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WEBINAR SUMMARY REPORT

Advancing Climate Action through Climate Tech Innovation

August 27, 2024



by

Ms. Anjali Bansal

Founding Partner
Avaana Capital

Moderator:

Prof. Neerav Nagar
Associate Professor
Finance and Accounting, IIMA



Webinar on **Advancing Climate Action through Climate Tech Innovation**



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Founding Partner
Avaana Capital

Moderator: Prof. Neerav Nagar, Associate Professor of Finance and Accounting, IIMA

August 27, 2024 3:00 p.m. IST

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About the Speaker



Ms. Anjali Bansal

Anjali Bansal is the Founding Partner of Avaana Climate and Sustainability Fund - investing in technology and innovation-led start-ups catalysing climate solutions and sustainability. Previously, Anjali was the Non-Executive Chairperson of Dena Bank, appointed by the Government of India to steer the stressed bank's resolution and merger with Bank of Baroda. Prior to that, Anjali was a Global Partner and Managing Director with TPG Growth PE, responsible for India, SE Asia, Africa and Middle East and strategy consultant with McKinsey in New York.

Anjali has invested in various successful start-ups including Nykaa, Delhivery, Urban Company, Darwinbox, Farmart, and climate tech leaders like Turno, Terra.do and Eeki. She serves as an independent director on leading boards including Tata Power, Nestle, and Piramal Enterprises. She has been appointed on the Board of ONDC (Open Network for Digital Commerce) and GIFT City, and chairs the Climate Council within IVCA. She is a Member of the Evolution Review Committee for Niti Aayog, India's premier policy think tank chaired by the Hon'ble Prime Minister.

Anjali has previously chaired the India board of Women's World Banking, and served on the boards of GSK Pharma, Siemens, and Bata. She has co-founded and chaired the FICCI program for Women on Corporate Boards.

Anjali is a member of the YPO and a charter member of TiE. She has been listed as one of the "Most Powerful Women" by India's leading publications, Business Today, Fortune India and Forbes India.

She has a bachelors in Computer Engineering from Gujarat University and a Masters from Columbia University.

About the Moderator



Dr. Neerav Nagar

Neerav Nagar is a Fellow of IIM Calcutta. His teaching and research interests lie in the areas of financial accounting, financial statement analysis, corporate governance and earnings manipulation. His research work has been published in leading journals like Journal of Business Finance and Accounting, Corporate Governance: An International Review, Journal of Accounting, Auditing and Finance, Journal of Business Research and Journal of Contemporary Accounting and Economics.



Abstract

India faces a complex challenge in transitioning to a net-zero economy while balancing rapid economic growth and environmental responsibility. As the world's second most populous country, India is highly vulnerable to climate change, risking significant GDP contraction if current trends persist. Despite ambitious infrastructure and digitization plans, India must address critical issues in energy transition, sustainable packaging, and water conservation. As a growing economy with significant development goals yet to be achieved, India requires new technologies and innovative business models to combat climate change while sustaining the provision of vital goods and services. The country's burgeoning startup ecosystem, leveraging technology and innovation, is at the forefront of driving this change and capturing value. Avaana has built the most preferred capital for climate technology out of India. Avaana invests in early-stage startups driving climate action and sustainable consumption and production supporting transitioning of critical sectors of the economy to low-carbon, climate-resilient and sustainable development pathways.



Introduction

Investing in innovation and technology for climate solutions is critical to addressing the global climate crisis while unlocking new economic opportunities. As countries like India face the dual challenges of rapid development and increasing climate risks, the focus must shift to finding scalable, frugal, and sustainable solutions.

India, with its history of low-cost innovation and technological leapfrogging, presents a unique opportunity for driving climate action. As the nation enters a phase of accelerated growth, sustainability is becoming a central theme in ensuring both economic continuity and environmental resilience. India's relatively low carbon footprint compared to its population size offers a strategic advantage in reducing emissions, particularly across high-emission sectors like energy, agriculture, and mobility. By leveraging renewable energy, circular economy practices, and climate-proofing critical systems, the country can set a path toward a low-carbon future.

However, significant gaps remain—particularly in capital availability for climate tech innovations at critical stages of development. Addressing these gaps will require coordinated efforts between industry, policymakers, and investors to build the necessary infrastructure and market readiness for sustainable technologies. As India scales these solutions, the transition to a resilient, low-carbon economy will become not just a possibility, but a reality.

Webinar Summary

Ms. Bansal began her talk by first providing the participants a broad overview of why it is important, as well as interesting, to invest in innovation and technology for climate solutions. Three critical questions need to be considered in this context:

- Where are the opportunities?
- Where are some of the gaps?
- How can we collaboratively deliver large-scale solutions and impact outcomes in this space?

However, before addressing these questions, Ms. Bansal first spoke about the availability and accessibility of capital for developing climate solutions. Having been in this space for around 30 years, Ms. Bansal observed that digitalization has transformed the way enterprises operate today, with digital technologies infiltrating every element of human life. According to her, sustainability is the next big step in the digital transformation journey in terms of maintaining a viable planet and ensuring business and societal continuity. In this context, India presents a huge opportunity, entering the “Amrit Kaal”, with its centennial Independence Day just 25 years away. At this juncture, India will embark on a massive growth path, wherein sustainability and climate action will be instrumental. This opportunity presents itself at a time when the country does not need to have a trade-off between people and profits; both can be achieved while ensuring economic growth. Even though India is the most populous and the youngest country in the world, its overall fossil fuel consumption and its carbon footprint is low compared to several other developing and developed nations, contributing around 7% of the cumulative carbon emissions till date.¹ Yet, India is the third largest emitter in the world, the first and the second being China and the US, respectively. As per Ms. Bansal, India’s emissions will eventually increase before they decline, and to achieve this, it needs to find new solutions across the economy while adhering to the core principles of sustainability. Interestingly, India already has a

healthy track record of thrifty innovation as well as leapfrogging. For example, the country leapfrogged from a cash-dominant to a digital payments economy, bypassing the whole debit/credit card phase. India also rapidly adopted and implemented 4G and 5G connectivity, boasting the lowest cost digital data network in the world. As a result, India currently has around 600 million smartphone users.²

Given India’s history of building low-cost technological solutions, it is only a matter of time before innovators in this country devise and develop frugal climate solutions. Ms. Bansal highlighted the point that, for India, the path to net-zero cuts across three key dimensions:

- 1) Mitigation, which is reducing emissions for global warming adaptation;
- 2) Responding and adjusting to the impacts of climate change; and
- 3) Transitioning from a high-carbon to a low-carbon economy and building resilience.

In essence, the three dimensions are oriented toward climate-proofing the economic and social systems in India. Many of the industrialised economies of the Global North have undergone these stages of development, and therefore, conversations in these countries revolve around reducing carbon emissions. On the other hand, for the developing economies of the Global South, the focus is on adaptation and resilience. According to Ms. Bansal, climate change adaptation is creating climate resistance in inputs and processes, waste management, water management, and transition financing across developing economies. When considering the immediate impact of extreme climate-related events, such as extreme heat, flooding, and erratic monsoons, which have a significantly negative effect on labour productivity, it stresses the need to make the energy system more resilient, especially in agriculture.

Talking about her own company, Avaana Group, which is India’s first thematic-focused fund on climate and sustainability that is centred in India for India as well as across the Global South, Ms. Bansal spoke about how climate needs to be looked at as a lens. This means that the mitigation-adaptation-resilience must be applied to the largest emitting industrial sectors. Most of the emissions, around 90% of them, energy generation, mobility, supply chains, agriculture, and food systems. Each of these also interlinks significantly with each other. For example, the availability, use, and discharge of water have an impact across sectors, while developing alternative materials, such as for batteries or packaging purposes, holds the key to strengthening circular economy models. In agriculture in particular, finding alternatives to harmful chemicals, especially in the case of fertilisers, will be the primary driver toward building resilient and sustainable agricultural practices. On this note, Ms. Bansal posed the following question: What is a good substitute for these harmful chemical fertilisers? On the energy side, India is blessed to have nearly 300 days of sunshine, which can power microgrids and enable off-grid battery storage technologies. Thus, the availability of renewable and clean energy is not an issue; the challenge is that of ensuring access to these new-age technologies to all. For this to happen, each of these solutions has to be frugal and cost effective, keeping in mind the economic needs in India. For instance, a new sustainable technology may get developed in the US or Europe but it may be too expensive for Indian farmers to adopt. For India, therefore, what works is adoption at scale and for this to occur, the economy needs market readiness as well as commercial readiness. Simply having a smart engineering product will not be sufficient. What has been observed in India is that these products usually take off when there is limited dependence on government subsidies or incentives.

However, Ms. Bansal pointed out that the Indian market is ready for sustainable alternatives. To substantiate her point, she gave the example of renewables. A couple of decades ago, the cost of

one unit of solar energy, which was heavily subsidy-dependent, was roughly five times of what it is today. At present, renewable energy generation and storage systems have not only advanced remarkably to work round the clock and work in hybrid mode but they have also become cheaper: a new unit renewable today is cheaper than a new unit of thermal. It, thus, makes sense for businesses to adopt it. Similar solutions are needed in plastics as well as food systems.

What are the challenges and gaps hindering the progress of the uptake of sustainable climate solutions in India? Today, India needs about US\$ 50 billion of steady capital over the next five years; at present, it is receiving only about US\$ 10 billion, which means that there is a gap of US\$ 40 billion that needs to be filled. In the climate tech space, Ms. Bansal observes that the playbook for climate startups is distinctly different from that used by traditional startups. While India has a thriving and a robust startup ecosystem and is the third largest in the world, the focus of startups over the last two decades has been focused on the internet, e-commerce, and fintech. None of these areas requires a significant CapEx, whereas the technologies for climate are largely industrial and therefore require substantial investment. In case of manufacturing, for example, large amounts of capital will be needed to fuel the market as well as revamp the existing business-to-business (B2B) ecosystem. For a company looking to adopt sustainable solutions while charting its growth, according to Ms. Bansal, there is a reasonable amount of capital available between the ideation stage and what is known as Technology Readiness Level 3 (TRL 3). Unfortunately, capital is nearly absent between the TRL 3 and TRL 6 stages. Even early-stage capital is unavailable for such companies, which is where the real gap is.

What is required? Ms. Bansal postulates that the business ecosystem needs to work together to accelerate this transition. What is needed is access to early-stage technologies being devised by universities, research & development (R&D) labs, and even private innovators. These then need to be linked to the various industries that are

¹ <https://www.iea.org/countries/india/emissions>

² <https://www.livemint.com/technology/gadgets/india-has-over-1-2-bn-mobile-phone-users-i-b-ministry-11668610623295.html>



willing to integrate them in their systems. As mentioned by Ms. Bansal earlier, the adoption of these technologies will take place in large companies at scale. If these solutions become an integral part of processes, such as the treatment of water effluents or circular economy, then the recovery and recycling of waste materials will eventually return from the input side, thereby aiding industrial decarbonisation and enhancing the carbon capture capacities at the industrial level.

An important element in enabling climate solutions in India has been in the form of policy support, especially in the last decade or so, such as the extension of the production-linked incentive scheme to solar manufacturing or the FAME scheme to promote the adoption of electric vehicles (EVs) in the country. Recent budgets have also strengthened this scenario. For example, the 2024-25 budget announced the Critical Minerals Mission, which will seek to incentivise the domestic production and recycling of critical minerals as well as allow for the overseas acquisition of critical mineral assets. Previous budgets have also incorporated capital and regulatory support for the creation and development of markets related to climate change and sustainability. The recycling market, for instance, originated due to the imposition of the producer responsibility by the Indian government.

From Ms. Bansal's viewpoint, enabling policy and catalytic capital need to work in tandem to facilitate India's transition to net zero. She elaborated broadly the types of capital that will be needed to drive this transition. The first type is the patient capital that can support the growth of new technologies and R&D. This capital can come from corporate and individual philanthropy and government grants. At this point, Ms. Bansal stressed on the need for equity to aid enterprise creation. The second type is growth capital, which can be further divided into equity and debt. However, debt instruments are more or less absent from the Indian ecosystem at present, which has created a unique space for

entrepreneurship. For example, Ms. Bansal's Avaana Climate and Sustainability Fund works by bringing together the elements of policy, industry, startups, and capital to engage all the key stakeholders. The company actively engages the startup ecosystem, links up with industry through various boards and Chambers of Commerce, and runs multiple corporate programmes, such as the Grand Challenge for Climate Tech Innovation. It works closely on policy in collaboration with different universities and research bodies, such as Rocky Mountain Institute (RMI) and Nucleo, as well as with the catalytic capital ecosystem.

Through the example of her own company, Ms. Bansal intended to convey to founders and entrepreneurs that they should focus on building at scale. The vitality of scale lies in the fact that not only does it deliver impact but also that it delivers returns. To further strengthen her standpoint, Ms. Bansal spoke about four companies that are a part of Avaana's portfolio and currently operating across the domains of food systems, energy transition, mobility, and carbon management. The first company she talked about was **Eeki Foods** that has formulated polymer-based growing chamber systems where it can maintain a stable environment. These structures are not greenhouses. Their ingenuity lies in maintaining a growth environment not for the whole plant but just for the root system. The company is based in Kota, Rajasthan, which is known for extremely hot weather. Even in such hot and dry conditions, the design of these chambers allows them to maintain a low root temperature. The founders, two mechanical engineers from IIT Bombay, have disaggregated the growth process of plants and have created a sort of an assembly line for plants. The electricity used is minimal, as the chambers are not greenhouses and therefore do not require artificial cooling. The technology used instead is evaporative cooling and consequently, the yield per acre is four to five times more than traditional farming methods. Moreover, the system does not require agricultural land and has generated additional employment in the region. The water usage is also nearly 80% less than that required on traditional farms, which has been made possible

by the use of sensors embedded in the root system of the plants. Powered by artificial intelligence (AI), Internet of Things (IoT), and other AI analytics, these sensors enable the monitoring and precision delivery of nutrients to the root systems. In these chambers, the company has been able to grow a wide array of vegetables commonly consumed in Indian households, such as eggplants and tomatoes. This innovation can become a game-changer not just for India but for the world.

The next company Ms. Bansal spoke about was **Kazam**, which is making steady headway in the electric mobility space. The major hindrance in the adoption of EVs in India is the issue of range and anxiety, which represents the fear users have about their vehicles not having enough charge to reach their destination or not finding a charging station in time. While large discoms and power companies, such as Tata, and gas station operators, such as HPCL and Reliance, are investing heavily in charging infrastructure for EVs, ensuring that these assets have maximum utilisation in terms of access is a massive challenge. In a bid to resolve this bottleneck, Kazam has built an interoperability software layer that is installed on top of the charging infrastructure, making the system agnostic to hardware. The company is now linked up with some of the largest original equipment manufacturers (OEMs), which has allowed it to integrate with the hardware and the operating system (OS) of vehicles across brands. The software is interoperable across charging points, which means that EV owners can simply install Kazam software and charge their vehicle or even fleet at any charging station, regardless of who owns the station. Presently, Kazam has 15,000 charging points in India and it is on track to scale it up to 60,000. The company has also been invited into Malaysia and is teaming up with Petronas, the Malaysian oil & gas giant.

Aerem is another company in Avaana's portfolio that has established its footprint in the solar sector. Citing the PM Surya Ghar Yojana, Ms. Bansal explained how India has a tremendous

opportunity of achieving energy security by using solar energy. Unfortunately, solar has been limited to either utility scale or for large commercial and industrial usage. There are several reasons why rooftop solar has not taken off in India. The two foremost reasons are cost effectiveness and the availability of good installers. While solar panels have a certain payback period, residential owners and small businesses are unwilling to take that risk. To address this issue, Aerem has stepped in with a full-stack software-plus-hardware solution, functioning as a marketplace for installers to discover customers for rooftop systems. The company boasts of a full-fledged procurement marketplace as well as a proprietary real-time sensor-based monitoring system called AeROC. Together, these technologies create assurance for customers as well as installers and also provide financial linkages, both which bring down the total cost of ownership. By reducing the payback period, the software makes access to rooftop solar more accessible as well as delivers better outcomes for all the stakeholders in the ecosystem.

Lastly, Ms. Bansal spoke about **Sentra**, which is a specialised SaaS platform that tracks and reports Scope 3 emissions and helps to reduce and mitigate them. The primary focus of the company is on the carbon management of hard-to-abate industries, such as steel and cement. A large portion of Scope 3 emissions occur in the developing countries across the Middle East and South, East, and Southeast Asia, as manufacturing activities are outsourced to these countries, especially China. For India in particular, heavy investments in infrastructure planned over the next 25 years will lead to a significant increase in the use of cement and steel. While reporting Scopes 1 and 2 will be relatively easy for manufacturers, providing Scope 3 data is much harder, and this is what Sentra is seeking to solve.

Q&A Session

Q. When you analyse a climate tech startup, do you have a threshold of the environmental benefits it offers or do you just consider the financial viability of the idea?

A. When assessing climate tech startups, we use five criteria. The first one is that the solution being offered is measurable, demonstrable, and positive. For us in India, resilience is central when it comes to climate solutions. So, if a company, regardless of how cool and exciting its technology is or how attractive the business is, is not solving for mitigation or adaptation, which are at the core of addressing climate change, then it is not worth an investment. At Avaana, since it works as an early-stage investor for pre-Series A and Series B companies on the cusp of scaling up and commercialisation, our first lens is binary: whether a technology is solving or not solving the core issue. We take a fairly medium- to long-term view on the overall scale of climate impact, even though the initial numbers are small. The second criterion we consider is how novel or innovative the technology is and ask: Is there a mode? Is it replicable? How easy is it to replicate? The third criterion hinges on the business model. As I said before, the technology may be cool and exciting but it will not deliver returns, and so, the model has to be commercially scalable. The next element we look at is the quality of the team and whether it can actually build the business. In the early stages, we know that the business will evolve and so we look at the learning agility of the team. Can the team be agile and evolve as the market evolves? The last criterion we assess is whether the business will produce financial returns, since it is commercial capital that we are investing.

Q. We have seen these phases of waxing and waning of interest and of the policy landscape in the climate tech space over the years. Could you throw some light on your early journey into this field when Avaana started? What were the biggest doubts in your mind and the issues in the ecosystem? What has changed in the last five to ten years?

A. Let me rewind even further back. The first cycle of clean tech, about 15 to 18 years ago, was a very hopeful, optimistic period, when the first investments in solar began. Globally, a lot of capital went into solar space. Unfortunately, these investments offered very little commercial returns. I would say there were two or three major reasons for these low returns, and these reasons have changed today. One reason was the high cost of technology, which at that point of time had not evolved into what it is today to make it more accessible and affordable. Sensors, for example, have become so cheap today that they can be installed in a variety of settings, such as small farms. The second reason was that since the technology was not cost effective and business models in this space were not commercially viable, they required strong subsidy and philanthropic support. The third important reason was that we did not have market readiness. The motivation behind sustainability then was to save the planet and not protect businesses. To make these solutions commercially viable, there had to be at least cost parity, if not lower cost. Today, as we know, solar has become cheaper than thermal. So, it's a no-brainer for companies to invest in solar not because it is necessarily good for the planet or because they have net-zero commitments but because it makes sense for the business.

Now, we have cheaper technology and we have a huge demand from the market, even though consumers, particularly in India, are not willing to pay more. At the same time, we have companies that have made net-zero commitments. On the policy front, we have adopted a carrot-and-stick approach. The extended producer responsibility (EPR) policy is an example of a stick policy, but it has created a new recycling market in India. On the other hand, enabling policies such as PLI are bringing CapEx and manufacturing into a space where otherwise we would have had to rely on foreign supply chains. We have the required market readiness today, although capital does tend to wane and wax at times. Subsequently, the focus shifted to Environment, Social, and Governance (ESG), which, I think we have all realised, is very hard, if not impossible, to measure. Given this difficulty, the interest in ESG is on the decline today and what we need today is to develop more robust,

measurable metrics, whether it be around climate impact, mitigation, adaptation, or even resilience, to enable the Just Transition process. The key here is to understand that simply having objective metrics does not mean that you have to maximise the measurement; sometimes, you have to make the right trade-offs as well. For this, we also need better frameworks.

When we started out on our journey, we had to educate ourselves about whether this space is ESG or corporate social responsibility (CSR). Then we realised that what we are doing is not CSR; this is actually technology venture investing. It just so happens that even though it is not crypto or fintech, it is in the climate space in the form of deep tech. Today, users, founders, and capital systems are catching on. We have a lot more capital arriving in the late stage but not enough in the early to growth stage.

Q. Early stage investment in climate solutions in India came from the investor side. The commitments made by pension funds around the world made climate a sort of investor imperative in the Global South. As a recipient of capital, you directly interact with the capital providers. How has investor perception changed in this regard over the years?

A. A lot of it has changed, and I would say in a productive, constructive way. I think it was Larry Fink who said that the next 1,000 unicorns will be in the climate space. When we started out on this journey, we actually experimented a little bit by first creating a small seed pool and investing in a few companies to see if it works. Then, we raised third-party capital. I think the first big impact has been seen on public markets, which has made measuring the positive or negative effect on the cost of capital measurable. Companies that have shown a better intent on greening, whether through the adoption of renewables for manufacturing processes or by implementing sustainability measures, such as zero discharge, are generally rewarded by foreign as well as domestic institutional investors and shareholders. As a result, these companies experience a higher demand for their equity and a high stock price, which consequently lowers cost of capital.

That said, we have seen in the last couple of years some large global corporations penalised by shareholders for going overboard with sustainability and not delivering business results. The lesson here is that there cannot be any compromises in business results while going up the sustainability paradigm, which brings me back to the point that we need cost effective alternatives and solutions. Companies used plastic and other environment-unfriendly materials because there are no alternatives available. We have a company called Dharaksha Ecosolutions, which is based in Delhi, specialising in biodegradable packaging material. The company aims to curb the bio waste generated by stubble burning, which is an acute problem in Delhi. The company realised that there is another use case that has led them to develop an inedible biomass solution. They also have a proprietary inoculate and a methodology in which they are able to put the biomass into moulds and create a substitute for thermocol or Styrofoam, which is 100% non-biodegradable; the material created by Dharaksha is 100% biodegradable. Today, at this scale, their product is about two times the cost. To achieve commercial scalability, Dharaksha's product will need to be 1.2 to 1.3 times the cost of Styrofoam to become a real substitute.



Q. While a few startups in the climate tech space are able to reach true industrial scale, a large number of them are unable to move from the small to medium level. Do you see other viable alternatives to stay in business for these firms?

A. When you are building a startup, market linkages and public policy interventions play a central role. The playbook for deep tech in climate is not established yet. It's not the same as SaaS or fintech for which we have a history of innovation. When we started doing the first round of early-stage investments in the early 2000s in India, we had the option of several different industries, such as IT services and consumer internet. Just like India innovated in finance that has led to the creation of UPI, which is probably the most effective and efficient fintech ecosystem in the world, we will have to go through a similar journey in deep tech. I was in Chennai last week and visited AgniKul Cosmos, the space manufacturing startup, which has made an entirely 3D-printed, single-piece engine, the first of its kind in the world. Founders and early-stage investors like us have to work harder to facilitate industry linkages for such innovations. Moreover, because working capital products do not exist in our banking system, we are working actively with non-banking financial companies (NBFCs) and the government to get access to concessional finance or working capital. Loan products can be made available to these companies because the path from Series A to Series B to Series C equity rating is not going to be a straight one.

Q. What has been your experience in terms of support from the government, good bidders, educational institutions, and private accelerators in aiding climate ventures at various stages? Also, what has been your experience when partnering with large players when you funded new ventures?

A. There is an increased activity in the commercial side of early-stage investment in the form of incubators and accelerators. When we started, we were really the only organised investor of scale. Today, almost every generalist we see also has a climate strategy, with claims that 10% to 15% of their portfolio will go into climate solutions. We welcome these claims as startups in this space do need the additional capital.

From the government side, many of the Atal Incubation Centres use the Startup India Seed Fund Scheme of the Department for Promotion of Industry and Internal Trade (DPIIT) to support nearly 300 new incubators across the country. I am increasingly seeing climate and deep tech as major themes in this space.

Collaborating with large corporations presents both a challenge and an opportunity. The challenge is for a small startup to work directly with a corporate partner with the best of intent. A lot of these organisations have innovation teams, but it's like an elephant trying to dance with a mouse. So, it's very hard for the startup and it's not fun either, since it's a long cycle. Young startups do not have access to big corporations and to make this happen, we build coalitions for our portfolio because we are well connected into the corporate ecosystem. We go early to the market and do a lot of piloting and sandboxing, as it helps our diligence. This makes it easier for us to get access to a large company. For example, if we have a startup working in, say, industrial automation, then we can approach a company like Siemens or Mahindra. This is the role that investors and advisors have to play in getting access to talent as well as to the market for these companies.

Q. What are your thoughts on carbon capture, utilisation, and storage (CCUS) technology startups in and sustainable finance in India?

A. In CCUS, we are seeing a number of startups, but in the absence of a clear regulatory regime in this area, I think it will take time. It is still nascent and it will take time before we start seeing real commercial models grow. It is quite risky to base your entire revenue model on carbon credits because we really don't know how that space will evolve. At present, it is neither positive nor negative; it's just unknown. Earlier this year, even the Science Based Targets initiative (SBTi) removed carbon offset from its list of permissible targets. So, I think, there is a divided opinion globally on the carbon offset regime itself.



Sustainable finance mainly comes from three sources. There is a lot of philanthropic activity in this space in the form of grant capital. Some of the largest foundations today are providing climate capital, which tends to be more sustainability-focused in areas such as biodiversity, nature-based solutions or resilience-building in communities. On the other hand, there are funds like us that are providing equity capital. However, as I mentioned earlier, what is missing is the mid-stage growth capital through credit and credit linkage as well as debt financing. Finally, a sizable amount of capital is becoming available in the organised sector, particularly for renewable and brownfield and greenfield projects in the commercial space. Today, some of the largest global players, including pension funds and infrastructure organisations, are investing in sustainability.

Q. In terms of scandals related to social and governance, such as child labour violations, when do you perform due diligence of a startup? How do you prepare yourself when evaluating a startup, or if you are seeing such violations, how do you handle them?

A. Given that we go in fairly early into these companies at the time of our investment, they are not large scale in terms of workforce or manufacturing; but they grow over time. So, when we enter at the time of investment, we do baselining, which is twofold, because these are technologies whose impact will be seen after they are adopted by other entities. We look at the footprint of the startup itself and we have a robust policy framework both for investment selection and post-investment monitoring. It's called the Environmental and Social Management (ESMS) framework, which is built on the Sustainable Development Framework of the International Council on Mining and Metals (ICMM). We have actually built a custom framework with the Green Climate Fund (GCF) on environment and sustainability management systems for pre- and post-investment stages. We have a development committee that screens every investment before it goes to our investment committee. To assess impact, we look at different buckets. The first is the climate or the environmental impact, which includes mitigation, adaptation, and resilience. The second is the economic impact. The third one is the social impact, and the last bucket we consider is inclusivity. While gender is not a filter per se for our investment decisions, we actually see significant gender diversity in both our portfolio as well as in our pipeline investments. We have a full-time person on our team who works with our portfolio companies for measurement reporting. One critical area of concern for startups is capacity building, so we link them up with many of our large funders that run capacity programmes.

Answering the other part of your question, I think violations happen when there is poor intent. We have to invest with the assumption of good intent and then back that up with continuous monitoring. Once they reach a certain stage, we encourage our companies to have internal audits and later, external audits become a requirement both for governance as well as operations.

Q. What are your suggestions on balancing market readiness and anticipated inevitable policy response to stay ahead of the curve in terms of technological maturity?

A. It is extremely difficult for a business to anticipate an inevitable policy response. Fortunately, in India, we have a benign policy regime, which is generally supportive. I think it is very brave to try and time the readiness of the market and readiness of policy; you have to keep a close eye on what is developing. I can give a couple of examples in this regard. Sometimes, policy actually creates markets, such as the recycling market. A more recent example is that of battery energy storage systems. Even though the enabling regulation has always been there, the first market mechanism got set up and the first tender was passed in Delhi last year. Once that happened, it created a precedent framework and now we are seeing almost 20 GW of the best tenders out there. So, there is a balance and that's the judgement you take: you may have the technology, but is the market ready for it? Sometimes, the market is ready on its own because the technology is such an attractive solution, while other times, it needs a little bit of policy support.



Q. You are essentially a venture capital (VC) fund. You are aiming for a 50% to 60% internal rate of return (IRR), even though you have a longer term horizon. Is it lower than traditional VC firms because of the horizon or does it make up in the growth trajectory?

A. It is the latter, because then you have large outcomes. We actually look at returns on the basis of both IRR and Money on Invested Capital (MOIC). Our capital is well aligned with US commercial funds and so, we have attractive returns.

Q. Do the parameters you use to calculate returns differ from industry to industry? Do you use MOIC, IRR, or Net Present Value (NPV), depending on a particular portfolio or an industry?

A. For us, it's both IRR as well as MOIC; we tend to not look at NPV as much. IRRs usually run anywhere in the 20s and 30s (percentage). In any case, the longer you hold a company, the more declining your IRR is. I think MOIC underwriting is very attractive, given that we go in early and take the initial risk.

Q. What is the typical capital structure at the seed-fund stage, given that it's a little different from the usual investment model? How does the structure in a company evolve and where does the fund come in?

A. If it is a repeat founder, then they may bootstrap in their own capital. But what we see most often and frequently is that the capital is brought in by angels, mainly family, friends, or previous bosses. In these cases, we are often the first institutional investors to come in and that's when the company's governance policies get organised. Then, other funds will come in and over a period of time, it is fairly standard on the equity side, around three to four rounds later, for some angels to exit and the captain has to consolidate. What is important in this space and which we, as a startup ecosystem, have not leveraged as much is the full balance sheet. While using debt as an instrument has become common, the way venture debt is structured makes it more like a quasi-equity fund, which is not fully regulated. Most of the alternative investment funds (AIFs) today are either Category 1 or 2 and are either very small or very early. Over time, as the categories evolve, I would like to see a more balance-sheet-plus-profit-and-loss approach being adopted by companies that are building real businesses. Not just equity but also debt needs to be utilised by companies. But again, equity is not always available in the market. To repair this, low-collateral or no-collateral working capital needs to be made available for startups. MSMEs actually have more support today than do tech startups in this space.

One of things I am seeing in our companies is that they have real revenues and profit & loss cash flows. Therefore, they are able to access commercial debt and some of these are in the priority sector as well. I think startups should get creative and look at all forms of capital, including debt. For instance, if they are in the agriculture sector, they might be eligible for priority sector lending. A similar case can be made for MSMEs as well. We definitely need debt capital and we need our commercial banks to create such products in collaboration with industry. Specific schemes can be formulated for deep-tech manufacturing startups, much like the Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) scheme was started for MSMEs.



Key Takeaways

Capital Accessibility for Climate Solutions: Despite India's potential, there is a significant gap in funding for climate tech, particularly between Technology Readiness Levels 3 and 6. Capital support at this stage is crucial for scaling climate solutions.

Frugal Innovation and Sustainability: India's track record in cost-effective and efficient innovation, such as digital payments and low-cost data networks, offers a strong foundation for developing cost-effective, scalable climate solutions across sectors like energy, mobility, and agriculture.

Sectoral Focus for Net-Zero Transition: India's path to net-zero hinges on addressing emissions across key sectors such as energy generation, mobility, and agriculture. This includes innovations like solar microgrids, sustainable fertilisers, and alternative materials.

Importance of Policy and Catalytic Capital: Ms. Bansal emphasised that India's climate transition requires coordinated efforts between policy, capital, and industry. Policy support, such as production-linked incentives and the Critical Minerals Mission, alongside catalytic capital, will drive the adoption of sustainable solutions.

Scaling Climate Innovations: Successful examples from Avaana Group's portfolio, including companies like eeki foods and Kazam, demonstrate the viability and impact of scaling frugal and sustainable technologies across energy, food systems, and mobility.



Conclusion

The path to addressing climate change lies in leveraging innovation, technology, and collaboration to develop scalable, sustainable solutions. With its rich history of economical innovation and rapid technological adoption, India is uniquely positioned to lead this transition. By focusing on renewable energy, sustainable agriculture, and climate-resilient infrastructure, the country can make significant strides toward a low-carbon future while ensuring continued economic growth.

However, to fully realise these opportunities, key gaps—particularly in capital availability for climate tech innovations—must be addressed. The success of India’s transition will depend on coordinated efforts among policymakers, investors, industries, and innovators to bridge these gaps and accelerate the adoption of climate solutions. Policy support, catalytic capital, and market readiness will be critical in enabling India to move from innovation to large-scale implementation.

By fostering collaboration across sectors and ensuring that sustainable technologies are both cost-effective and scalable, India can not only meet its own climate goals but also serve as a model for other developing economies. The journey to net zero is complex, but with the right focus and resources, India can emerge as a global leader in climate action and sustainable development.



Acknowledgements

The Centre for Sustainability and Corporate Governance Research (CSCG) would like to extend its sincerest thanks to:

1. Ms. Anjali Bansal for providing comprehensive insights into how accessibility to capital in various forms needs to be expanded in India for financing climate tech startups and enabling them to create environmental, economic, and social impact;
2. Prof. Neerav Nagar for moderating the webinar;
3. Prof. Anish Sugathan for his support in organising this webinar;
4. PGP/PGPX/PhD students, Research Assistants/Associates (RAs), and Academic Associates (AAs) for attending;
5. Participants from the industry and academia;
6. The IIMA Communications Team for its creative and design support; and
7. The IIMA IT team for its help and logistical support.



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KLMDC, Heritage Campus, Vastrapur, Ahmedabad - 380 015, Gujarat India

Prof. Anish Sugathan & Prof. Neerav Nagar | Co-Chairpersons | chr-esg@iima.ac.in

Ms. Suganya Sudhakar | Assistant Manager | am-esg1@iima.ac.in | +91-79-7152 7956