CLIMAKE
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The State of Climate Finance in India 2024

August 2024

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We need to focus on adaptation

The Apple TV show Extrapolations portrays Mumbai in 2059 as a place where the effects of climate change have forced all commerce to nighttime. Streets are lined with oxygen stations that provide a few moments of breathable air for the masses unable to afford nasal nanobots that filter air in one's nose. The future India is shown as a place where wet bulb moments are common, and where people live below ground during the day to survive the heat. This fictionalised account of the future gives a worrying depiction of what climate change effects can lead to. Humanity could soon have severely compromised living conditions as warmer temperatures and extreme weather events become commonplace.

The dystopian way of life in Extrapolations, however, is not how climate adaptation should look like. Successful adaptation is about coping with climate change while preserving quality of life. For this to happen, significant focus and investments in adaptation are needed, and needed today. Climate adaptation needs more representation in research, in innovation, in policy, and in finance. To support this, we have decided to shift more of our focus towards adaptation finance, starting with this report.

For long time readers of this report, our insights and charts, about investment trends, growth segments and investor interest in climate finance, that you have come to love are still here. We continue to believe that significant investments in climate mitigation are critical. But we also want to put to rest, once and for all, the investment sentiment that climate adaptation investment is **'public goods'** and has little role for private sector finance. In this report, we take a first step by identifying areas of adaptation investment that make sense from both an impact and return perspective, and those that we think would become relevant to an increasing number of investors over time.

Regardless of whether your interest lies in climate mitigation or adaptation, we hope this report leaves you with a deeper understanding of the immense opportunity that exists today: solving for climate change is not just good for the planet, it is also good business and one that we believe needs many more entrepreneurs, investors and ecosystem builders. The choices we make in the next decade will be critical. Scaling and adopting those choices will also need an unprecedented amount of capital. This report is one of several interventions we are building to support capital flows towards climate action, and as always, we are happy to collaborate on moving this agenda forward.

— Simmi Sareen and Shravan Shankar

2023: A Recap

Climate funding diversified, but saw minimal growth in 2023

Emerging sectors are receiving more equity funding

Equity funding in 2023, saw a marginal **2.5%** increase from 2022, to **USD 4.82 billion** but well short of 2021's peak of **USD 7.12 billion**. However, this is not bad news.

While the global funding winter had an impact, the lede for this year's investment trends is funders recognising that newer ecosystem innovations — which carry smaller ticket sizes — need to be backed for the emerging climate sectors to grow.

As a result, the big three emerging sectors — **mobility**, **sustainable agriculture**, **waste and circularity** — all saw reduced overall funding. But, mobility and circularity did not see a significant change in the number of funded startups between 2022 and 2023, while agriculture deals dropped by **45%** in 2023.

Debt financing accounted for **USD 17.7 billion**, driven by growth in EV financing, and increased DFI involvement in climate sectors. The total climate tech investment in 2023 was around **USD 22.5 billion.**

Figure 1: *Sectoral breakup of equity funding in climate action in 2023 (Source: Climake analysis)*

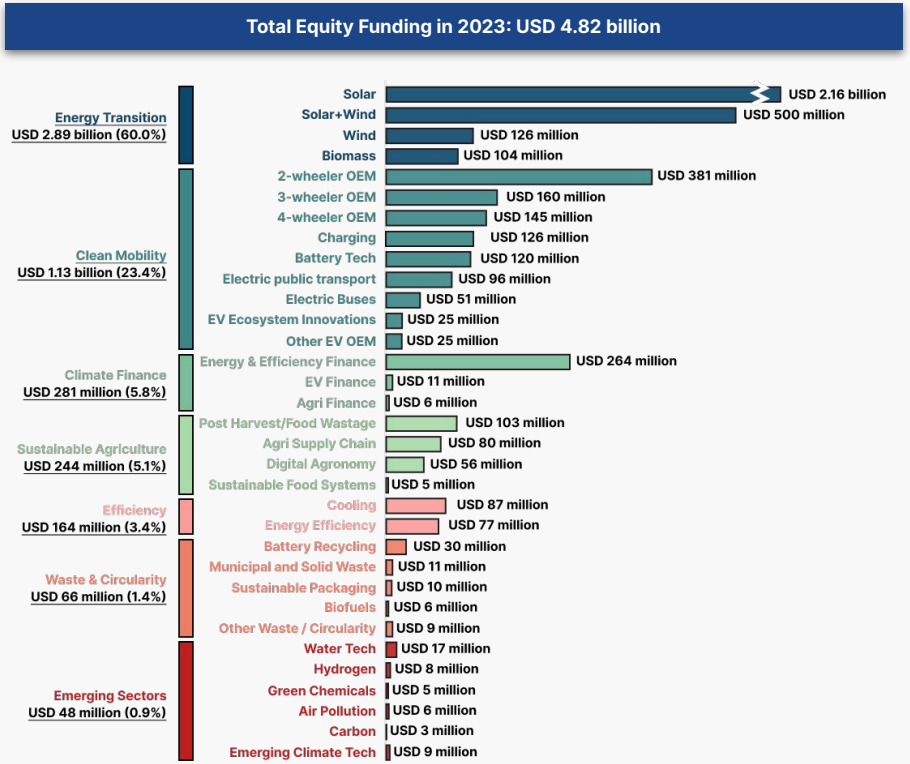
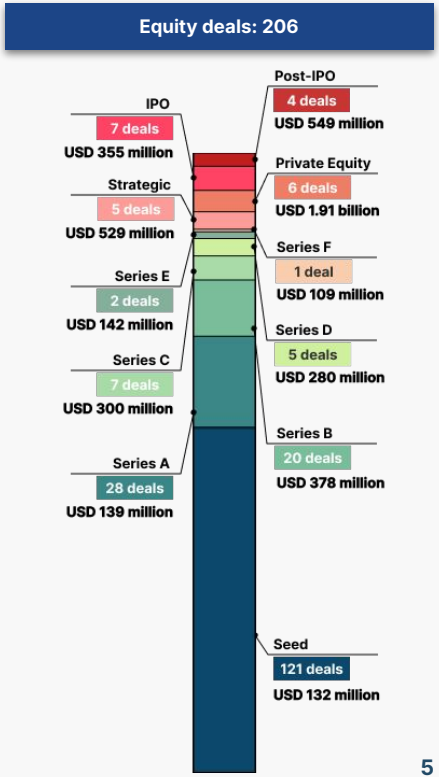


Figure 2: *Climate action equity deals and funding rounds in 2023 (Source: Climake analysis)*



Climate equity is slowly moving beyond solar and EVs

New segments emerge in renewables and clean mobility

Energy transition dominates climate funding, accounting for **60%** of the total equity raised since 2021. **52%** of the energy deals in 2023 were over **USD 100 million**, driven by large-scale solar and wind. Funding for rooftop solar and biomass has also picked up as India's energy transition widens.

Clean mobility saw a **USD 300 million** reduction in overall funding in 2023, as EV OEM investments fell. However, funding for the EV ecosystem — crucial to scale adoption beyond the **1.5 million** EVs sold last year — grew by **103%** to **USD 367 million** in 2023: **30%** of all clean mobility funding.

Agritech had a **67%** funding drop in 2023, as none of the large technology platforms raised new capital. This drop was somewhat offset by a growth in sustainable agriculture, with investments flowing to post-harvest and supply chain startups. A recognition of on-farm solutions that improve yield and productivity is an encouraging trend, though these will face adoption complexities in India's fragmented agriculture landscape.

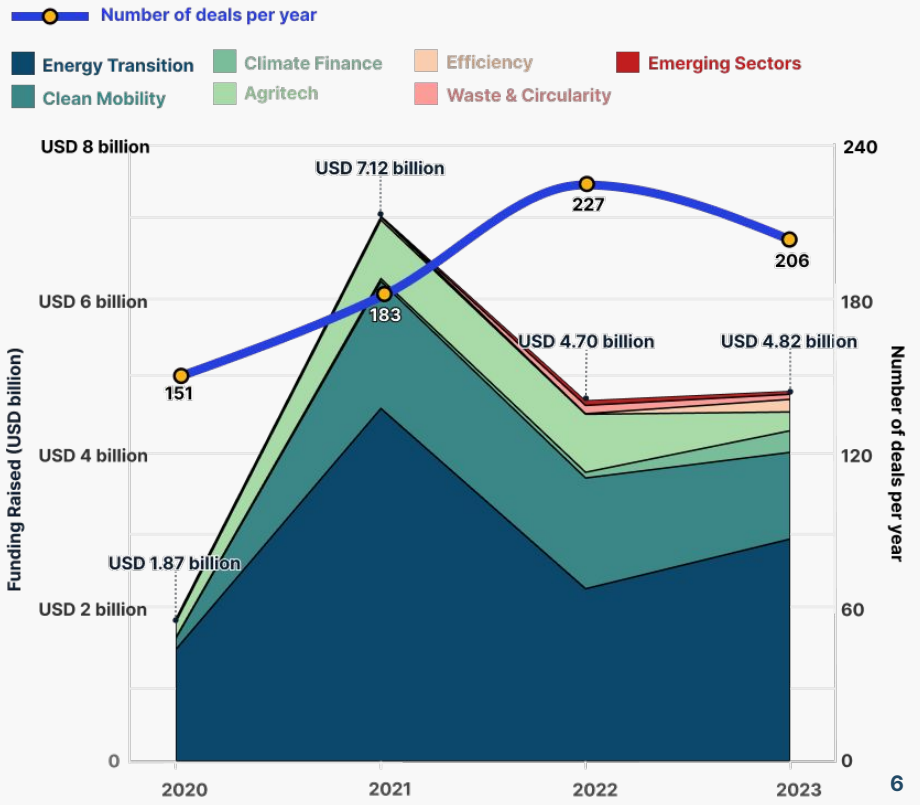
Investors are backing scaled up players in emerging sectors

Waste and circularity investments reduced **40%** in 2023. This was a year of flux for the sector as waste management moved beyond collection and segregation to extracting high-quality recycled materials, prompted by policy changes and customer demand for circular solutions. However, circularity innovations are still early-stage which led to the sector's average ticket sizes halving to **USD 3.6 million** in 2023.

Lithium-ion recycling plays led the way, attracting **USD 30 million**. Unlike previous years, equity deals in plastic recycling were muted in 2023, but plastic recyclers saw significant debt rounds to scale capex-heavy assets. Circularity solutions are emerging but play at a much smaller level.

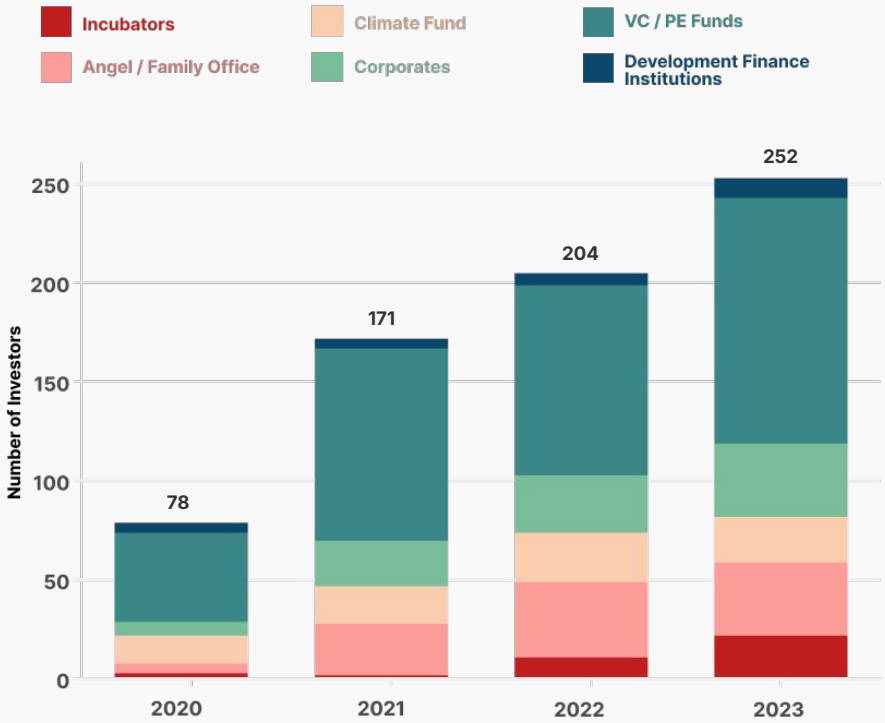
Efficiency's significant growth of over 2000% more funding in 2023, was driven by just two funding rounds: Atomberg and Ikio Lighting. However, we expect a greater demand and entry to come into these sectors following the path set out by these companies.

Figure 3: *Sectoral breakup of equity funding in climate action in 2023* *(Source: Climake analysis)*



The climate equity investor universe is going mainstream

Figure 4: *Participation of Indian climate equity funders from 2020 to 2023 (Source: Climake analysis)*



252 climate investors in 2023

The climate equity universe is expanding as the sector goes more mainstream. Out of the **475** investors that have invested in climate enterprises in India since 2020, more than half participated in 2023.

2023 saw a **25%** increase in the number of climate investors from 2022. For **124** funds, it was their first time investing in climate enterprises.

Even as overall funding growth has been minimal, the increased participation and the new climate focused funds we hear about are signs of optimism.

The role of different investors is getting more defined and connected across the funding stages.

Incubators

Incubators, often linked to academic institutions, are increasingly focusing on climate innovations as a new tech frontier, helping to move lab-scale solutions to market relevance. Beyond venture support programs, **21** incubators actively funded climate solutions in 2023, more than double the number in 2022.

Angels and family offices

Angels and family offices are critical first investors for early-stage innovations, often being able to take a strategic lens to investments — **60%** of their investments in 2023 came at seed stage. The emergence of more climate-focused family offices, in particular, is a big positive for more first capital to enter the space.

The evolution of India's climate investors

Climate funds

Climate funds are crucial for more high potential, technologically complex bets, but witnessed a decrease in deals from **58** in 2022 to **45** in 2023. On the plus side, 2023 saw a lot of climate "dry powder" coming in: new climate fund announcements totalling USD 500 million that should should see more deals in coming years.

Corporate investors

Corporate participation has grown significantly from 2020, as companies recognise the potential of startups to meet their net-zero goals. The biggest emergence has been the growth of Indian corporates, who, in 2023, made up **47%** of corporate investors in climate action.

VC Funds / Private Equity Funds

Climate is a focus area in almost all VC funds — **50** new VC and PE funds invested for the first time in 2023.

Despite the positives of increased participation (more conviction, more capital flow), most VCs funds, outside of seed funds, often lack a clear climate thesis, and apply a tech-first, asset-light lens in contrast to sectors' needs.

Development Finance Institutions (DFIs)

DFIs are figuring out their catalytic role to bring in more private climate finance. For instance, outside of energy, climate requires lower-ticket sizes than what DFIs are accustomed to. However, they are recognizing this, with 2023 seeing DFI investments as low as **USD 10 million**.

The increased vibrance of India's climate investors is supporting contextualised plays that go more in depth to tackle funding-innovation gaps. We expect blended instruments to bring in grants with risk capital, and venture studios, which can scale deep-tech solutions, will grow in 2024.

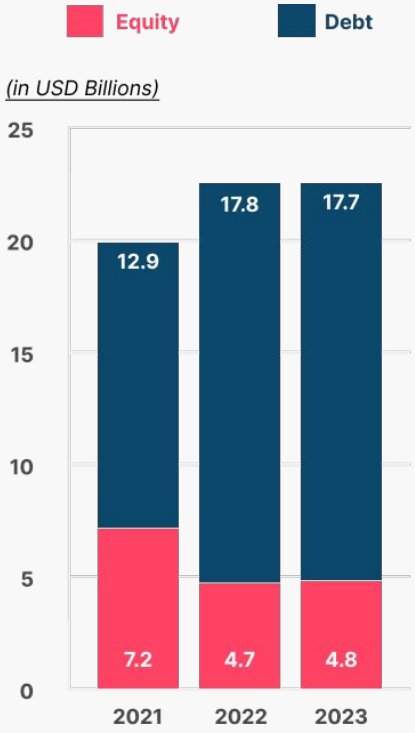
Debt

While equity gets all the applause and press, debt has been crucial to scaling up climate action in India. The good news is that debt is widely available once a sector becomes mainstream and profitability is well established. For renewable energy, and increasingly for electric vehicles, debt providers are offering affordable interest rates, allowing projects to generate returns for both debt and equity capital providers.

International DFIs and domestic lenders (ranging from specialists, like Power Finance Corporation (PFC) and IREDA, to commercial banks) are showing an ability for larger ticket sizes as projects get bigger, and faster deployment is needed. Renew Power raised **USD 7.8 billion** in one go last year, the largest climate debt deal seen in India so far.

Debt for buyers of climate-positive products has also evolved with retail lenders like Ecofy, Aerem, Mufin and Revfin supplementing SIDBI and local banks in financing end-customers for solar and EVs.

Figure 5: *Debt and equity funding raised from 2021 to 2023 (Source: Climake analysis)*



India’s Climate Sector Trends

Renewables adoption needs to accelerate for India to reach its 2030 target

Grid renewables

2024 will see India's largest addition yet of non-fossil fuel energy capacity. The **14.2 GW** added in the first 6 months exceeds the **13.5 GW** installed in 2023. But more is needed; annual installed capacity additions have to average **60 GW** by 2030. **Figure 6** takes stock of India's non-fossil fuel energy capacity towards a likely **2030** mix as outlined by the Central Electricity Authority (CEA); **40%** of the **176.1 GW** of upcoming capacity has no clear timeline of completion.

Installed capacity is also not a guarantee of generation. In 2023, non-fossil fuel energy accounted for **45%** of electricity capacity, but only **24%** of generation. Renewables may have reached cost parity with fossil fuels, but India also needs to upgrade its grid to balance renewable energy's variability for **24X7** delivery of electricity.

India needs to solve for large-scale storage, and upgrading transmission and distribution to integrate renewable energy, the latter being a **USD 30 billion** investment need.

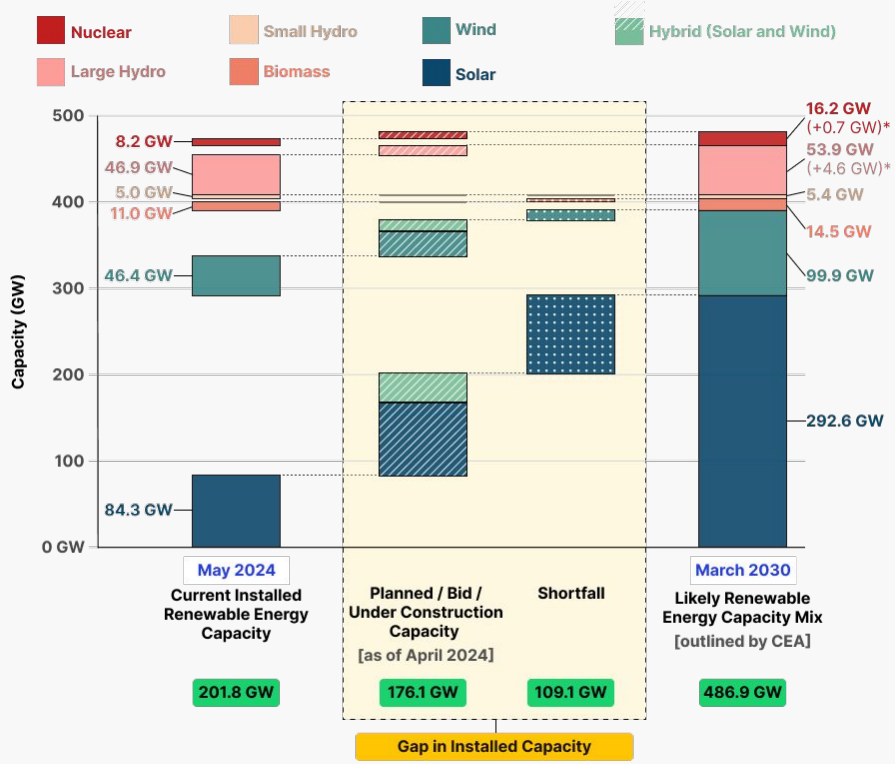
Until these are solved, renewable energy generation will lag. Demand-side measures to incentivize renewable energy adoption — such as dynamic pricing and the General Network Access — will also be ineffective.

Biofuels & bioenergy are emerging

From enabling policies, improved feedstock supply and access, and the emergence of high-value output producers, the biofuels ecosystem is a high-opportunity sector. Consumption of biofuels is expected to triple over the next **5 years** on the back of higher biofuel blends (**20%** ethanol by 2030 and **5%** biodiesel by 2030) and more diversified use cases, such as sustainable aviation fuel. (side note: PSUs are among the most progressive decarbonization entities in India)

The quest to bring circularity for agriculture wastes is among the primary drivers for bioenergy's growth. Sukhbir Agro Energy, which raised **USD 1 billion** in January 2024 and runs **30%** of India's waste to energy capacity, best exemplifies this.

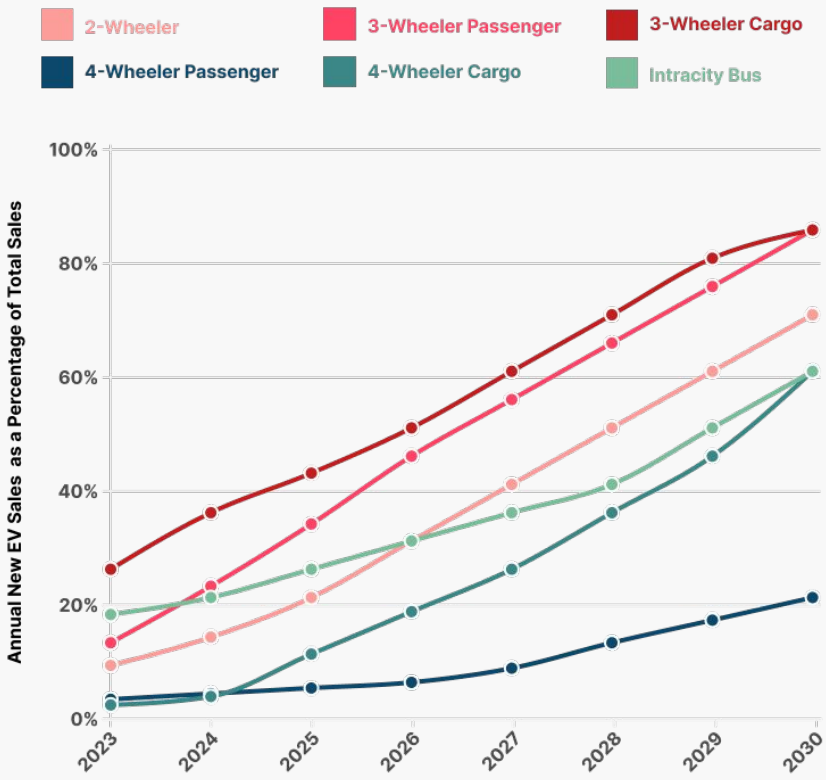
Figure 6: *India's current and likely non-fossil fuel energy mix between May 2024 and March 2030*
(Source: Central Electricity Authority [1][2] and Ministry of Power [3][4])



** Amount by which capacity exceeds CEA's target based on upcoming capacity*
*** Upcoming hybrid capacity is only available as a consolidated number. The share of wind and solar in hybrids is assumed based on existing share of renewable energy capacity*

Electric vehicle adoption continues to grow but policy clarity will define scale

***Figure 7**: Projected share of EVs in vehicle sales until 2030* (Source: Blume Ventures)



India's needs to fix its concessions approach for EV adoption to grow

Electric vehicle (EV) sales will continue to grow across all vehicle categories over the next decade. However, for the growth projections in **Figure 7** to be realised, India will need to overcome the high upfront costs: through concessions and financing.

From April 2019 to mid-July 2024, subsidies were used to purchase **1.67 million** 2-, 3-, and 4-wheeler EVs — **41%** of the EVs sold during this period. The FAME-II subsidies which ended in March 2024, has had issues: from confusion around subsidy claims, to gaps in coverage (2-wheeler EVs accounted for **87%** of subsidies; only **11%** of 3-wheeler and **12%** of 4-wheelers benefitted). But subsidies are a driver for adoption, as seen by a 20% dip in EV sales in the quarter after FAME-II subsidies ended.

India's current EV policy only provides concessions for EV manufacturers through production-linked incentives. This will reduce costs for manufacturers, but give no guarantees for reduced costs to consumers. Hence, subsidies are needed for EV adoption

EV financing is going mainstream

Financing mitigates the high upfront costs of EVs. We identified **40** banks, NBFCs, and other other lenders, including **10** dedicated EV financiers operating today. This market is expected to grow to **USD 50 billion** by 2030. EVs' likely inclusion as a priority sector lending category will bring more capital from mainstream banks and likely more competition for existing EV-only financiers.

Electric buses arrive on the scene

Funding for electric OEMs in 2023 dropped **40%** compared to 2022, but electric buses as a segment has grown, led by a plan to shift a third of India's **2.5** million diesel buses to electric buses by 2030, supported by schemes such as the PM eBus-Sewa. Emerging e-bus startups are seeing opportunities along with established OEMs.

Heavy vehicles — buses and trucks — will be in focus in 2024 and see increased sales, while the 2- and 3-wheeler markets await direction and clarity on subsidies to determine their growth.

New batteries opportunities emerge as energy storage becomes a priority

LiB will be the battery of choice; redox flow leads in new chemistries

By 2030, battery demand is expected to grow **10 times** to **260 GWh** — **95%** from lithium-ion batteries (LiB). Post-2030 will see a more diverse mix of new battery chemistries with better efficacy in specific applications, or as alternatives without LiBs' limited raw material supply constraints.

We identified **10** sodium-ion and metal-air startups at various development stages, none at commercial scale. But, redox flow batteries are seeing commercial potential due to India's energy storage system (**ESS**) priorities. NTPC has issued a tender for a **3MWh** vanadium redox flow storage system, giving opportunities for the likes of **Delectrik** that has been focused on exports. Regardless, LiB will continue as EV's battery of choice.

India's grid energy storage drive

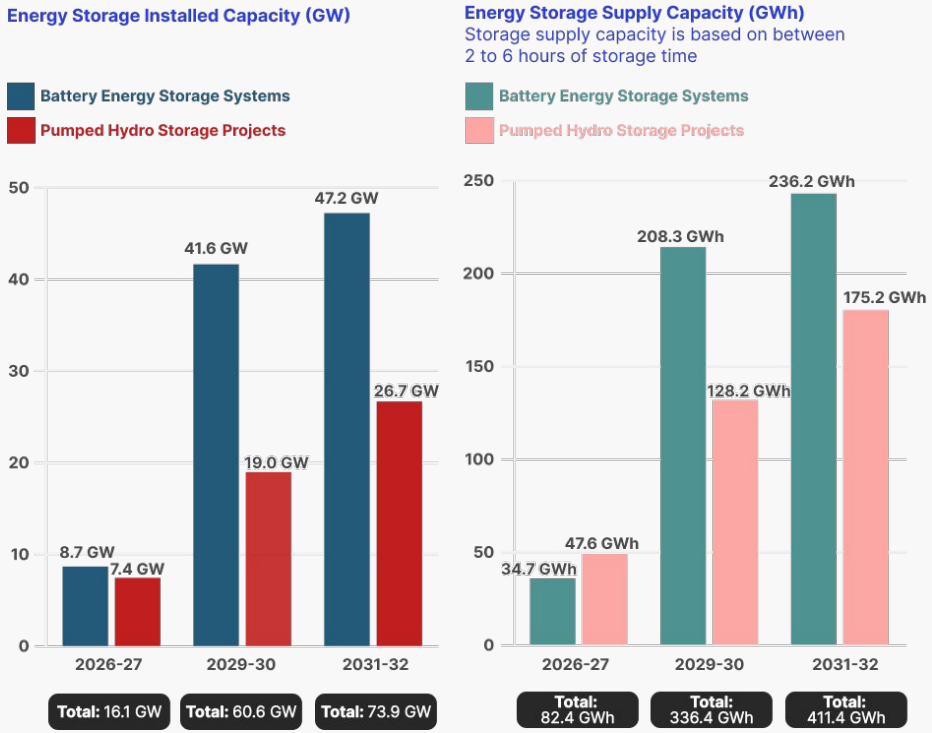
ESS is critical for grid management to ensure reliable power supply as renewables' share increase. Battery energy storage systems (**BESS**) and pumped hydro storage projects (**PSP**) are India's storage systems of choice.

Figure 8 outlines India's projected PSP and BESS storage, defined by Energy Storage Obligations (ESOs) that mandate discoms to procure a minimum amount of electricity from renewable energy through ESS — **1%** in FY2024 to **4%** in FY2032. PSP's target is viable: current capacity stands at around **7.4 GW**, **5.1 GW** is being developed; up to **60GW** is being explored. BESS's targets, however, are over-ambitious. The current storage of **0.2GWh** and upcoming **1.6GWh** account for just **5%** of the FY2027 target, but targets are catalysing entities like NTPC, and GEAPP, which aims to fund **1GW** of BESS by 2026.

Storage's second-life for LiBs

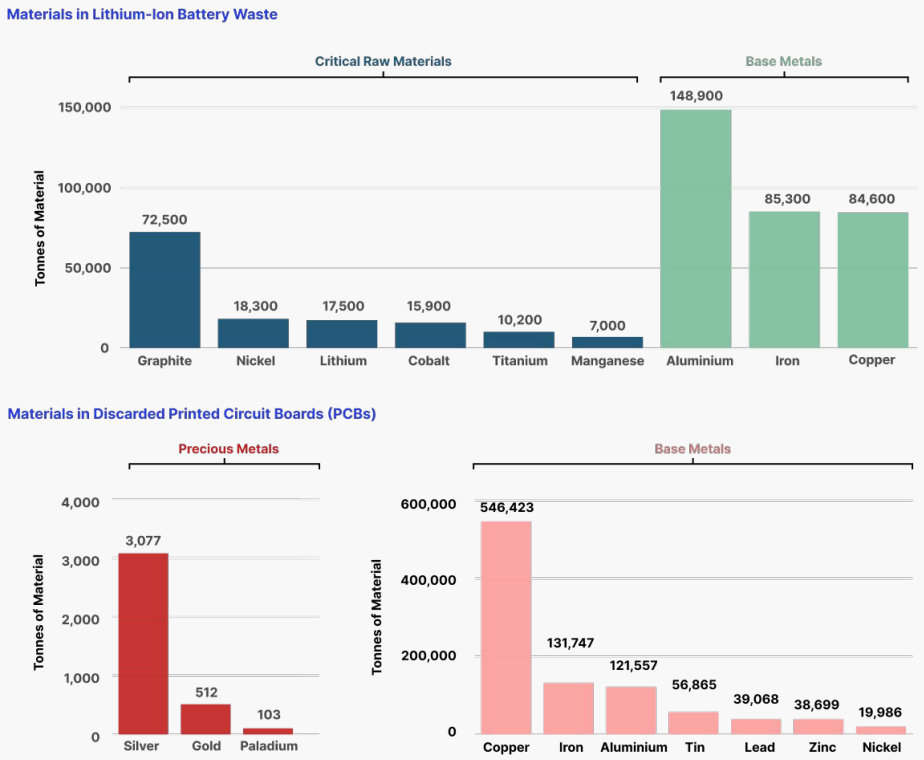
EV LiBs reach their end-of-useable life at **70%–80%** of original capacity. But fuel cells within still have utility in less-intensive use cases, e.g., off-grid or front-of-meter energy storage. Second-life batteries avoid material usage and emissions associated with new batteries, and account for upto **5%** of battery energy storage system needs by 2030, from the likes of startups like **Lohum** and **Nunam**.

Figure 8: *Targeted energy storage installed capacity and supply capacity through pumped hydro and battery energy storage systems until 2031-32* (Source: Central Electricity Authority)



Waste management is moving towards high-value material recovery

Figure 9: *Cumulative quantity of key minerals expected to be found in e-wastes (Printed Circuit Boards) and lithium-battery wastes from 2022 to 2030 (Source: Niti Aayog, Industry Sources)*



Waste management is moving to high-quality material extraction

Waste management in India is moving from low-quality recycling and ensuring proper disposal, to high quality end-recycling that recovers valuable outputs (*secondary raw materials*) for use in new products. Policy targets (centred around Extended Producer Responsibility (EPR) norms), and moves to secure raw material supply are driving this.

We expect e-waste generation in India to grow to **9.4 million tonnes by 2030** from 4.1 million tonnes in 2022. **Figure 9** shows the potential for e-waste and lithium-ion battery (LiB) recycling by 2030. **45%** of funding in waste in 2023 went to LiB recycling.

E-waste is a large capex funding story. The main technology, smelting, is established, while less energy-intensive alternatives are not commercially ready. Commercial scale hydrometallurgical tech for LiB recycling is nascent. Technologies that improve extraction — mainly converting black mass to raw materials — have significant funding potential, as global LiB raw material demand is expected to grow 20 times by 2030.

Regardless of technology, success for recyclers will hinge on tackling fragmented supply chains, an unreliable supply and the quality of wastes.

Chemical recycling of plastics wastes needs to grow

Mechanical recycling, which accounts for 94% of plastic recycling in India, saw little equity funding but healthy sums of debt in 2023 as capex-heavy facilities expanded.

But this does not address hard-to-recycle plastics, e.g., flexibles. Refuse-derived fuels (RDF) handle 5 times more plastic wastes than chemical recycling which has more valuable outputs. Chemical recycling also needs to shift; from pyrolysis that leads to low-grade fuel oil, to depolymerization and its recycled polyolefin outputs for new plastics. This has only seen pilots, as financing for larger setups is inaccessible for most technology players; but partnerships, such as that of RE Sustainability and Polycycl could pave the way in this space.

India faces an uphill task to decarbonize steel and cement

Carbon capture is likely to define decarbonization potential

Steel and cement account for **20%** of India's total GHG emissions. They offer significant decarbonization potential, but face an uphill task to be realised. Decarbonization of steel and cement in India will be reliant on carbon capture, utilization and storage (CCUS), if other solutions and technologies are not scaled faster. CCUS is only expected to be commercially viable in India by 2035, which will increase cement and steel prices: any such adoption will require a CO_2 offtake market to be developed to mitigate costs.

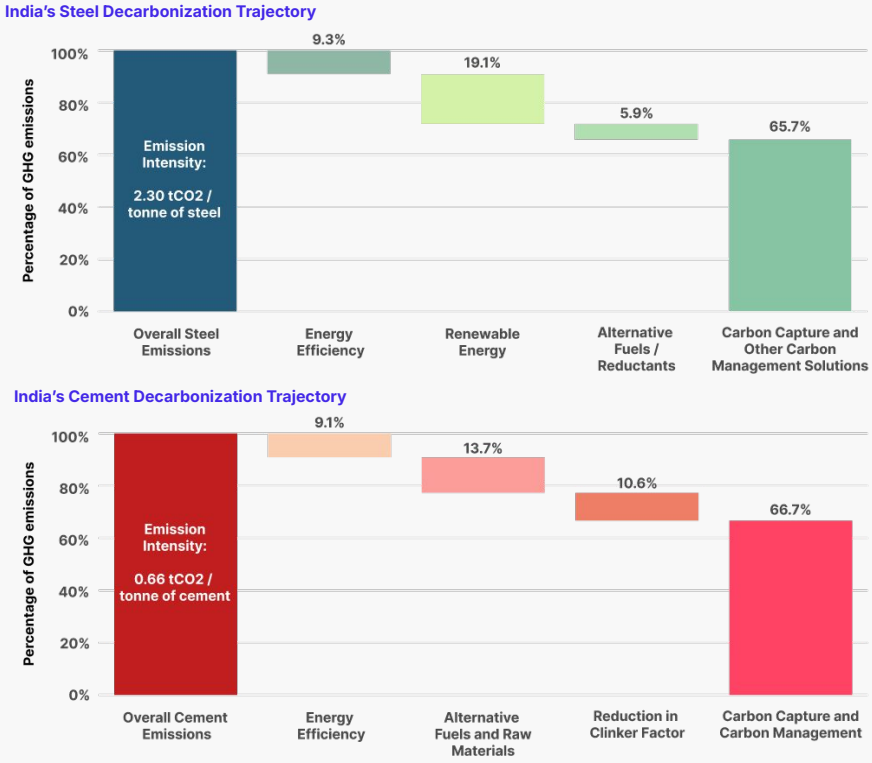
India's main issue to decarbonize steel is not just in ensuring green hydrogen or renewable energy capacity. 48% of India's current steel capacity of **120 MTPA** and **70%** of steel's **195 MTPA** in pipeline is through the fossil-fuel heavy Blast Furnace and Basic Oxygen Furnace (BF-BOF). Challenges to replace coal in blast furnaces mean that only **30%** of GHG emissions can be removed directly through energy efficiency, alternative fuel or renewable energy adoption. CCUS is necessary for the rest.

Less than **5%** of current and **15%** of the planned steel capacity is through Direct Reduction of Iron and Electric Arc Furnace (H-DRI-EAF), which if utilised with green hydrogen and renewable energy, can reduce a plant's GHG emissions by up to 97%, but increase steel costs by between 40-50%.

In cement, alternative raw materials, such as slag and fly ash, can offer emission reduction potential of up to 35% to 70%. However, the main issue lies in carbon dioxide released as unavoidable process emissions during the calcination of limestone in kilns, which accounts for **56%** of cement's GHG emissions, making CCUS a need.

India is unlikely to pay a premium for green steel and cement. Decarbonization solutions for these sectors need to scale faster and more affordably. Without improvements, upcoming cement and steel capacity will follow business-as-usual approaches with incremental emission reductions, waiting for CCUS as a holy grail to decarbonize at a far off date.

Figure 10: *Approaches for decarbonizing India's existing cement and steel sectors (Source: CEEW [1] [2])*

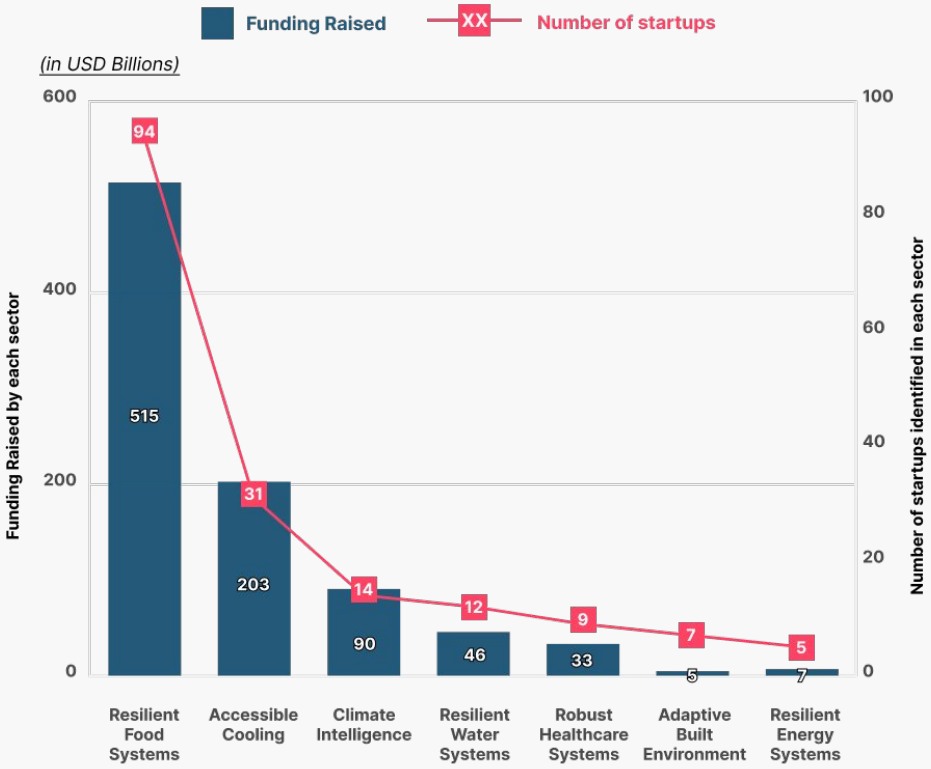


We Need To Talk About Climate Adaptation*

* For the sake of brevity, we refer to climate adaptation and climate resilience as ‘adaptation’ throughout this report.

India is lagging behind in climate adaptation investments

Figure 11: *Number of startups identified across climate adaptation sectors, and funding raised by each sector (Source: Climake analysis)*



We need more adaptation investment

India is ranked as the **7th** most affected country in weather-related losses and climate risks. These effects, which result from heat exposure, erratic rainfall patterns and rising sea levels, are being experienced today.

However, the focus on climate adaptation in India is under represented: in policy, finance, and innovation. The contrast is clear when it comes to investor interest in the segment. Lifetime investments in all adaptation sectors — **Figure 11** — totals up to **USD 899 million**. Climate mitigation, in contrast, raised **USD 4.7 billion** in 2023 alone.

Climate-related losses and damages will continue to increase. While it is difficult to put a value on human suffering, research indicates that the economic loss itself could be as high as **5%** of global GDP by 2050. Despite this growing need for climate adaptation, the 2023 UN Environment Programme (UNEP) Adaptation Gap Report shows that progress on climate adaptation is slowing — planning, implementation, and finance for adaptation is lacking globally.

UNEP maintains that the window to act on the climate adaptation gap could be closing as climate change effects become commonplace. Adaptation will be significantly harder to implement and need a lot more capital than it needs today. The global adaptation finance gap until 2030 currently stands between **USD 194 billion** and **USD 366 billion** per year.

Private sector capital has long believed that adaptation finance is public goods and not suited for commercial capital. This is partly true. Many adaptation segments fall squarely into the purview of what governments need to fund (think disaster relief, support for climate migrants, and the like).

But there is much that offers opportunity and needs focus from commercial ventures and funders. As a starting point, this section is a guide on adaptation for the curious investors as they explore their first investments in this segment.

Investing in climate adaptation: A funders' guide

Adaptation is a high potential market opportunity

Investors need answers to three fundamental questions before making sizeable commitments towards climate adaptation:

1. Is the market opportunity large enough?
2. Are there likely to be near-term investable opportunities?
3. How do I measure impacts to know if my investments are making a difference?

The answer to the first is a resounding yes. UNEP estimates that South Asia will need to invest about **2.4%** of its GDP in adaptation every year till 2030. This translates into a **USD 94 billion** annual opportunity for India. **Figure 12** shows investment need in India's main adaptation sectors by 2030, and their private finance opportunity and time period.

Some, like disaster relief, will always be public goods. Yet the private investment opportunity is significant in areas like agriculture. The potential investment universe could be even larger: several sectors (cooling and energy infrastructure, for example) offer investors co-benefits of investing in both mitigation and adaptation.

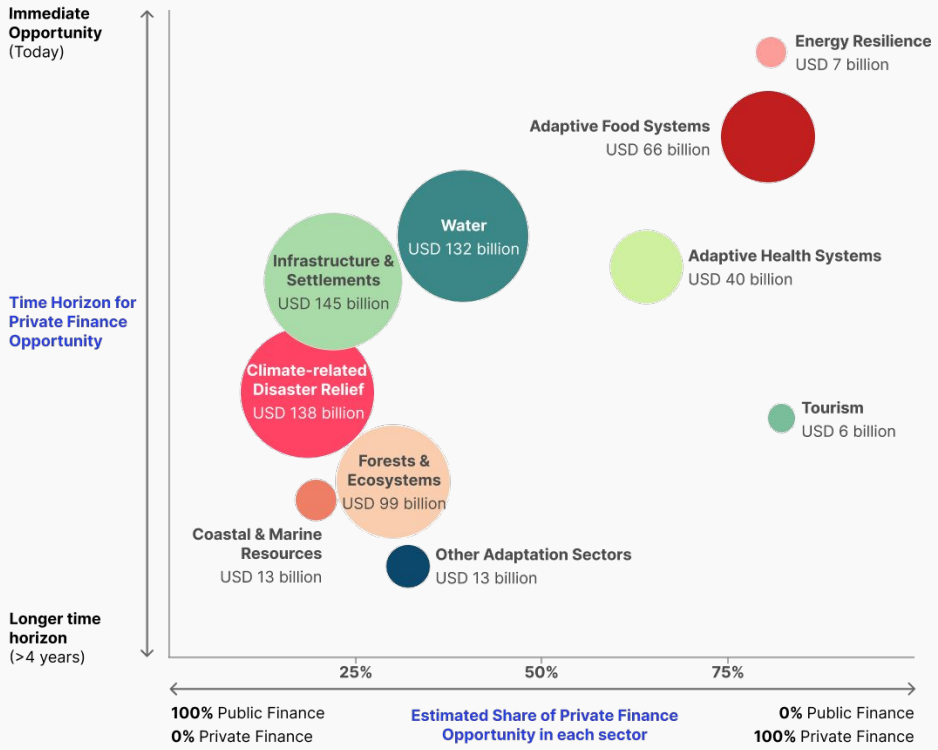
How to measure the impact of adaptation investments

Question 3 is more complex: climate funds and DFIs, especially, face the challenge of measuring and reporting impact of their adaptation investments. Unlike mitigation, where GHG emissions reduction is a universal measurement indicator, adaptation has diverse indicators and needs a new approach. Lightsmith Group's 2020 Adaptations Solutions Taxonomy was the first real framework, and was further improved by GARI's CRISP framework.

Both frameworks give examples of business models that could constitute an adaptation investment. However, neither solves the investor's dilemma on measuring portfolio-level impact for stakeholders' reporting.

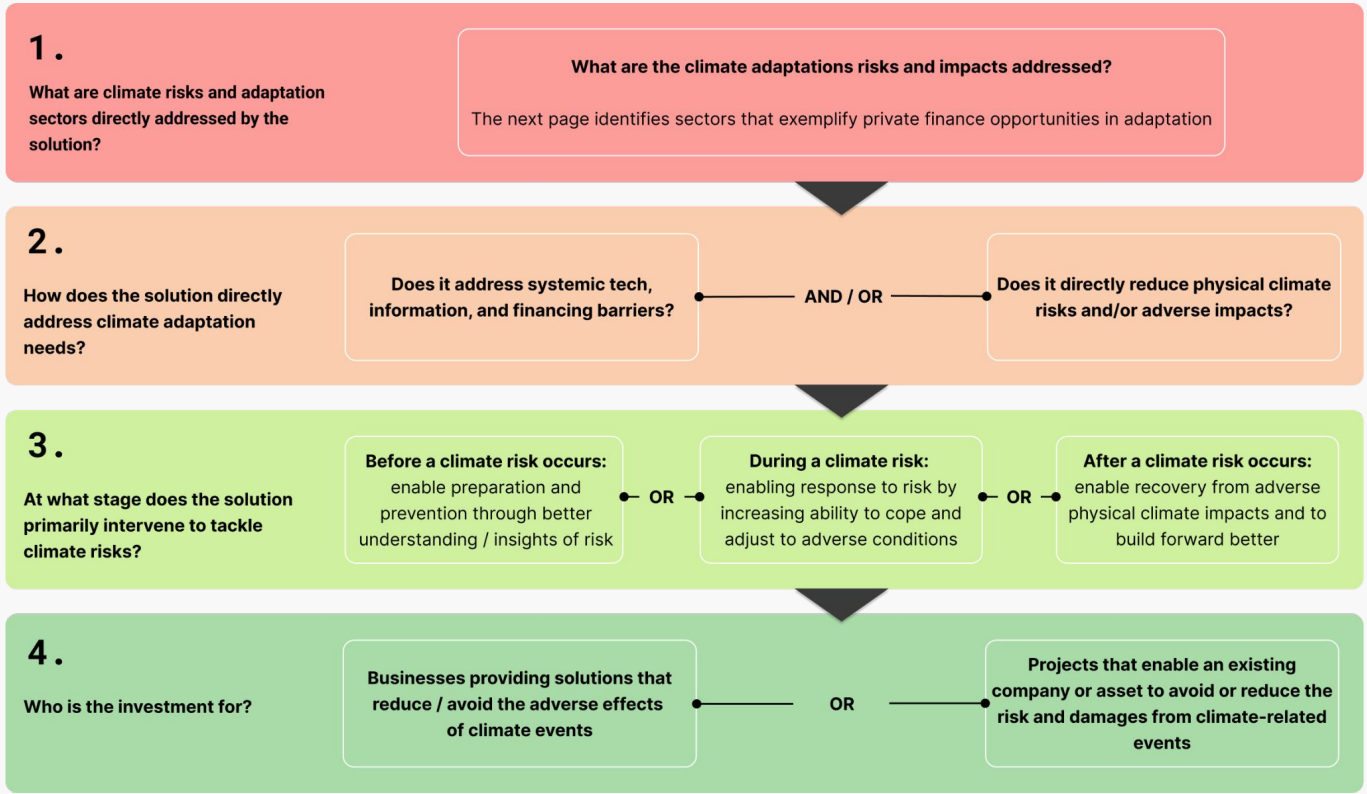
Investors have banded together to solve this, such as UNEP's Adaptation and Resilience Investors Collaborative (ARIC) and the Framework for Global Climate Resilience (FGCR) set up at COP28. Progress on measurement and reporting is being made by both. So while no real answers exist today, standards should be available soon.

***Figure 12:** The investment opportunity in adaptation from 2024-2030 (Source: Climake analysis)*



Defining adaptation investments

Figure 13: Decision framework for determining climate adaptation solutions (Source: Climake analysis)



Decision frameworks for identifying investable adaptation solutions

Climate adaptation solutions need to address impacts faced from climate risks — efficiency and mitigation solutions are often identified as adaptation without them delivering on its impacts. Understanding what is an investable climate adaptation solution helps investors understand the sector in representative terms to the nature of climate adaptation, while being relevant to funder expectations.

Figure 13 is a decision framework to help investors better understand and identify potential climate adaptation solutions, by understanding insights on:

- the correlation of climate risks and impacts with a solution's offering;
- how solutions reduce sensitivity from climate adaptation faced by organizations, people, nature, either directly or by addressing systemic access barriers;
- the stage towards the climate risk that a solution operates in, and;
- the type of enterprise looking to access capital for adaptation solutions.

How to invest in adaptation

The top 5 investment areas in adaptation for private finance

We know what constitutes adaptation and why it is critical to invest in adaptation businesses. The final question to answer is: **Is adaptation investable and does a pipeline of startups exist?**

To highlight adaptation sectors and business models that private capital can flow into, we have stayed as close to what a VC or PE investor would consider investable, and find to be viable. We have also taken cues from mitigation sectors such as renewable energy and circular economy. **Figure 14** is a framework to determine the likelihood of adaptation segments in India to attract private investment. From this, the top **5 adaptation areas** for private finance are:

- **Sustainable Food Systems**
- **Sustainable Cooling**
- **Access to Water**
- **Adaptive Built Infrastructure**
- **Adaptation Data, Analytics, and Finance**

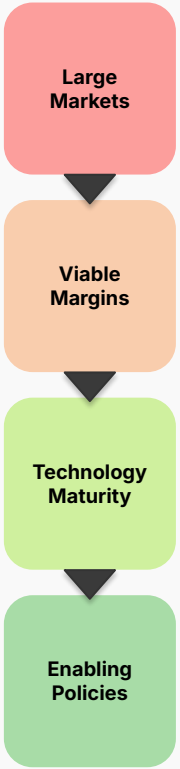
Who will invest in adaptation

The first set of investors to show interest in adaptation funding are development finance institutions (DFIs). It is early days though, and most are still forming a view on how to make their first foray into adaptation finance.

We expect the next round of interest and potentially the most significant investments, to come not from the financial investors, but from corporations with strategic interest. Listed companies globally can see adaptation costs potentially as high as **USD 4 trillion** if temperatures rise by **3 degrees**. They need to look for investments that help them cope with the challenges that extreme heat and related weather events present.

As these corporations adapt operations to become climate resilient, they are also likely to emerge as first customers and significant buyers of adaptation solutions. We already have precedent in mitigation: securing orders from large steel companies kickstarted many hydrogen startups. The same, we hope, could be repeated for adaptation solutions.

***Figure 14:** A subjective framework to identify adaptation segments likely to attract private investment capital (Source: Climake analysis)*



For adaptation startups to be attractive to VCs, the first criteria is the presence of a large market segment. Whether a solution targets individuals, businesses or governments, those that offer products requiring minimal behavior change are the ones that are likely to succeed in the near term.

The potential for price points that **(i)** customers would be willing to pay for and **(ii)** generates enough margins for the segment to make commercial returns is a key second factor. Impact investors do not always target commercial returns, but we are yet to see an investment segment at scale with sub-market returns.

The segments we focus on are ones where technologies needed for adaptation already exist but business models need to emerge and scale through reducing costs and solving for hurdles towards effective deployment.

In emerging sectors like adaptation, enabling policies are important to drive demand for solutions, especially at nascent stages. This has been an experience witnessed in other climate action sectors, where alternatives to existing solutions are needed to realise impacts.

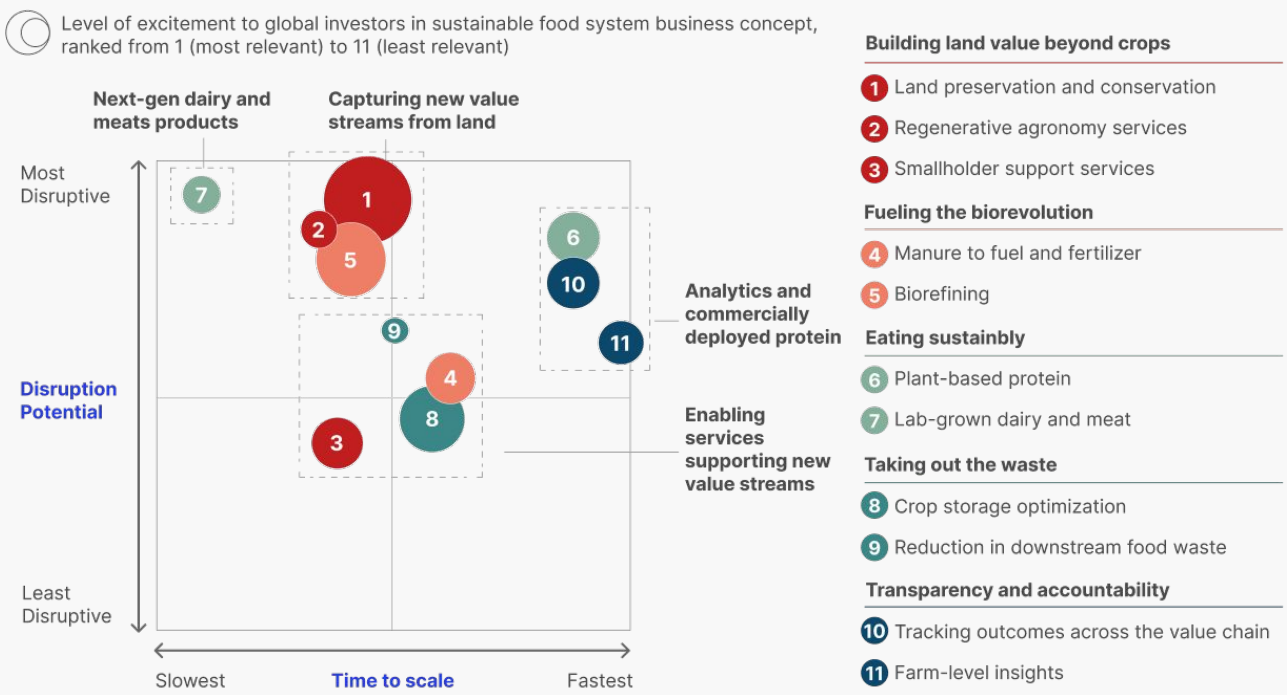
Adaptation Thesis #1: Sustainable Food Systems

Climate-resilient agriculture

Agriculture, and related activities, is the most ready segment for private investor involvement in adaptation finance. While a **67%** drop in funding for the sector in 2023 may worry some investors, the reduced interest is largely accounted for by B2B technology platform marketplaces which have saturated. We believe the next round of food system investments ought to and will be focused on making our farms and farmers more resilient.

From 2015 to 2021, India lost 69 million hectares of cropped area to floods and drought. Even the most conservative estimates show that we will continue to lose **2 million+ hectares** each year without any interventions. Investments are, therefore, needed in new seeds, resilient crop varieties, farming techniques and post-harvest processing. Off-farm technologies, including hydroponics and lab-grown proteins will also make food supply chains more sustainable.

Figure 15: *Investable business models in food and agriculture for adaptation* (Source: McKinsey)



Three ways to invest in sustainable food systems

Climate Resilient Seeds and Crops

Frequent droughts and floods mean that we cannot keep growing the same crops as before. One way to get better yields is to create seed banks: both high-tech and low-tech solutions are effective here. The likes of **Sahaja Seeds** are promoting use of indigenous seeds that are better suited for pest and disaster resilience, while the many research labs in the country create newer, stronger varieties. Getting these seeds to farmers, and getting them to use the new varieties at scale is where the challenge lies.

Thankfully, India's funded agritech startups already have a solution. Most of the VC financing in agritech over the last three years was deployed in market linkage solutions; these platforms now have the scale and reach to help deploy better-than-normal farming inputs and practices.

Crops are not the only segment that needs a change. Our meat and poultry supply chains are also climate-proofing (or, as the many alternate protein and dairy alternative startups indicate, driving a change in what we eat).

Water-Efficient Farming

Climate change is changing India's agriculture landscape through erratic rainfall patterns and prolonged droughts. Irrigated crops are a must to provide food security. Yet, over the last 3 decades, India's irrigated areas have been increasingly reliant on pumped groundwater, a rapidly diminishing resource. To make irrigation sustainable to climate change effects, new technologies have emerged:

1. Smart irrigation: Data-driven intelligent irrigation utilises IoT devices and sensors to collect data on soil moisture, weather conditions and crop health, giving farmers insights on when and how much to irrigate. Startups like **Cultyvate** are using this to implement Alternate Wetting and Drying (AWD), an intermittent irrigation technique for paddy cultivation, which can also reduce paddy's methane emissions by **30%–40%**.

2. Micro irrigation: Drip and sprinkler irrigation systems deliver water directly to the roots of plants — a more efficient alternative to flood irrigation. With subsidies and policy support, the likes of **Netafim** are scaling up cultivation lands under such efficient irrigation systems.

Preventing Post-Harvest Losses

India loses **20%+** of the food grown, to post-harvest losses. If climate change means we will be able to grow less food, making sure a lot less of it is wasted is critical. Two key ways to achieve this would be:

1. Optimising crop storage to prevent loss: Perishable food (fruits, vegetables, fish, dairy) needs immediate cooling or freezing, a resource many farmers do not have access to. Many startups are already solving for this: both **Ecozen** and **DD Solar** provide solar refrigeration, albeit for very different scales of operations and use cases. Grains get lost too, often because of poor storage. **Ergos** is one example of near-farm grain banks solving for this.

2. Reduction in downstream losses: Freezing, dehydrating and canning food near farms not only ensures less transport weight (ergo less emissions), it also significantly reduces the possibility of less than perfect produce being thrown away. Companies like **S4S** and **Raheja Solar** are already making inroads into building a successful ecosystem here.

Adaptation Thesis #2: Sustainable Cooling

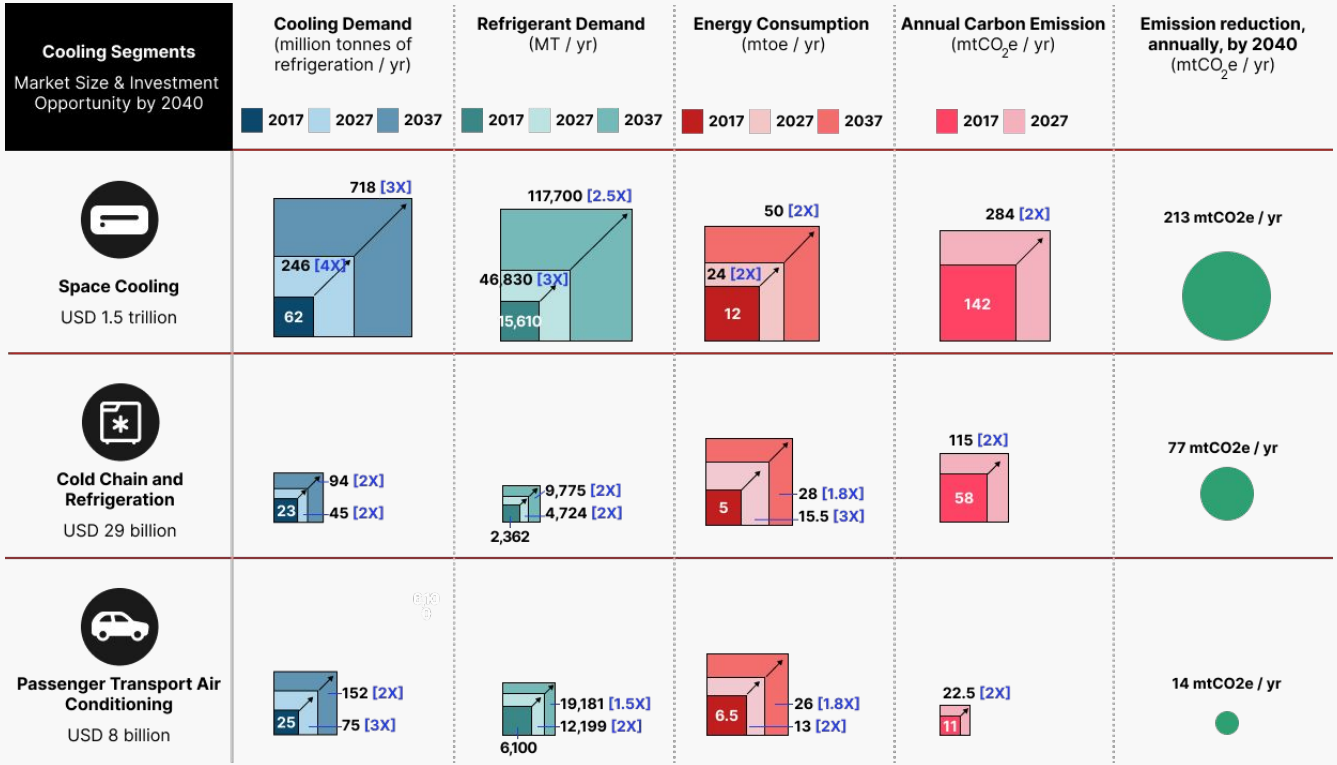
A new way to cool

Air conditioning in India has traditionally been a luxury; not only is the upfront cost of an AC higher than what most people can afford, the monthly running expenses in the summer heat are also a deterrent.

As temperatures rise, air conditioning will soon stop being a luxury and become an imperative to survive the heat. India has **25 million ACs** today; World Bank estimates we would need **1 billion** of them by 2050. Yet, selling more ACs is neither sustainable nor viable — we will need to build new electricity capacity as large as the current grid just to power these ACs by 2050.

So we need to think and invest outside the box: not just for space cooling, but also to make sure that precious commodities — food, medicines and vaccines — survive extreme heat during transportation and storage. Each of these segments present a significant market potential and growth opportunity.

Figure 16: The opportunity for cooling in India (Source: World Bank)



- *[XX] indicates the scale of growth between 2017 and 2027 numbers, and 2027 and 2037 numbers for the cooling metrics above in each of the 3 segments*

The many examples of investable sustainable cooling businesses

Tabreed

Technology innovation: District cooling

Centralized systems that distribute cool water to each building in large commercial complexes are not only scalable, they offer 20-30% less power consumption over traditional cooling. Tabreed, the leader in district cooling in Middle East, is already making its first investments in district cooling in India.

Celcius

Technology Innovation: Cold chain tech

Celcius is solving for the fragmented cold chain logistics industry by providing end-to-end supply chain solutions, including booking and monitoring transport, warehousing, last-mile, and hyperlocal delivery services, thus saving perishable food from wastage.

Tessol

Technology Innovation: Phase change materials (PCM) for cold chains

Tessol's innovative solutions use phase change materials and precision temperature control to maintain cooling efficiency across the value chain for perishable foods, pharmaceuticals and vaccines.

Circolife

Business Model Innovation: Cooling as a service for households

Many of the several hundred thousand ACs that India will add over the next decade will be for households that cannot afford the upfront cost. By providing room ACs on a monthly lease model, Circolife makes this critical resource available to a much larger population.

Smart Joules

Business Model Innovation: Cooling-as-a-service for commercial buildings

Smart Joules provides sustainable, energy-efficient cooling as a service that takes the upfront capital investment out of the equation, leading to adoption of best in class technologies for new buildings. The company also retrofits existing buildings to make cooling them more efficient.

Ecozen

Technology Innovation: Off-grid refrigeration

Ecozen's solar cold rooms ensure near-farm food preservation, significantly reducing post-harvest food losses. With a smaller sized fridge, DD Solar is taking this off-grid cooling to even smaller farms, fisheries and dairies, improving food production efficiency and farmer incomes.

Tan90

Business Model Innovation: PCM cold chain solutions as a service

Tan90 is another startup offering phase change material based cooling to food, pharma and diagnostics businesses. Additionally, **Tan90** offers a unique cooling-as-a-service model to businesses that do not own blast freezers, thus increasing adoption.

Community Cooling Hubs

While we have no real example to offer at this time, we believe that community cooling hubs offering cold air for people on extreme heat days, and those that offer food storage for farming communities, are likely to become a relevant, viable solution over time.

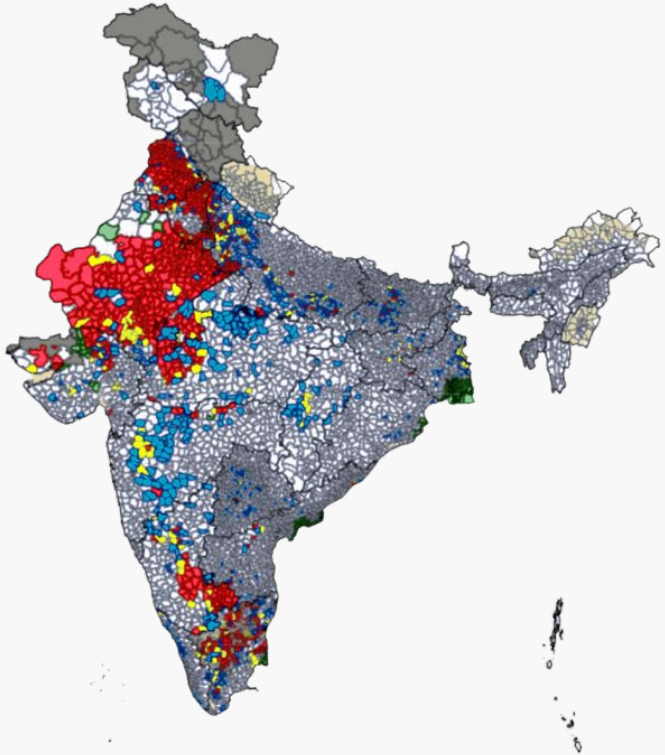
Adaptation Thesis #3: Access to Water

Water

India's traditional reliance on groundwater is showing cracks; **25%** of our groundwater is already at critical levels or over-exploited, and the situation will likely continue to deteriorate as monsoon patterns shift. While some countries have solved for the water problems by building grand desalination plants, India cannot afford either the land or energy costs needed for this.

Instead, technology innovation and deployment at scale are needed to harvest rainwater, reduce waste water and process more of it back into productive use, and even generate water from new sources. We provide some examples of water businesses we are excited about in the water space. We see them as flag bearers for a segment that is bound to grow as pressures and needs increase. However, capital will be key in this sector that has traditionally been heavily reliant on government engagement.

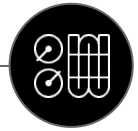
Figure 17: *The current state of India's groundwater sources (as of 2022–23)* (Source: *Indian Institute of Technology Hyderabad*)



Groundwater district categories	Number of districts	Percentage
Safe	4,793	**73%**
Semi-Critical	698	**11%**
Critical	199	**3%**
Over-Exploited	736	**11%**
Saline	127	**2%**
Hilly Area*	-	-
No Data	-	-

** Groundwater categories in hilly areas are not captured in the model*

Three ways to invest in access to water



Innovation in Wastewater Treatment

Only 28% of wastewater in the country gets treated. India has the potential to treat and utilize up to 80% for non-potable purposes, reducing the strain on potable water uses. With this gap, technologies are emerging: from improving treatment processes and treated outputs, to the setup of decentralized plants.

Indra Water uses electrolysis-like technology to create a superior solution compared to traditional chemical or biological wastewater treatment plants. Their plants are compact, affordable, and finding traction across a range of industries and residential buildings.

What makes it investable:
There is a huge market and positive policy push towards better wastewater treatment and recovery outcomes. The business model is private capital friendly: they sell the equipment upfront and earn tail revenue from monitoring and maintenance.

Community Water Purification Plants

Only 29% of rural households have access to water in their homes. The measures to enable drinking water access for rural communities have been hit and miss so far. Investing in water supply infrastructure is not enough. Water sources are often unsafe and polluted through point and non-point sources, and often there are not enough treatment systems to make them safe.

Rite Water, however, has found a winning formula to tackle these twin problems by combining solar power and purification technologies for their decentralized water purification systems, solar-powered water treatment units, and mobile water ATMs.

What makes it investable:
Impact capital and ten years of history has brought Rite Water to a scale that makes it attractive to mainstream investors. Diversification in their product and market segments provides risk mitigation when compared to the many failures associated with water ATM businesses.

Atmospheric Water Generation

Atmospheric water generation (water-from-air) has emerged as a solution to develop alternative water sources that reduce the strain on our overexploited groundwater and limited freshwater sources. This is certainly the most nascent of the water's adaptation solutions, but its promise to create an alternate, and potentially unlimited source of water (from water vapour) holds a lot of appeal.

Uravu Labs creates water from air, using solar energy to power its innovative technology. Their focus currently is in targeting the premium packaged water segment, where cost competitiveness is more attractive at the early stages of the sector.

What makes it investable:
While it is early days and the technology and the water generated is still expensive, we see a potential for this technology to future-proof water. Given the high upfront cost, there is a need for debt investors to fund early customers, thus creating a pathway to scale.

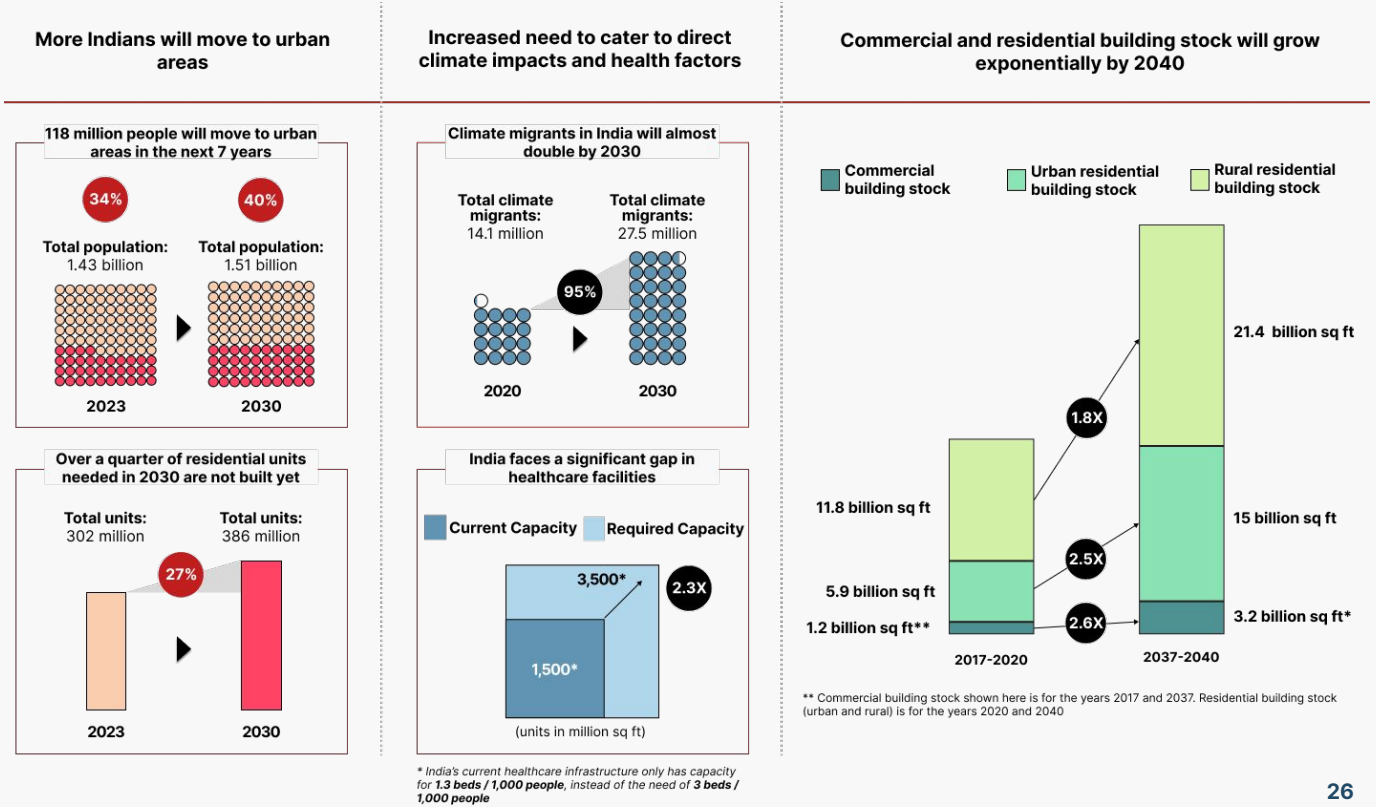
Adaptation Thesis #4: Build Better Infrastructure

Buildings

Buildings get their fair share of attention in the climate debate, mainly due to their large carbon footprint — buildings account for 25% of India's emissions, a number that will grow quickly as we build more. The likely increase in construction from now to 2030 offers an opportunity to build better.

New buildings already focus on monitoring energy consumption and finding ways to make cooling, lighting and water usage more efficient. But we now need to also factor in the impact of climate events (floods, landslides, storms) on building structures. Construction technologies and building materials are evolving to mitigate these, and also be a tool for positive adaptation action. Rapid construction for disaster relief is one such area, while affordable construction solutions have an important role in rehousing climate migrants, and increasing the stock of housing and critical facilities like health centres for a growing urban population.

Figure 18: *The demand factors that will drive opportunity for new building infrastructure in India* (Sources: Action Aid, India Cooling Action Plan, India Energy Transformation Platform, Knight Frank, World Bank)



Three ways to invest in adaptation infrastructure

Fast Micro-Construction

India has between **18 million to 50 million** shortfall in homes that need to be constructed. Affordable housing has been a consistent policy focus in India, yet the country is struggling to grow and bridge housing gaps. Traditional "slow" construction faces challenges with affordability and time delays that only exacerbate the problem — factors which have created the market for fast micro-construction.

Modulus Housing builds prefabricated foldable structures that enable rapid micro-construction at scale. These structures can be deployed at even the remotest locations within **30** to **60** days, and have been used to build COVID-19 response centres, primary healthcare clinics and rural education infrastructure, in India and Africa.

What makes it investable:
Modulus is a pioneer in solving the significant market gap in building rural infrastructure for health, training, farmgate storage and affordable housing. The need and demand for all these segments is likely to grow as climate change effects necessitate better infrastructure.

3D Printing with Sustainable Materials

3D printing of buildings operates against a similar backdrop as fast micro-construction. The difference is the former uses an on-site construction approach. 3D printing can offer benefits in cost reduction (through precise material use which limits waste), use in hard to access locations (an asset for disaster relief), and ability to automate complex designs based on different settings.

Tvasta aims to transform micro-construction by deploying advanced industrial 3D printers to digitise micro-construction. Their technology expedites the construction process, and also enhances sustainability and resilience through the use of eco-friendly materials.

What makes it investable:
Although early in its journey and traction, Tvasta's technology has the potential to deploy affordable solutions at scale, and enable fast response when there is a need to build disaster relief camps, climate migrant housing and trauma centres.

Climate-Proofing Roads

Buildings are not the only critical infrastructure facing challenges against weathering in a warming world. India's road network has faced issues for years, but the additional effects of increased rainfall intensity, heatwaves, and flooding will exacerbate these stresses, with adverse consequences for the country's infrastructure network — roads account for **71%** of the country's freight and **85%** of the passenger transport.

Bitubin is making road construction sustainable and climate resilient, using innovative materials that make roads perform better in high rainfall conditions and extreme weather.

What makes it investable:
Road infrastructure is key to climate-proofing our cities and ensuring smooth transport and disaster management. The sector has significant policy push and funding, with a **$500 million** Green National Highways Corridor Project (GNHCP) already in place to mainstream resilient and green technology for national highways around India.

Adaptation Thesis #5: Our Top Picks in Adaptation Data, Analytics & Finance

Weather Forecasts and Early Warning Systems

Early warning systems possibly provide the highest return for adaptation investments. At this point, these systems are being used largely by state and central governments to warn of floods, hurricanes and cyclones, or by financial institutions to assess the health of their credit portfolios. This has however, led to the emergence of many private sector startups that offer these technology solutions:

- Using satellite imagery and drones to provide location-specific intelligence; successful examples like **Satsure** already exist in the space.
- Combining sensor- and mobile-based systems with data, analytics and AI / ML modeling can provide insights to governments, businesses and households to effectively respond to weather events and threats. Platforms like **Satsure**, **Satyukt** and **Greensat** provide real-time actionable data on weather updates, soil health, pest forecast, and land area mapping to help farmers make accurate and timely interventions.

Climate Resilience Intelligence

Climate dialogue for corporations has so far focused on their GHG emissions and net-zero goals. But large companies are realising that there is an additional need to manage risk to their assets and business continuity, as climate change effects become more pronounced. Indian banks have also identified climate change as the biggest source of systemic risk.

Business intelligence startups are helping companies forecast, measure and protect against this climate risk. The likes of **Blue Sky Analytics** and **Ambee** are building environmental datasets that enable corporations to make better climate risk decisions.

What is missing though is a holistic approach to managing and addressing these identified risks. While every consulting firm has jumped into the fray to "manage climate risks for large corporations", we expect a real-world solution to emerge; one that builds an ecosystem of partners to manage a variety of physical risks, and brings capabilities to build redundancy in assets, supply chains and technology systems.

Parametric Insurance

As natural disasters become more frequent and severe, the traditional insurance models that rely on historical data of losses and premiums no longer remain relevant. Traditional insurance also has lengthy loss evaluation and payout processes.

But when disaster strikes, vulnerable populations need relief and recovery capital quickly. Parametric insurance is solving for this by creating simple products with fast payout processes, linked only to the occurrence of a weather event (or an agreed magnitude thereof).

Farmers are the obvious starting point for parametric insurance in India, with firms like **Ibisa** and **MistEO** offering innovative weather protection insurance solutions to agriculture value chain. This parametric insurance provides coverage against excess rainfall, excess wind speed and drought.

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Roadmap to 2030:
Funding Climate Action

India needs $108 billion a year until 2030 for climate action

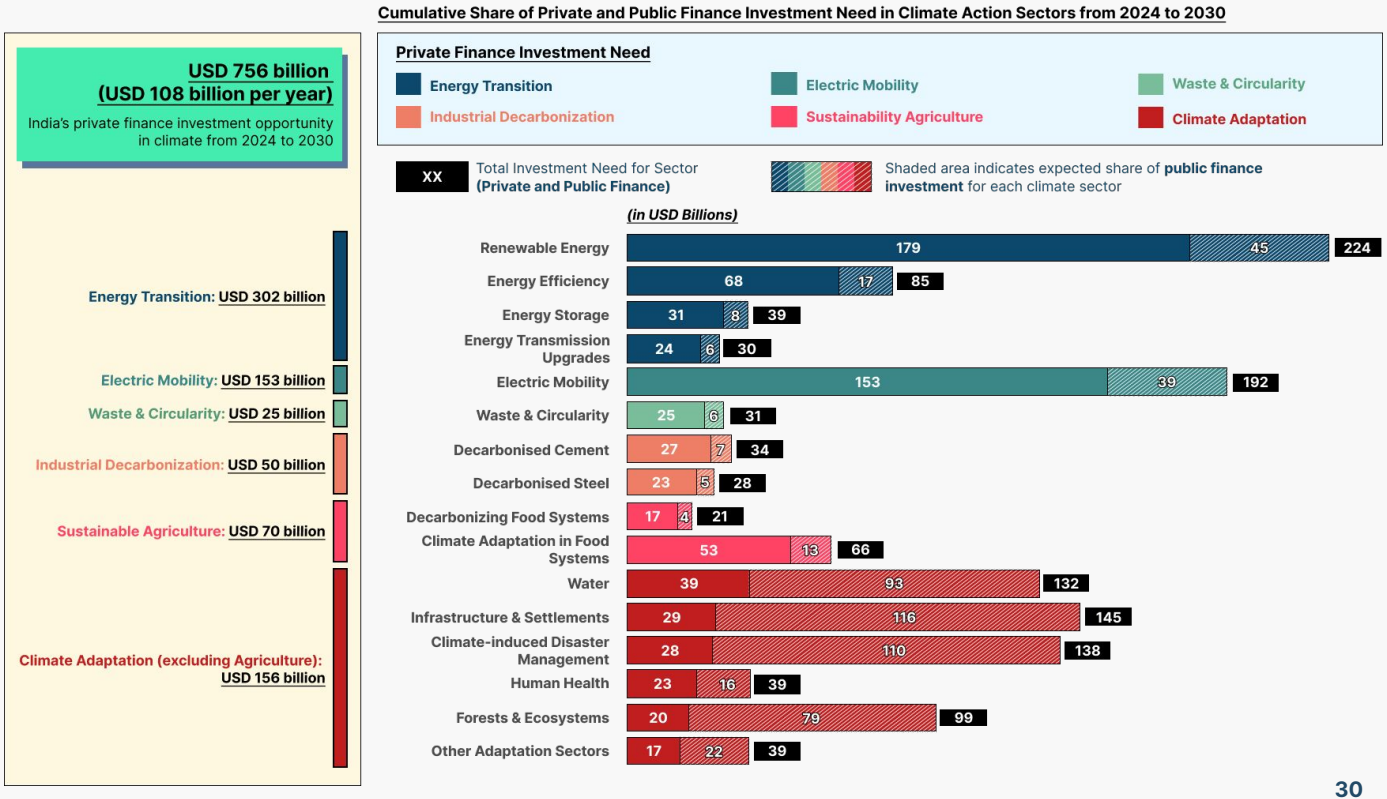
Private finance involvement is varied across climate action sectors

Figure 19 provides an overview of the overall investment need across climate mitigation and adaptation sectors, classified into public and private finance involvement.

Mitigation may offer more opportunity for private finance, but it is crowded, as the pace of the startup pipeline is a limited factor.

Private finance has a smaller role in adaptation today, but it could provide greater opportunity. Competing funds are limited, the need (and conversation) is growing, and importantly, a pipeline of investable startups is present. Demand and need for adaptation will increase beyond 2030 as climate change effects increase. The heavy government involvement in adaptation may even evolve over time — something we have seen in waste, a traditionally public services and informal sector, now creating increased opportunities for private enterprises and finance.

Figure 19: *India's overall investment need and private finance opportunity across climate action sectors from 2024 to 2030*
(Source: Climake analysis)



The current stage of investing in climate mitigation

Figure 20: *Capital need across current technology and infrastructure stages in different climate mitigation sectors (Source: Climake analysis)*

Mitigation Sector	Private Investment Needed Until 2030	Type of Capital Needed	Current Stage and Gaps
Renewable Energy	USD 179 billion	Growth equity with private equity / infrastructure-like returns and project debt is needed to scale the sector **2.5X** towards 500GW in capacity.	Solar and wind are both mature sectors with enough growth capital available; new sectors like biomass and small nuclear still face funding challenges that need addressing.
Energy Efficiency	USD 68 billion	Capital expenditure to retrofit existing factories, commercial buildings and home with efficient equipment; new buildings will also need significant investments.	While many early stage startups exist in the sector, investors have struggled to build conviction and fund these companies beyond seed / Series A. Debt for the sector is widely available.
Energy Storage	USD 31 billion	Investments until 2030 will likely focus on lithium-ion batteries but research in new battery technologies is needed now to ensure adoption beyond 2030.	Funding for LiBs and related infrastructure is available both as growth equity and debt; new chemistries are in early stage of evolution and will need VC / growth capital.
Energy Transmission Upgrades	USD 24 billion	Demand-side upgrades are driven by electricity DISCOMs and need significant upfront capital expenditure.	Investors are wary of the customer credit risk; projects need to be well designed for timely payments with escrows etc. to ensure a steady flow of capital to this segment.
Electric Mobility	USD 153 billion	EVs are expected to see significant capacity expansions across all vehicle classes as well as related infrastructure.	Investors tend to favour large, established companies to back. While sufficient growth capital is available, more focus on innovation is needed to improve vehicle and battery performance.
Waste and Circularity	USD 25 billion	Capital expenditure to set up projects that convert waste to high quality outputs for full circularity.	Companies need significant capital to scale beyond initial proof of concept; investor appetite to provide large investments to early stage companies with low levels of scale is limited.
Industrial Decarbonization	USD 50 billion	Capital expenditure for large steel and cement plants; technology providers implementing net-zero solutions will need to raise VC equity and working capital.	CCUS accounts for **56%** and **87%** of emission reduction in steel and cement, respectively. These solutions are highly experimental and untested at this point.
Decarbonizing Food Systems	USD 17 billion	Investment in converting assets like pumps, tractors and other on-farm equipment to renewable energy.	The sector has significant subsidies under the PM-KUSUM scheme; on-ground implementers will need to raise growth equity and working capital to meet high demand over a short time frame.

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Annual mitigation investments need to grow from USD 20bn to USD 75bn

Half of mitigation need will be for Infrastructure

About half of the **USD 756 billion** in investment needed by 2030 is what we call infrastructure investments. These are capacity additions in renewable energy, energy transmission infrastructure and electric mobility.

Business models in these sectors are well established. Large, scaled up companies already exist. Even when considering a new segment for India, like electric buses, chances are that the hundreds of millions needed for investment will be made into a legacy company diversifying into electric mobility and not a startup.

Investors in these segments need to set up funds that expect the maturity and return profile of infrastructure funds. This is increasingly a space for large investors: DFIs, banks and private equity funds that can make **USD 100 million+** investments.

This also means that energy transition, and increasingly, electric mobility, are no longer spaces for early-stage startups or venture capital. There is still innovation needed in technology but we believe that **90%** or more of investment in these sectors will be into large, already established enterprises.

What should the other half do

Over the past year, we have spoken to multiple new climate funds being set up, as well as with DFIs and growth equity funds looking to invest in climate action. All of these funds are looking to make investments of **USD 25–50 million** in growth businesses. That pipeline, sadly, does not exist today. There are maybe **10-odd** companies beyond renewable energy and EVs looking to raise capital at that size, but such developments mean many more funds chasing the same pipeline.

Instead, funds need to focus on **the missing middle**. There are hundreds of startups today, in energy efficiency, sustainable food systems, waste and circularity. All have raised small seed rounds and found their first customers. These startups are not ready for **USD 25 million** rounds yet: what they need are patient investors for their initial growth spurt. This **USD 5–10 million** investment is where today's pipeline of startups is. Yet too few funds are focused here, and even those are looking for companies with large traction and profitability. **Climate funds:** we need you to refocus and fund this "riskier" pipeline or the late stage startups will never emerge.

The early-stage ecosystem needs to build for the future

While our analysis largely focuses on the investment needs until 2030, there are many more sectors that we believe will become significant beyond that. While it is early days for carbon capture or alternative materials, innovation in these segments has to be supported now.

India already has a robust network of incubators and accelerators, many of which are based in engineering colleges and universities. That said, most programs focus on the near term: we have seen at least five programs targeting waste and circularity startups just in the past year.

Incubators need to go beyond **3–6** month programs that end in investor demo days. What these early sectors need is a more sustained support: lab and testing infrastructure, help in onboarding large corporations and governments as customers, and guidance to navigate a new segment as it evolves. Institutions like Third Derivative and Indus DC are great flag bearers of this model. We need a lot more of them in the climate ecosystem.

Investing in adaptation will need new structures and approaches

Adaptation needs new thinking

The initial use cases for adaptation financing we have identified as investment-ready, all of them have a defined revenue stream and a potential pathway to investor returns. However, most of the business models are untested, which means that investors will need to take a leap of faith to make that first sectoral investment.

Most adaptation interventions also require physical infrastructure that will need a mix of equity and debt capital. At both places, building a blended finance layer to crowd in more commercial capital can be catalytic.

That itself is not enough though. The unprecedented need for adaptation capital, and the sense of urgency means that investors need to look beyond existing playbooks to build adaptation-specific investment vehicles and strategies.

Adaptation-only funds need to arise

Building adaptation focused funds — both debt and equity — can be hugely impactful.

Adaptation encompasses a wide range of mostly nascent technologies or markets. Building a fund focused on, say, sustainable agriculture or cooling, will enable the funders to back the right plays, ensuring higher probability of success and avoiding maladaptation.

Such funds can also find common ground with like-minded investors to back them. **Circulate Capital** provides a good template here: as the first fund focused on waste and circular economy, not only did they back the first set of waste processors that became large businesses in India, they also brought in interested corporations (say **Coca Cola**, with their strong interest in reducing plastic waste) to back the fund. Similarly, like-minded LPs in an adaptation fund could make access to growth capital easier by making future investments in investee companies as they mature.

Bundling adaptation and mitigation

Beyond the near-term investable segments we have outlined, there are many more adaptation needs that do not have a clear revenue or return stream. For these, it might pay to experiment with ideas such as bundled adaptation and mitigation projects, where revenues and profits from mitigation are shared with the project co-designed to provide adaptation benefits.

Globally, the 5 adaptation sectors that have received the most funding (*precision farming, sustainable farming, sustainable batteries, novel foods,* and *energy efficiency tech*) also promise climate mitigation benefits — reducing the carbon footprint compared to conventional farming methods and energy usage. Founders of adaptation companies also cite their ability to satisfy multiple impact themes and investment mandates as an advantage in attracting finance.

Carbon credits have a role in adaptation

Take the example of mangroves: planting more of them acts both as a physical barrier to storm surges and as a carbon sink. Yet, no logical revenue can accrue in the immediate term for those in the mangrove business. Such high-impact interventions have attracted the attention of carbon buyers. Despite the volatility in voluntary carbon markets over the last couple of years, interest in nature-based solutions and agroforestry, both highly impactful adaptation solutions, continues to increase.

Biochar is another good example. While it has potential both for carbon sequestration and improving soil quality, the current cost of manufacturing biochar is prohibitive to achieve scale. Add carbon removal credits that are available for biochar and suddenly the technology becomes viable and scalable. Carbon markets are increasingly paying a premium for high-quality projects, and many with adaptation co-benefits will qualify.

India's investor landscape will evolve as climate sectors grows

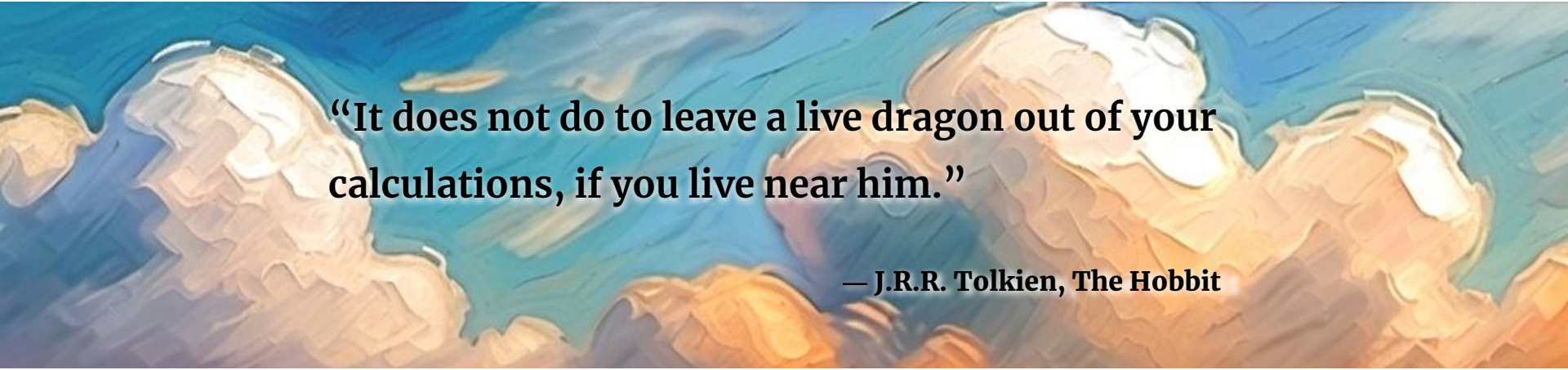
Figure 21: *Climate investment opportunity trends until 2030* (Source: Climake analysis)

○ Limited opportunity ● Current opportunity ● Future opportunity

	Energy Transition	Electric Mobility	Circular Economy	Industrial Decarbonization	Sustainable Agriculture	Climate Adaptation	New Battery Chemistries	New Materials	Carbon Capture and Use	Sustainable Fuels
1. Incubators and early-stage VCs Few will back breakthrough innovations with longer lead times; more focus on incremental innovation with near-term adoption cycles	○	○	●	●	●	●	●	●	●	●
2. Climate-only Funds More climate-only funds will emerge, especially focused on specialised segments	○	●	●	●	●	●	●	●	●	●
3. VC and Private Equity Funds VC and PE funds may need to participate in earlier stages to access more pipeline	○	●	●	●	●	●	●	○	○	○
4. Family Offices Strategic lens can see them play a key role in backing more breakthough innovations	○	○	●	○	●	●	●	●	●	○
5. Corporate Investors Access to climate solutions related to core business will drive investments	○	○	●	●	●	●	●	●	○	●
6. Development Finance Institutions Significant role as a debt and equity provider for climate, especially in derisking growth	●	●	●	●	●	●	○	○	○	○
7. Invits & Infrastructure Funds Will pick up a larger share of investments as sectors and asset portfolios mature	●	●	●	○	●	○	○	○	○	○
8. Carbon Markets Adaptation and circular economy will be a significant driver for carbon markets	○	○	○	●	●	●	○	○	●	●

** What is given above are expected sector trends. One-offs cases of investors participating in limited / future opportunity areas is likely to occur. Post 2030 trends will be different)*

Endnotes



> “It does not do to leave a live dragon out of your calculations, if you live near him.”
>
> — J.R.R. Tolkien, The Hobbit

Climate change may be the dragon of our times, but we also view climate action and climate finance as the biggest opportunity of our generation.

We hope that climate entrepreneurs and investors can both take back ideas for future action from this report. And if you are one of those on the fence, we hope that we can nudge you to take a plunge into the world of climate finance.

We are happy to chat more, so do reach out to us with your thoughts, comments, or questions. We are at: hello@climake.co

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Climake was founded in 2020 as a platform to make climate finance more accessible. Climake focuses on improving access to equity and non-dilutive capital, for startups, and to support investors to improve funding flows to the climate action, especially into emerging sectors. Climake's work focuses on 4 core areas: investment advisory for high-potential climate startups, development and adoption of innovative financing structures to mainstream climate innovations, research and knowledge sharing on climate finance trends, and advocacy with investors to focus on climate action.

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Unitus Capital (UC) is an investment bank that arranges capital for companies positively impacting underserved communities and the environment. Since its launch in 2008, Unitus Capital has been committed to delivering best-in-class investment services that unlock the capital needed to fuel the rapid and sustainable growth of impact businesses. It focuses on three broad themes: technology, financial services, and climate solutions. With operations in Bengaluru and Mumbai, it delivers its services to clients across India, Southeast Asia, and Africa. To date, Unitus Capital has raised over USD 4 billion in capital for more than 150 enterprises.

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