CE as a business and not an NGO, and therefore are more interesting to me.

CCN: Any last thoughts?

MR: Meeting these climate founders every day is like a vaccination of hope.

> We have a once-in-a-lifetime opportunity to make a difference by backing some of these founders; I really hope we as funders don't mess up the market.

Section 5

What Are We Tracking? What Are We Exploring? And What Do We Want to Learn More About?

If India is to meet its climate goals, we will need to unlock more and different types of capital; this will call for innovation not just in solutions, but in the financing that helps them scale – in other words, creative and collaborative climate capital.

Here are a few innovative models and approaches that emerged in our conversations with capital allocators:

Figure: Innovative Climate Capital

Revenue Based Finance is a financing instrument that enables funders to invest in growth-stage companies and achieve returns through a percentage of monthly revenues until a predetermined amount is returned. This form of financing is an interesting combination of debt and equity, with the distinction being that no personal guarantees or collateral are required; it is also non-dilutive. Where this also differs from debt is the flexibility in the event of lower revenues and the ability to create multiple variations of this offering to protect both lender and borrower.

While clearly a model only suited to revenue-generating businesses and ideally those with a monthly revenue model (good candidates are SaaS and subscription models), it has the potential to create financing opportunities for a large and hitherto unserviced set of enterprises and organisations.

> Within climate innovation and technology, many organisations have business models that may not align with the growth curve and return-timeline expectations of the conventional VC funds. This model facilitates access to funding for stable, steady-growth, revenue-generating businesses, and enables funders to participate in the growth of many more types of companies and business models.

These models are relatively nascent in general in India, and especially so in the climate innovation space (N+1 is an example of a revenue-based growth fund that has recently started building a cleantech portfolio), but a definite opportunity exists to provide organisations with financing that is more closely aligned to cash flows, while providing flexibility for growth.

Regenerative Finance is an idea, like DeFi, based on a set of web3 technologies and economics, that suggests that efforts to combat climate change can be funded by the "crowd". ReFi is emerging as an interesting player in innovative climate finance, bridging cryptocurrency and climate action and intending to align incentives for large groups of people to take climate action.

At the heart of this model is the DAO, or Decentralised Autonomous Organisation, groups of individuals who organise themselves digitally around a purpose and operate in a decentralised way to execute the idea or achieve that business objective. A ReFi DAO will allow Regenerative Economic Projects (such as Climate Actions, and Carbon Sequestrations) without trusting a central leader to manage the funds or operations. Blockchain-based rules in the code define how the organisation works and how funds are spent. Cerulean Ventures in the US is just one example of this funding model; others are companies and not-for-profits like Project Ark and EcoSapiens. These models have not clearly emerged in India yet.

> While the current models of DeFi are built on Web3 technology and often tap the block chain, fundamentally their growth speaks to a broader trend of democratising climate action, growing interest from the "crowd" to ensure planet-friendly funding and decentralising the access to funding.

Blended Finance is widely considered a method to address many funding gaps, but requires aligning two or more types of capital - CSR funds, grants, equity, and debt - to provide the funding needed to an enterprise and achieve the risk-return profile sought by different finance providers. This is a challenging balancing act.

The four archetypes of Blended Finance are

1. Concessional Capital: catalytic funding from development organisations or government with the intention of bearing below-market returns and/or absorbing higher investment risk to attract risk-averse commercial investors. Common forms include subordinate debt, junior and first-loss equity and returnable grants.
2. Risk Mitigation Tools or Guarantees act as insurance to cover downsides for commercial investments.
3. Support Mechanism structures that strengthen the quality, efficiency and financial sustainability of development projects and the probability of their financial close.
4. Results-based Financing: using innovative, outcomes-oriented or pay-for-success contracts that incentivise participants based on achievement of pre-agreed, measurable performance targets.

> These models are particularly interesting because of the focus on outcomes and accountability.

Some Examples of Blended Finance in Practice:

CSR/ Philanthropic capital to create compelling evidence to enable commercial lenders to finance new consumers or mainstream new SME lending models - as demonstrated by SEWA

To enable transition of salt-pan workers in Gujarat from diesel to solar powered pumps, SEWA:

Enabled extension of loans for 10 solar pumps using CSR funds to bring down interest rates and provide a first loss guarantee; thereby creating evidence of the model's economic efficacy and the workers' credit-worthiness. With this evidence, approached mainstream lenders (Bank of Baroda and ICICI Bank) to extend loans to ~15000 women.

Using concessional debt to derisk and guarantee - the Three Wheels United (TWU) way

Unpredictable financial health of auto-rickshaw drivers, combined with the uncertainties of an emerging EV ecosystem, excludes many drivers from participating in the green transition. TWU de-risked the extension of loans to three-wheel EV drivers by layering multiple financial instruments to de-risk transactions for all stakeholders. TWU:

Subsidised interest rates by blending foreign and domestic capital with DFI loan guarantees
Mobilised cooperative saving schemes among drivers to de-risk individual loans and the larger portfolio

Combining concessional debt with portfolio guarantees and creating instruments that are specific to sector, stage of validation, tenure of returns, business models - as exemplified by CCN member, cKers Finance

To set up the institution, cKers developed 'Sustainable Energy Bonds' to attract impact oriented debt, and combined that with portfolio guarantees for the risky portfolio segments and equity. They have also developed a host of sector specific innovative debt products - EV Fleet Loan, and Energy Storage Loan, among others.

Establishing fund vehicles in geographies like the UAE and Singapore, which offer 1:1 matching of non-dilutive funding for equity funds. This is an interesting and valuable source of government/ public concessionary capital to support the derisking of important climate technologies.

Alternate Capital Vehicles: Data has shown that if climate and cleantech startups persist long enough and cross the Valley of Death, there can be outsized returns on the other side. But the critical factor here is the time horizon for those successes and returns.

> Permanent Capital Vehicles, without the time horizons of a traditional VC fund can address the issue of return time horizons within the climate sector and are an opportunity for equity funders who are looking to better align their cycles with those of their portfolio companies.

Venture Philanthropy: The term "venture philosophy" is often attributed to John D. Rockefeller III in 1969, who described it as an imaginative and risk-taking approach to philanthropy. Venture philanthropy is a type of impact investment that takes concepts and techniques from venture capital finance and business management and applies them to achieving philanthropic goals.

When it comes to climate innovation, Venture Philanthropy has a unique role and opportunity to play in: building or strengthening the ecosystem, addressing systemic gaps that are ignored/ not addressed through market actions, extending niche markets to become more mainstream by facilitating the scale of critical solutions, funding the de-risking and demonstration of technologies and solutions at customer point-of-use, unlocking more commercial and follow-on capital by showcasing successful models, and bringing multiple stakeholders together for collaboration.

> Venture philanthropy funding generally focuses on building capital and scale and can be an extremely valuable addition to the financing toolkit for climate innovation. So far it has largely been practiced in India by foundations with a primary focus on health and education outcomes; it will be interesting to see other, similar models develop to better catalyse C&E impacts.

The ACT For Environment Fund

The ACT for Environment Fund focuses on identifying key gaps, challenges and intervention areas where a specific activity, partnership or solution can unlock the market and facilitate scaling. For example, the India Clean Air Challenge was designed in collaboration with multiple stakeholders – government, corporates and funders – with the purpose of catalysing the ecosystem for air quality innovations and extending the market for proven solutions.

Conclusion

All capital does not have the same colour.

All capital does not have the same colour, and capital instruments are not fungible. Through our conversations, it is clear that there are several gaps/ opportunities in the climate finance stack in India.

We need more financial tools like those available to the broader or foreign markets like project finance, invoice discounting, prepaid contracts, structured products with varied risk-reward profiles to pool in more capital, asset securitization, results-based financing, and much more.

> We also need to go beyond existing and traditional financial models and have truly creative capital designed for our business contexts.

Philanthropic capital has enormous opportunities around supporting underserved but important areas of impact, funding the building of infrastructure, and risk absorption for models that can be transitioned to commercial capital.

Equity investment has an opportunity to support more diverse business models and better understand the risk profiles of a broader set of innovations – hardware, process and deep-tech.

Once risk is accurately priced, debt allocators have significant opportunities around galvanising and catalysing the diffusion of innovation through more varied instruments and potentially blended solutions.

> That said, just plugging funding-instrument gaps will be both insufficient and inefficient. The continuum of capital is quite different from the climate funding stack, and for climate innovation to scale, we need both.
>
> The transitions between types of capital, stages of funding and the collaboration of different capital structures/ instruments is critical for the innovation ecosystem to thrive. The pipes, connectors and nodes between these funding tools do not currently exist, are unlikely to develop organically, and will need strategic focus and facilitation.

This is a continued area of work for the Climate Capital Network and we are always looking for ideas, and opportunities to share insights and build partnerships.

Interviewees/ Guest Contributors

India Impact Investors Council (IIC) is a membership-driven non-profit established to strengthen India's impact investing ecosystem through data-driven research, thought leadership, policy advocacy and partnership building. IIC works with capital providers of all types to bridge the social investment gap in India.
https://iiic.in/about-impact-investors-council/

India Climate Collaborative (ICC) is a first-of-its-kind, India-focused collaborative that seeks to direct funding and visibility towards climate action in India. We envision an India where climate action has enabled people and the environment to thrive. The ICC is incubated by the Tata Trusts and legally registered as the Council of Philanthropies for Climate Action.
https://indiaclimatecollaborative.org/about/

Rainmatter Foundation is a non-profit initiative by the people behind Zerodha. We recognise that climate change is the biggest existential threat to life as we know it. We have committed to using the resources available to us to enable, and to attempt to replicate at scale, the potential solutions that may help address at least some of these threats, and aid in the restoration of our natural ecosystems.
https://rainmatter.org/about/

cKers Finance is a specialised Sustainability finance company that operates in the rapidly growing segments around clean energy and resource efficiency. Launched in 2017, it is developing new instruments for providing finance in the Sustainability space, and building data around risk metrics.
https://ckersfinance.in/

Sundaram Climate Institute strives to fill the “Last Mile” of Climate Change research and implementation. In our two focus areas – water and waste – we will test available technologies to be able to give recommendations. We aim to use Japanese Plant Maintenance systems – Kaizen, Poka Yoke, to name two – in our trials in the focus areas to achieve “Zero Waste” and “Zero Water state”. Additionally, through our founder, we aim to invest in start-ups in the Cleantech space to increase our impact.
http://climaction.net/about_us.php