standard chartered

India and the energy transition

Corporate perspectives

Table of contents

India is one of the fastest growing economies in the world and holds significant potential for sustainable, lower carbon growth. Central to realising this opportunity is the energy transition, which will unlock new opportunities and spur further economic development, alongside emissions reduction commitments.

We continue to closely engage our clients across sectors keen to participate in the transition to a lower carbon economy, particularly in areas such as clean energy, sustainable infrastructure, and transition finance. Through these interactions, what we continue to see from corporate India is growing appetite to transition, with many expressing a strong interest in opportunities that support decarbonisation and sustainable growth as evidenced in this report.

What is also clear is the need for deeper collaboration—especially in expanding local manufacturing, strengthening policy support, and unlocking sustainable finance. With demand for finance for the transition and carbon markets set to grow sharply, Standard Chartered will continue to come alongside our clients and partners, to help deliver resilient, competitive lower carbon growth.

PD Singh
CEO, India & South Asia

We extend our gratitude to our clients for their participation in our inaugural energy transition survey.

As India's economy expands, sustainably meeting its energy needs and leveraging opportunities will be crucial. Our survey reveals a strong commitment from our corporate clients to adopt lower carbon solutions to address these growing demands. Additionally, we see significant potential for India's manufacturing and technology sectors to excel in providing low carbon solutions both domestically and internationally.

Standard Chartered is committed to supporting our clients in achieving their energy transition and sustainability goals, harnessing our extensive experience in sustainable finance and capital investment in low carbon projects and infrastructure.

Ben Daly
MD, Global Head of
Transition Finance

01

Executive summary

India is one of the fastest growing economies in the world with an annual average GDP growth rate during the past 25 years of 6.3% (World Bank, 2025), and with Standard Chartered economists expecting growth to reach 6.5% during 2026 and 2027 (Lee & Sahay, 2025).

The need to sustain these growth rates is high as India seeks to further improve the living standards of its growing population of currently more than 1.4 billion. To do so requires India to rapidly expand its domestic power generation capacity as electricity demand may increase by 200% between 2022 and 2042 and as the country seeks to create energy security for its economy.

Enabling such an expansion of power supply in a way that ensures the integrity of the country's ecosystems and limits the impact on the environment is a major challenge and requires widespread adoption of low carbon technologies and solutions. To assess the likelihood of this, we surveyed a range of Standard Chartered Indian corporate clients.

This report highlights the results of this exercise and shows that while corporate engagement with low carbon energy solutions is already high, investments in these solutions look set to rise further. The appendix of this report outlines the broader aspects of India's energy-related challenges and targets.

Key findings

Corporates are optimistic about India's net zero ambitions

Although 95% of surveyed Indian corporates are concerned or very concerned about the general state of the environment, we find that 83% of them believe that India will achieve its net zero ambitions. Meanwhile just 53% of surveyed Indian companies believe that other countries will achieve their net zero targets.

Engagement with low carbon solutions is high

The relatively optimistic view held by the surveyed corporates regarding the outlook for India's environment may well be driven by their own engagment, as 83% of them have already established net zero strategies, while 93% have actively started to invest in emission reducing solutions. When asked about their future investment intentions, almost all surveyed companies (98%) indicated that investments in sustainable solutions would likely increase during the next five years. The survey also shows that 75% of Indian corporates have the intention to support and influence other companies to become more sustainable, suggesting that supply chain decarbonisation is a priority.

Broad agreement on the solutions with the strongest growth potential

The survey shows that solar, energy efficiency solutions, and recycling are central to corporate strategies to reduce emissions. Solar ranks as one of the solutions with the strongest growth potential as it was picked by almost all (98%) of the surveyed companies. Wind and hydrogen were highlighted by 55% and 53% of companies as having strong growth potential. The need to electrify the transport system is clear as transport emissions already account for 12% of India's total GHG emissions despite overall vehicle penetration rates being 85% and 95% below levels seen in China and the EU. The surveyed corporates are optimistic about the prospect for an electric car and motorcycle fleet in India, with 83% stating that India's transport system will be fully electric by 2050.

Sustainable finance and carbon markets are key enablers

Corporate funding requirements associated with the energy transition are likely to be high considering that for India to reach net zero requires overall annual investments of as much as circa USD 300 billion (see appendix). The sustainable finance market and the development of carbon markets may well become significant enablers to help corporates fund their transition-related investment needs. The survey showed that less than 40% of Indian corporates have so far engaged with sustainable finance solutions, while just 32% have been exposed to carbon credits.

Three levers to accelerate India's adoption of low carbon solutions

Despite the high level of optimism displayed by corporates in the survey, data also points to several factors that could slow down the pace of decarbonisation. Based on these, three actions are critical for accelerating the energy transition in India.

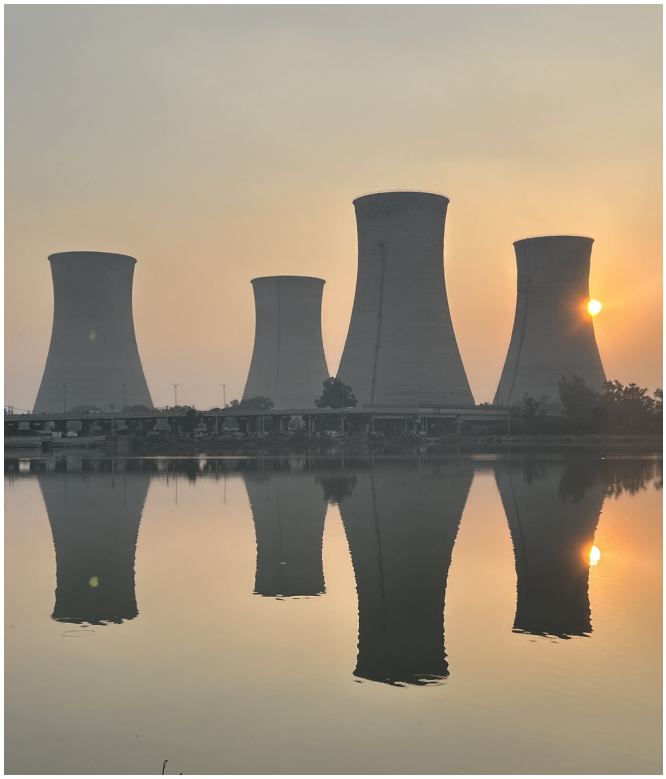
- **Expand local manufacturing capacity of key solutions.** The survey highlights that some low

emission solutions are not yet offered at sufficient scale (e.g. biofuel or charging infrastructure for EVs), that some technologies are too expensive (e.g. batteries, hydrogen and EVs) or that related investment costs are too high. These issues are interrelated and may be caused by the relatively early stage of development of these technologies which means that they suffer from a lack of economies of scale which limits supply and keeps costs inflated. These headwinds can be reduced by aggressively expanding local manufacturing capacity of low emission solutions, especially those with the highest cost premium or greatest risk of supply (e.g. EVs, batteries including recycling, and hydrogen). This can be justified by the potential size of India's economy, the fact that it enhances supply security and that this strengthens the resilience of the Indian economy.

- **Expand government support schemes for low carbon power solutions.** The survey suggests that financial incentives, regulation, and consumer willingness to adopt a more sustainable lifestyle are key to drive greater adoption of low emission power solutions. The Indian government has already established a range of programs to support the development and take up of low emission power solutions, however, it could explore whether it can expand these to help scale their supply and demand more. Other government actions that would help accelerate India's transition include the introduction of tighter mandatory emission targets and compliance carbon pricing schemes for key sectors.
- **The financial sector could engage further.** Securing sufficient funding to meet decarbonisation-related investment requirements or invest in low carbon solutions is a key challenge for Indian corporates. The survey suggests that financial firms play a key enabling role. Of the companies that had engaged with sustainable finance, 69% noted that their banks had become more active in offering these products. In contrast, 53% of companies who had not yet raised sustainable finance highlighted that they were unconvinced about the benefits of it while 35% highlighted a lack of engagement from their banks. This suggests that banks need to become more active in offering a broad enough suite of sustainable finance products and explain the benefits of them better if Indian corporates are to be successful in raising dedicated funds to support their low carbon investment strategies.

Risk of stranded assets may be higher than expected

The most recent energy plans from the Indian government introduced in 2022 assume an increase in the installed capacity for coal and lignite by 2032, while its long-term low-carbon development strategy highlights that coal will be needed for power and energy including grid stabilisation. The Indian corporates that were surveyed hold a much more negative view on the outlook for coal as only 21% believe that there will only be a limited reduction in coal usage by 2050 whereas almost 40% believe that it will have been largely or completely phased out by then. When asked about the outlook for oil consumption in India, the survey shows that 73% believe that demand will be at least significantly lower than what it is currently. If true, this scenario may have implications for financial investors as it suggests that the risk of assets in the coal and oil sector in India becoming stranded is higher than if current government projections are true.



02

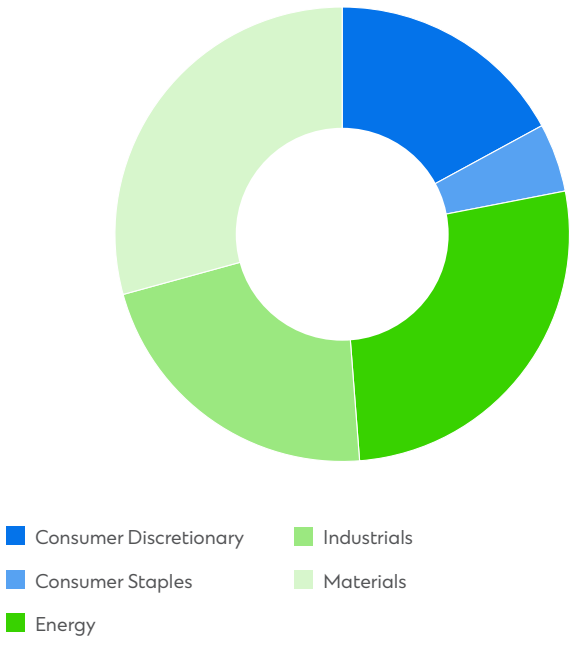
India’s energy future

The task to transition India's economy towards a low carbon one is challenging, not least considering that the country simultaneously aims to lift the living standards of its population of more than 1.4 billion people and meet a likely strong increase in power demand. The appendix of this report provides an overview of the challenges that India faces in relation to these factors as well as the strategies and targets adopted by the Indian government to meet them. One of the key requirements to achieve these targets is that the corporate sector engages with low carbon solutions and invests in reducing their emission profiles. With that in mind, a survey was conducted with a focus on a range of Standard Chartered corporate clients across material and emission intensive industries to find out what their view is regarding India's transition requirements and strategy.

Over 40 high profile corporate clients were selected across 5 key sectors: consumer discretionary and consumer staples, energy, industrials and materials (Figure 1), collectively generating total revenue in their last fiscal year of more than USD410 billion (Figure 2). The majority of this revenue, however, was contributed by oil and gas, chemicals and steel companies which makes the survey results more interesting considering that these emissions-intensive sectors are often perceived to be the most negatively affected by country decarbonisation objectives.

FIGURE 1

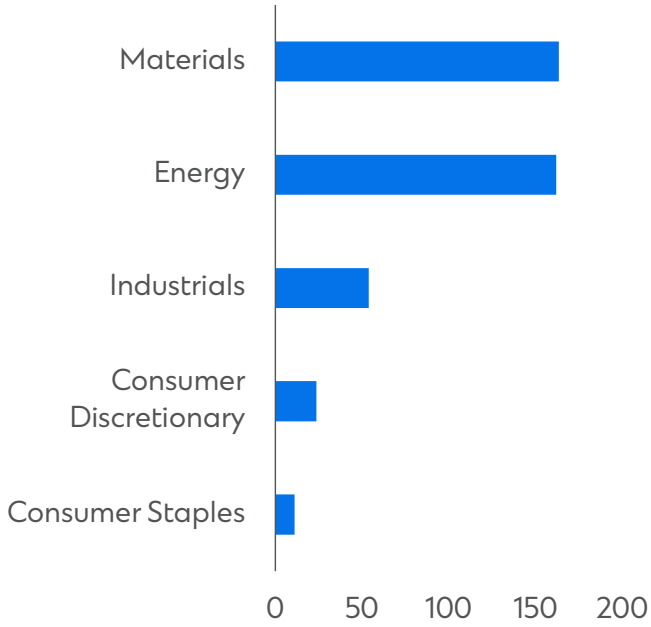
Mix of surveyed companies by sector



Source: Standard Chartered

FIGURE 2

Revenues of respondents by sector
Latest FY year in USD billion



Source: Companies surveyed, Standard Chartered

Survey questions

To assess how Indian corporates view the implications and outlook of the government's strategy to decarbonise the economy, a survey was put together consisting of more than 30 questions grouped into four different categories. A key objective was to understand the level of concern that corporates have over the environment and whether decarbonisation is likely to be achieved. A second group of questions discuss the approach and strategies taken by Indian corporates in relation to their own emission footprint. Several questions then asked corporates about their views on the outlook for low carbon solutions as well as traditional fossil fuel power sources. Finally, Indian corporates were asked about their use of sustainable finance solutions and carbon markets. The questions asked in the survey are included in the Appendix of this report.

Corporates believe that India will achieve its net zero targets

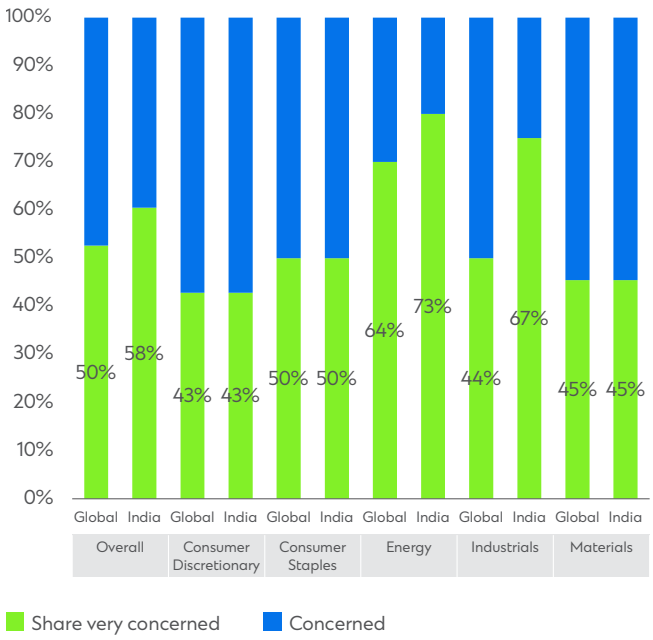
When asking corporates about their level of concern with the state of the environment globally, the survey shows that 95% are either concerned or very concerned. None of the surveyed corporates indicated a lack of concern.

Interestingly, the survey also showed that Indian corporates are slightly more concerned about the state of their local environment than that of the environment globally. Surveyed representatives of the energy sector appear more concerned about the state of the environment than other industries (Figure 3). This may be explained by the fact that the majority of these companies are renewable energy generators.

The surveyed Indian corporates are not totally convinced that global net zero targets will be achieved, as only 52% felt that this is likely or highly likely, whereas 30% indicated that this was unlikely (Figure 4). Greater confidence exists in relation to the ability of India's government to achieve its net zero ambitions with 83% of surveyed corporates indicating that this is likely or very likely.

FIGURE 3

How concerned are you about the state of the environment?



Source: Standard Chartered

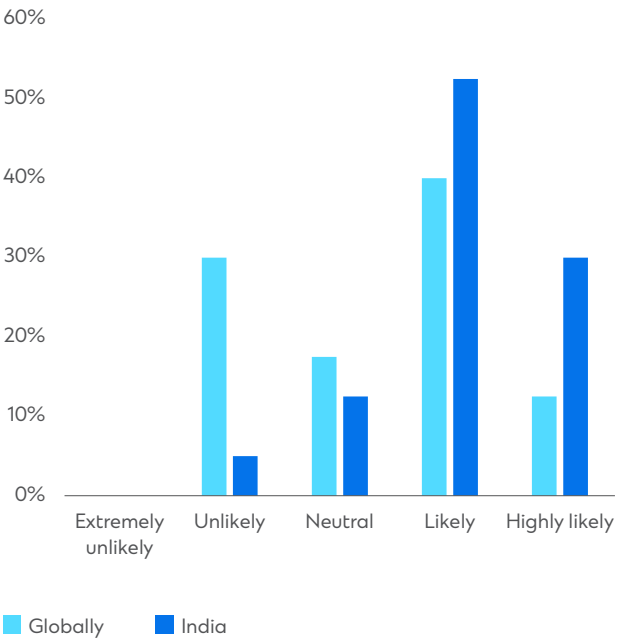
Three factors are critical to achieve long term emission targets

Indian corporates were asked what the most effective way is to achieve long term emission targets by providing them with five different drivers. Their responses suggest that to reduce net emissions significantly requires greater financial support such as tax incentives or subsidies so that corporates and consumers can invest in low carbon solutions, stricter policies or regulation that force change upon emitters and greater consumer willingness to adopt a low carbon lifestyle (Figure 5).

International harmonisation of regulation is not seen as a major factor according to the surveyed Indian corporates. This is interesting as it suggests that these corporates do not feel that inter-country differences between emission-related regulation such as the EU's Carbon Border Adjustment Mechanism (CBAM) is likely to disrupt competitive dynamics or put their own business outlook at a competitive disadvantage.

FIGURE 4

How likely is that net zero targets will be achieved?

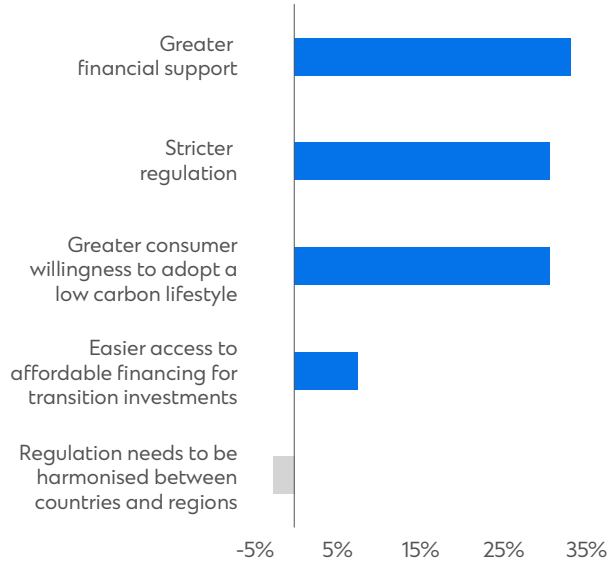


Source: Standard Chartered

Reviewing the data by sector suggests that greater financial support through taxation and subsidies would be a major catalyst to achieving net zero for industrials and materials companies in India (Figure 6). Materials companies also believe that stricter local regulation is needed to enforce greater action. The data by industry shows that this was particularly true for chemical companies. Within the consumer discretionary sector, textile companies were surveyed. They believe that achieving net zero would be more likely if financing for transition solutions was more affordable and if local regulation were to tighten.

FIGURE 5

How relevant are the following factors to achieving net zero?
(difference between (highly) relevant and (totally) irrelevant)



Source: Standard Chartered

Engagement with low carbon solutions is high and set to rise further

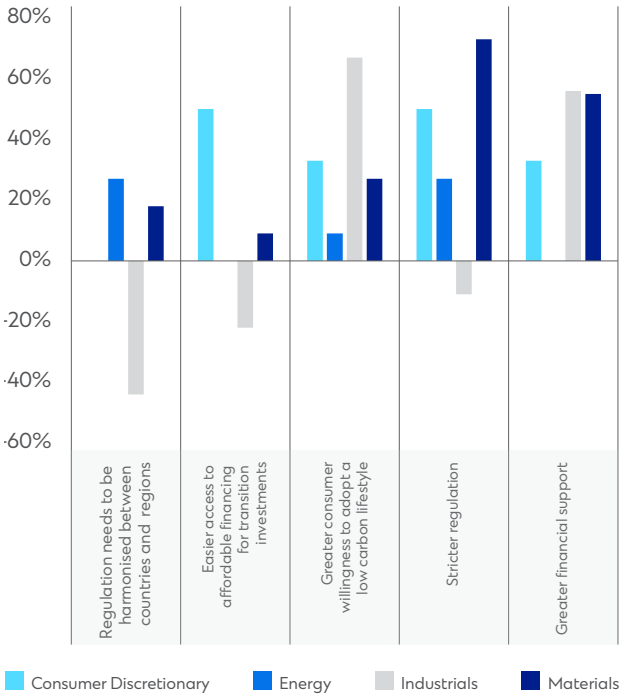
The survey results show that the high level of concern that surveyed corporates have regarding the state of the environment has caused most of them to already pivot their business strategies towards the use of sustainable solutions. For example, the data suggest that 83% of companies have already established a 'net zero' strategy for their business. Furthermore, 98% of the surveyed corporates have also actively started to invest in emission reducing solutions.

Survey data shows that that solar power (92%), energy efficiency technologies (85%) and recycling (77%) were the most popular solutions to reduce a corporate emission footprint (Figure 7). The sector-based responses for the most popular transition solutions show limited variation, especially in case of solar. Wind energy as a low carbon power source is currently less popular than solar. One of the possible explanations for this may be that wind power generation in India is less developed than solar power so less available as a low carbon power source to corporates. Energy efficiency and recycling are strategies adopted by all consumer, oil and gas and steel companies.

Almost a third of surveyed companies indicated that they are engaged with the voluntary carbon credit market. This share may well increase in the future if government legislation supports the development of carbon markets and allows corporates to use voluntary carbon credits more to offset their overall emission profile.

FIGURE 6

Relevance of factors to achieving net zero by sector
(difference between (highly) relevant and (totally) irrelevant)



Source: Standard Chartered

Decarbonising the supply chain

The survey suggests that the commitment from Indian corporates to adopt low emission solutions extends beyond their own company. When asked about their company's approach towards addressing environmental concerns, almost 75% of surveyed corporates suggested that they not only aim to become a sustainable leader in their own sector but importantly that they would seek to persuade others to do the same. This compares to 20% of surveyed companies that indicated a desire to become sustainable but that would not seek to influence others about this too. What these answers suggest is that the decarbonisation of supply chains is likely to be a key corporate focal area for many Indian companies going forward.

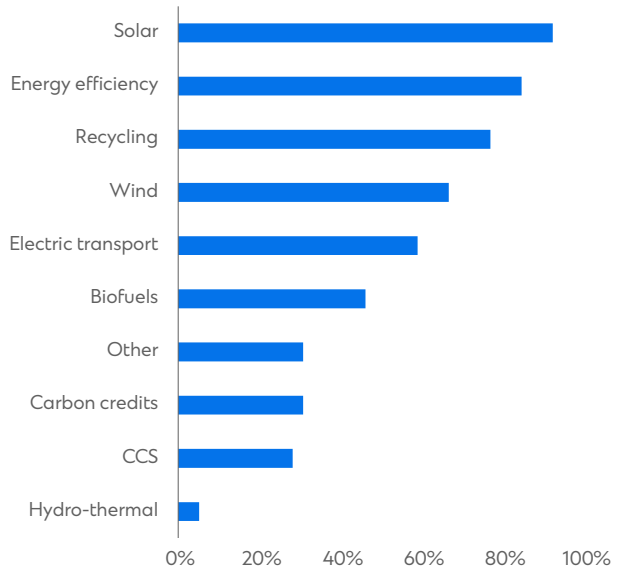
Investments in low carbon solutions likely to rise

Even though almost all surveyed companies already engage with low carbon solutions, the survey suggests that the growth outlook for these solutions remains strong. All but one of the surveyed companies indicated that they will increase investments in decarbonisation solutions during the next five years.

One of reasons that might well explain why the surveyed Indian corporates intend to expand their exposure to low carbon solutions is the fact that 85% of them believe that a low carbon economy benefits their growth outlook. This share is the lowest for oil and gas companies (33%) and the highest for renewable companies (100%). To decarbonise hard to abate sectors is challenging, however the survey suggests that in the case of steel companies, 67% are positive about the impact that a low carbon economy may have on their business. This optimism can be translated into action if decarbonising solutions such as carbon capture and storage and green hydrogen become cheaper and more readily available for Indian steel companies. This could accelerate the reduction of their emission profile and may make them more competitive.

FIGURE 7

Which transition solutions does your company use or have exposure to?
(% of surveyed companies)



Source: Standard Chartered

FIGURE 8

Which of these factors might cause you to delay investing in low carbon solutions?
(% of surveyed companies)

Source: Standard Chartered

As highlighted earlier, most of the surveyed Indian corporates have integrated recycling as a material and emissions optimisation strategy. Analysis of recycling and circularity solutions more broadly suggests that these not only help reduce a company's emission profile, but may also make a company's business more resilient as they reduce the need for virgin materials. One explanation for why Indian corporates are optimistic about the impact of a low carbon economy on their business may therefore be that they expect to make greater use of circularity solutions in the future.

Factors that might slow down investments in transition solutions

Although almost all surveyed companies intend to increase investments in emission-reduction solutions during the next five years, the survey also wanted to understand what might cause them to change their view. The biggest hurdle, cited by 63% of companies, would be if these emission saving solutions were not available at sufficient scale (Figure 8).

Another factor that may limit the near-term growth of investments in transition solutions is if the direct investment costs are too high or if companies do not have sufficient pricing power to transfer at least some of these costs onto their customers.

Overall, one can say that as long as a transition solution has not yet achieved sufficient economies of scale, it may not see a rapid acceleration of demand for it by Indian corporates as supply will be too limited and costs likely too high. Solutions that fit these criteria at the moment include hydrogen and biofuel. The survey therefore suggests that the Indian government should focus on establishing policies and procedures that help streamline the scaling of energy transition solutions. These policies could include investment grants, favourable tax treatments and subsidy schemes.

Consumer or regulatory pressures appear to drive investment decisions into transition solutions less than expected. Only 15% of companies say that they would delay investing if consumers did not require them to do so while a lack of regulatory demand is a factor for only 23%. These results suggest that engagement with sustainability by the surveyed Indian corporates is more internally or intrinsically driven rather than as a reaction to external forces. This is exactly what the survey data shows when corporates were asked which factors drove their approach to sustainability as 90% suggested that it was based on their own view.

Low carbon power sources with the greatest growth potential

The intention to increase investments in transition solutions by the surveyed companies triggers the question, which of these solutions companies are most likely to gravitate towards. As part of the survey, Indian corporates were asked to highlight which solutions have the strongest growth potential during the next 25 years.

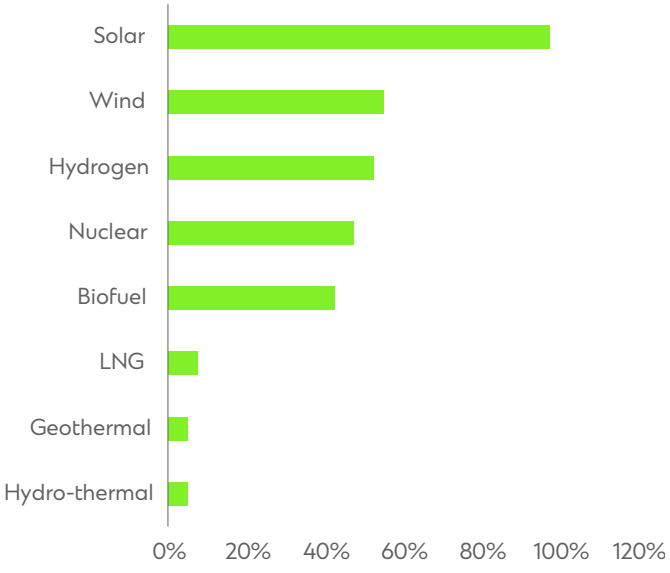
Of the 8 power sources that were suggested, solar was selected by 98% of the surveyed companies as being one of the solutions with the strongest growth potential. This was followed by wind (55%), hydrogen (53%) and nuclear (48%). LNG and geo- and hydrothermal power were only chosen by 8%, 5% and 5% of surveyed companies respectively (Figure 9). When the responses were analysed regarding the outlook for low carbon power sources by sector, minimal dispersion was seen between the views by sector regarding the most and least popular power sources. Wind energy is mostly supported by surveyed companies in the materials sector whereas oil and gas companies have a much less optimistic view on this.

The strong level of support for solar and wind displayed in the survey aligns with actual capacity growth in India and plans by the India government. Renewables now supply over 51% of power capacity and have expanded rapidly [1]. India's solar PV capacity jumped from 2.82 GW in 2014 to 110.9 GW by mid-2025 [2], as module costs declined by almost 80% since 2013. Wind power capacity has doubled over the last decade (to 51.3 GW [3]) and has strong technical potential (~1,164 GW onshore [4]). Grid and financing constraints remain (e.g. ~60 GW of planned renewable projects are held up by transmission shortfalls [5]), but scale economies and policy support (e.g. 100% FDI allowed, large clean-energy investments [6]) make solar and onshore wind very practical today.

One of the interesting results of this question was that companies in the hard to abate sectors do not seem to believe that the growth outlook for hydrogen is very strong. Only 25% of surveyed steel companies, for example, choose hydrogen as a solution with strong growth potential. This is interesting given that hydrogen is often seen as a potential decarbonisation option for steel production. India's 'National Green Hydrogen Mission' targets 5 million metric tonnes/year by 2030 (requiring ~125 GW of new renewables [7]), but today green hydrogen costs ~$5–7/kg (2–3× higher than fossil H2)[8]. Over 95% of that cost is upfront capital (electrolyzers and power electronics) [9]. Global analysis shows that hydrogen costs could

FIGURE 9

Which transition solutions have the strongest growth potential during the next 25 years?
(% of surveyed companies)



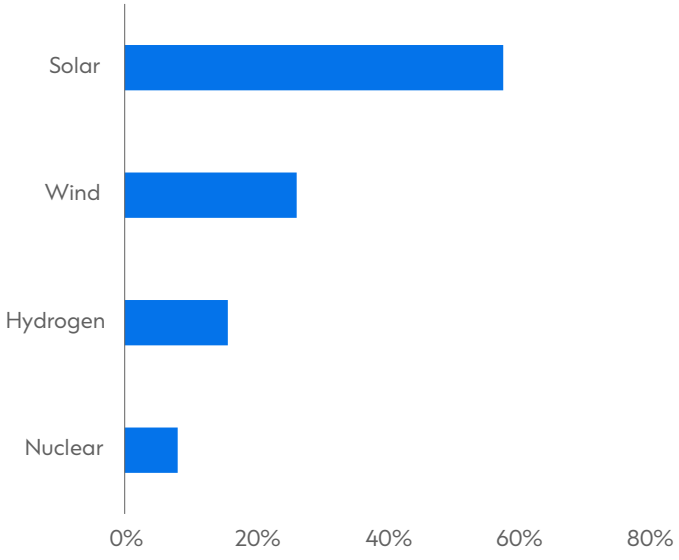
Source: Standard Chartered

roughly halve by 2030 if deployment accelerates [10], but significant infrastructure (electrolyzers, grid upgrades) and incentives will be needed before this becomes widely viable. Other potentially interesting decarbonisation strategies for the hard to abate sectors continue to be developed. One recent example includes using wood fibre to produce metallurgical-grade biocarbon that can replace coal in iron, steel, silicon, ferro-alloys and other metal production (Weyerhaeuser, 2025).

Nuclear power garners moderate interest (46% of respondents).. India's 'Nuclear Energy Mission', a key part of its Net Zero by 2070 goal, calls for ~100 GW by 2047 (from only ~9 GW today [11]). However, nuclear is expensive and slow: current plants supply just ~2% of India's power [12], and new reactors have long lead-times and large public subsidies. In the near term, nuclear will play only a limited role in corporate decarbonization (it may be a critical baseload source beyond 2030), though recent reforms (market guarantees, SMR development) aim to speed growth [13].

FIGURE 10

How do you rate the capacity outlook for the following alternative energy sources?
(% better than current expectations -/- % below current expectations)



Source: Standard Chartered

Solutions that may grow more quickly than expected

Certain technologies may have strong growth potential but what is of equal importance is to understand the degree to which this demand is already factored into capacity expectations. For the solutions with the highest growth potential, corporates were asked whether the related capacity requirements are stronger or weaker than what is already expected in India.

The surveyed corporates believe that the required capacity increase for each of the transition solutions is likely greater than current market expectations. Solar and wind are the two solutions for which the required capacity increases are most likely to be higher or much larger than is currently expected (Figure 10). The capacity outlook for hydrogen and nuclear on the other hand appears much more in line with market expectations. In case of hydrogen this might be because it remains in a relatively early-stage development with increased costs associated with that. In case of nuclear this most likely reflects the fact that building nuclear capacity tends to be a long term and highly expensive process and therefore unlikely to change significantly over a shorter timeframe.

EV and battery development depends on greater economies of scale

The need to focus on decarbonising India's transport sector is not just because the sector contributes 12% to India's energy-related CO2 emissions (Ministry of Environment, Forest and Climate Change, 2022) but that without change this could rise rapidly as vehicle penetration rates increase. Car penetration rates in India are low at 32 per 1000 people in 2022 (Ministry of Road Transport and Highways, 2025) compared to 225 for China (The State Council, 2022), 574 for the EU (ACEA, 2024) and more than 800 in the US (Ministry of Environment, Forest and Climate Change, 2022). Strong economic growth coupled with further urbanisation will likely drive India's vehicle ownership rates higher which could push transport emissions up unless the sector move away from fossil fuel power sources.

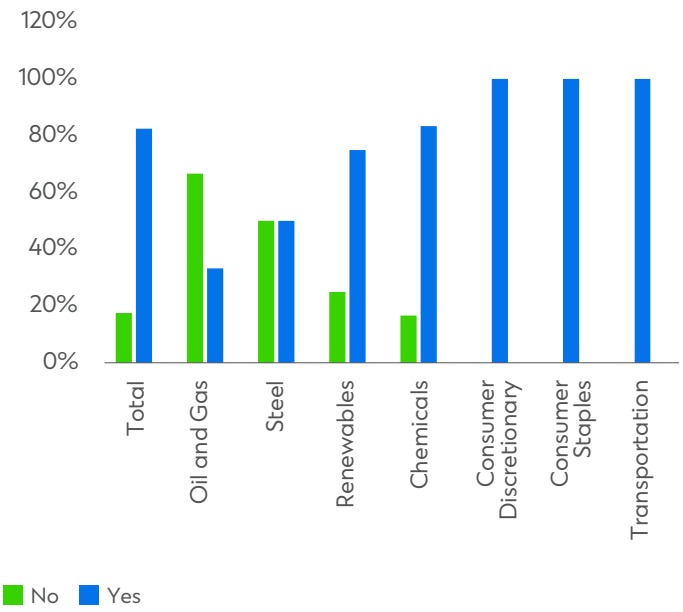
Indian corporates expect that transport will be largely electric by 2050

Engagement from the surveyed corporates with electric vehicles is significant as 53% of them have already established policies supporting the usage of electric transport. Indian corporates appear largely optimistic about the chances that the country's transport sector will electrify. When asked whether they believe that India's car and motorcycle fleet will become largely electric by 2050, 83% of surveyed Indian corporates indicated that they indeed expect this to happen (Figure 11). Sectors most convinced include transport companies. Companies less convinced about full electrification include the oil and gas sector which may be explained by the fact that their business models may be disrupted by a move away from petrol powered internal combustion engine vehicles.

When analysing the data for companies that are sceptical about full electrification of transport for their reasons, it shows that cost was a factor as 86% of them didn't expect electric vehicles to become cheap enough. A lack of charging infrastructure was highlighted as a major headwind for vehicle electrification by 71% of companies. These responses may reflect the perception that charging infrastructure is insufficient, despite government programmes put in place during the past few years to support the expansion of India's EV charging network. To accelerate the electrification of the transport system may well require the Indian government to not only increase their support for investments into local EV manufacturing capacity but also expand existing financial incentives such as the PM E-drive and FAME Phase II schemes that help draw in more private capital towards the construction of a nationwide charging infrastructure for electric vehicles. The expansion of EV charging infrastructure in India during the next few years should help address current concerns regarding charging availability.

FIGURE 11

Do you expect India's transport sector to be electric by 2050?
(% of surveyed companies)



Source: Standard Chartered

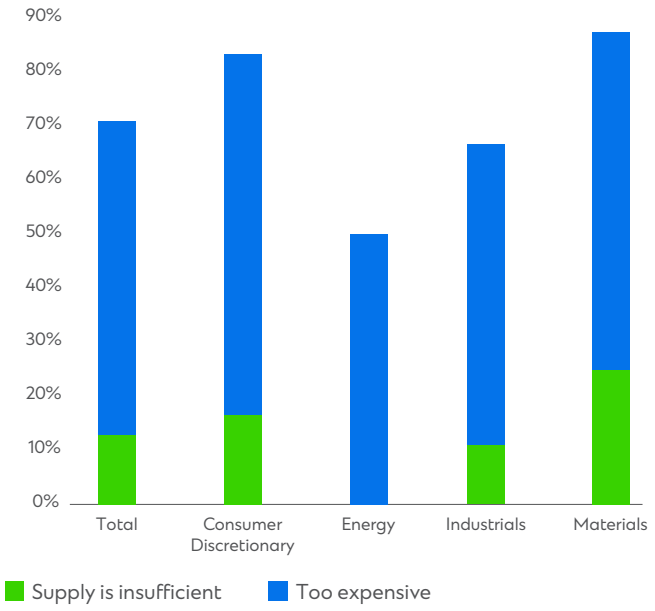
Batteries need to become cheaper for full deployment

For India to achieve full electrification of its transport and power sector also requires widescale adoption of energy storage capabilities. With that in mind, Indian corporates were asked what their views are in relation to batteries. The answers for this show again that cost and a lack of supply are major hurdles for the development of the battery sector.

Of the companies for whom batteries are relevant, 58% feel that they are too expensive, a view that is shared across all key sectors (Figure 12). An additional 13% of companies feel that the supply of batteries is insufficient at this point. These two factors are related and can be solved through greater economies of scale as increased production of batteries will lift supply and likely lower average production cost per unit too.

FIGURE 12

Which of the following factors in relation to batteries do you agree with?
(% of companies by sector for whom batteries matter)



Source: Standard Chartered

Increasing battery production capacity is not without its own challenges as it may increase supply chain pressures over the availability of raw materials including critical minerals. A potential solution that would help in this regard is the development of a successful battery recycling industry. To maximise the chances of a transition towards a low carbon power supply system and adoption of electric transport modes may well require the Indian government to put strong policies in place that support the development of local battery recycling capabilities.

Increasing supply and lowering the cost may increase demand for biofuel

Biofuel is seen as a lower carbon intense fuel alternative to traditional fuel sources. The Indian government aims to promote the adoption of cleaner fuels including biofuel as part of its attempt to develop a low-carbon transport system.

As part of the survey, Indian corporates were also asked about their views on biofuel. This showed that 53% of companies feel that a lack of supply and the cost of biofuel are limiting uptake of it at the moment. Addressing these issues could unlock significant demand as only 28% of companies suggest that biofuel is not relevant for their business while just 3% of surveyed companies are not convinced about the benefits of biofuel at all.

Corporate sentiment towards fossil fuel in India is quite negative

Current plans from the Indian government suggest an increase in the installed capacity of coal and lignite between 2022 and 2032 while the capacity of gas-fired electricity production is to remain stable (Ministry of Environment, Forest and Climate Change, 2022). Against this backdrop the survey wanted to understand how Indian corporates see the outlook for traditional, fossil-fuel sources.

Corporates believe that coal will be largely phased out by 2050

When Indian corporates were asked to provide their views on the future role that coal, oil and natural gas are likely to play, the answers show that almost 40% of them believe that coal will be largely or completely phased out by 2050. Only 21% believed that coal will experience only a limited reduction while no corporate believes that coal consumption will be higher in 2050 than today (Figure 13). This corporate view on the outlook for coal is more negative than what the Indian

government has outlined in its long-term low-carbon development strategy as this talks about the fact that coal will be needed for power and energy including for grid stabilisation (Ministry of Environment, Forest and Climate Change, 2022).

Indian corporates are more negative on the outlook for oil and the global industry

The corporate outlook for India's reliance on oil is less negative than for coal, however, 73% of companies surveyed believe that oil consumption by 2050 will be at least significantly lower than what is today. None of the surveyed corporates, however, believe that the Indian economy will have completely transitioned away from oil usage. The Indian oil companies that were surveyed believe that oil consumption will either decline moderately (67%) or be largely phased out by 2050 (33%). The view from surveyed Indian corporates on the outlook for oil consumption in India appears much more negative than that of the global oil industry itself. For example, forecasts from BP suggest that India's oil consumption will increase from 5.4 million barrels per day currently to over 9 million barrels per day by 2050 (link).

The relative role played by natural gas is likely to increase in India

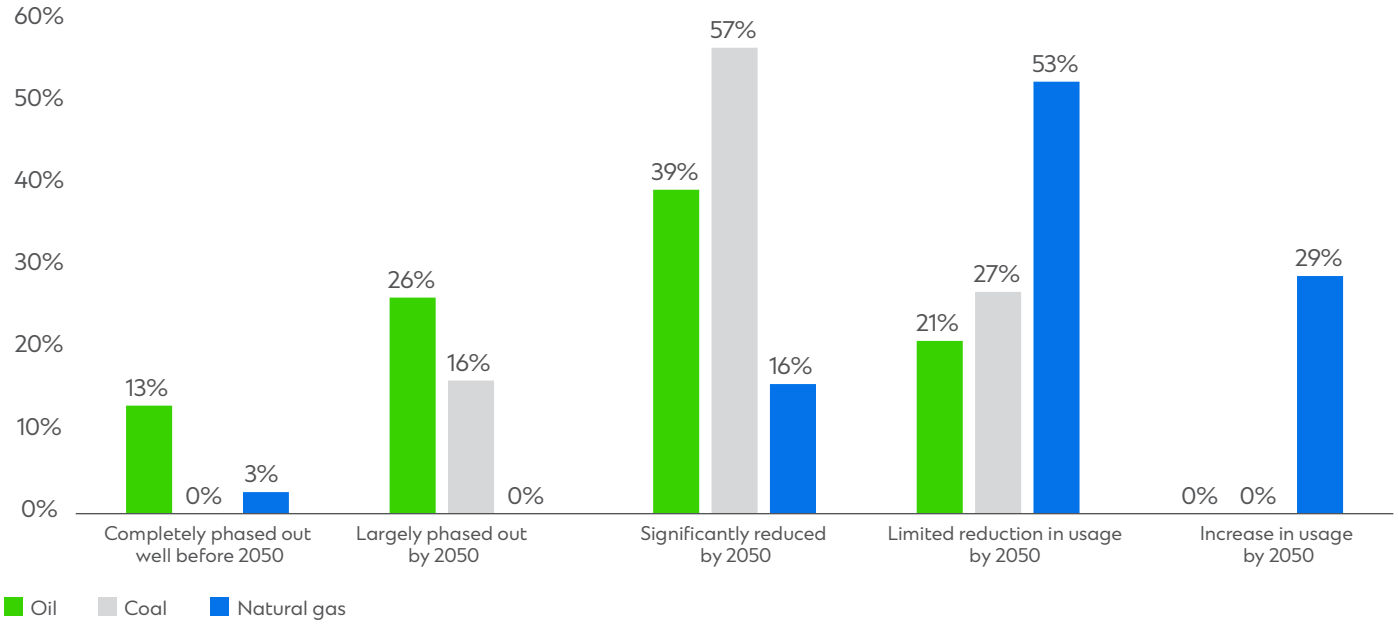
Of the reviewed fossil fuel sources surveyed Indian corporates are more constructive on the relative outlook for natural gas as 29% of them believe that consumption will increase until 2050 (Figure 13). Sectors with the greatest share of corporates believing that natural gas consumption will increase are oil and gas (67%) and steel companies (75%). Natural gas is often seen as a less emission intense fuel source compared to oil and coal which may explain this greater level of support found in the survey. However, India's power supply is shifting rapidly towards renewables as is also suggested by the fact that the government in June 2025 achieved its 2030 target to have non-fossil installed power generating capacity account for more than 50% of total power generating capacity. This suggests that the long-term role of LNG may be smaller than the surveyed corporates expect.

86% of surveyed companies intend to use sustainable finance

The investments required to reduce a company's emission profile are often significant and may well create external funding needs. To assist companies in raising the necessary funds, various sustainable finance solutions have been developed including green and blue bonds and loans, sustainability bonds and loans and social bonds. Data from the International Institute of Finance (IIF) suggests that the overall sustainable debt market reached a volume of cUSD7.6 trillion at the end of June 2025 (IIF, 2025).

FIGURE 13

How do you rate the outlook for each of these three traditional energy sources?
(% share of respondents)



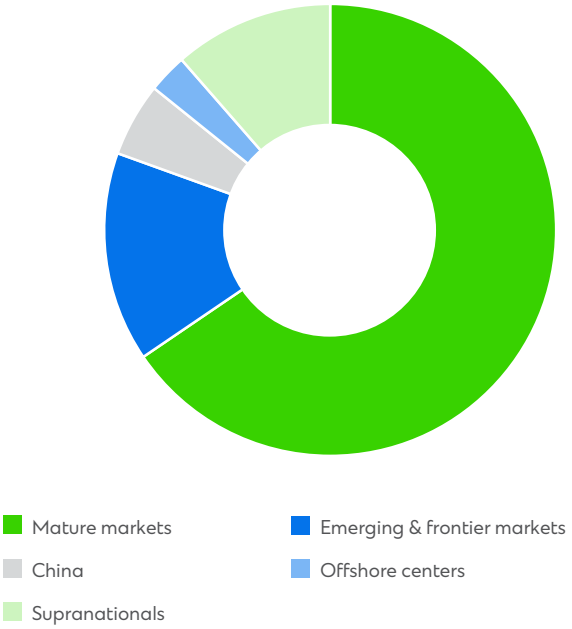
Source: Standard Chartered

A total of just over USD1.2 trillion of outstanding sustainable debt has so far been issued by emerging and frontier markets excluding China (Figure 14).

Data for the end of 2024 showed that outstanding sustainable debt issued by Indian entities was just over USD70 billion or 6% of total sustainable debt that had been issued by emerging markets entities. India is the second largest sustainable debt issuer across the emerging world after China which had almost USD400 billion of sustainable debt outstanding at the end of 2024 (Figure 15). India's size, overall development requirements and sustainable targets suggests that sustainable debt is likely to play a key role in funding decarbonisation strategies. To test whether this hypothesis holds on a corporate level too, several questions of the survey focused on the topic of sustainable debt.

FIGURE 14

Outstanding sustainable debt by issuer
June 2025



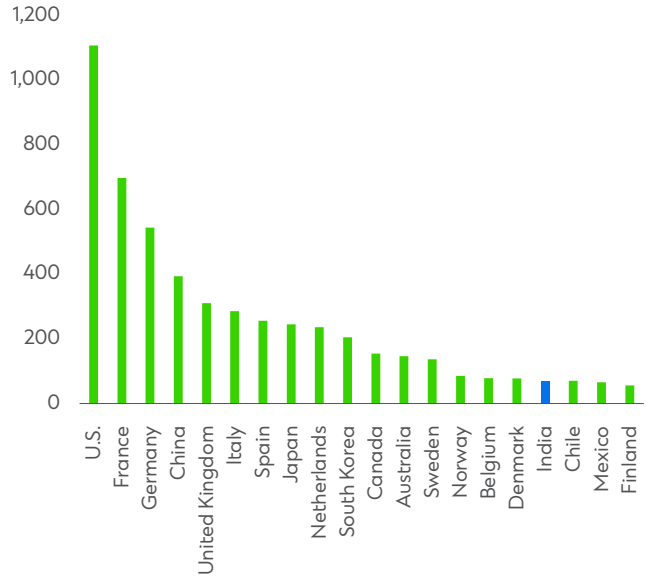
Source: IIF, Standard Chartered

Financial firms are key to unlocking sustainable finance issuance

The survey showed that less than 40% of Indian corporates have so far engaged with sustainable finance solutions (Figure 16). Renewables is the only sector where more than half of companies have used sustainable finance (71%).

FIGURE 15

Outstanding sustainable debt by country
USD billion, Dec. 2024



Source: IIF, Standard Chartered

When asked about the reasons why companies had and had not used sustainable finance, the answers showed that financial firms play a major part. Of the companies who have used sustainable finance, 69% noted that their banks had become more active in offering these solutions to them which probably also explains why 63% of them felt that the process had been easier than expected. A potential cost benefit of using sustainable finance over traditional funding solutions was only highlighted as a factor by 38%. Of the companies that have not yet raised sustainable finance, 53% noted that they were not convinced about its benefits while 35% also highlighted a lack of engagement with sustainable finance from their banks.

These answers strongly suggest that Indian corporates will likely engage more with sustainable finance solutions if financial firms in India become more active in offering these and spend more time explaining the benefits of them. This positive view on the outlook for sustainable finance in India is supported by the fact that the survey also showed that 86% of Indian corporates expect to be using these solutions in the future. The likely increase in engagement with sustainable finance was observed across every one of the surveyed sectors (Figure 16).

Green and Sustainability-linked bonds and loans likely to be most popular

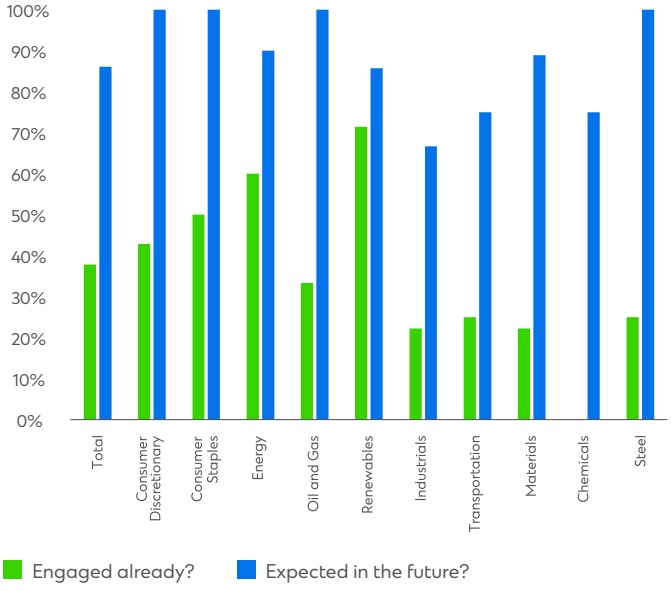
The survey shows that green and sustainability-linked bonds and loans are likely to be the most popular sustainable finance solutions for companies in the future (Figure 17). Blue bonds are highlighted most as a source of funding by the sectors exposed to water (oil and gas, materials and textiles). The textile sector tends to be labour-intense which may explain why more than 40% of the surveyed textile companies also highlight social bonds as a funding source in the future.

Carbon credits likely to take on a more prominent role

Companies can not only reduce their net emission footprint by investing in low carbon solutions but part of this reduction can also be achieved through engagement with carbon markets and the purchase of carbon credits. Article 6 of the Paris Agreement was established to help develop the trading of carbon credits and provide companies with additional avenues to reducing their net emission profile.

FIGURE 16

Share of respondents that have engaged with sustainable finance and that expect to do so in the future

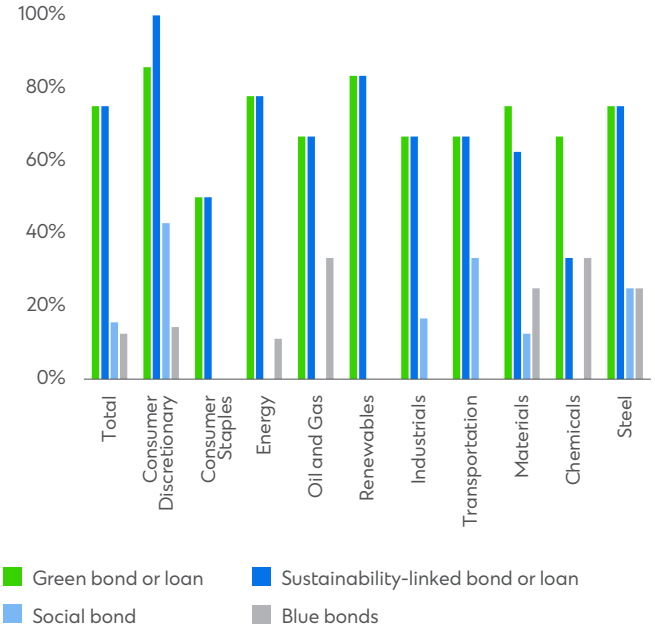


Source: Standard Chartered

The amended Energy Conservation Bill 2022 recently passed by the Indian government provides the basis for the implementation of a Carbon Credit Trading Scheme (CCTS) in India. The compliant market is expected to become active by late 2026 and targets companies from nine industrial sectors including aluminium, cement, steel, energy and textiles. India's CCTS also includes an offset mechanism for voluntary participation. On March 28, 2025 India's Ministry of Power approved 8 crediting methodologies for generating voluntary carbon credits (link). These include renewable energy, green hydrogen, industrial energy efficiency and mangrove afforestation and reforestation.

FIGURE 17

Potential engagement with sustainable finance solutions by sector
(% share of respondents)

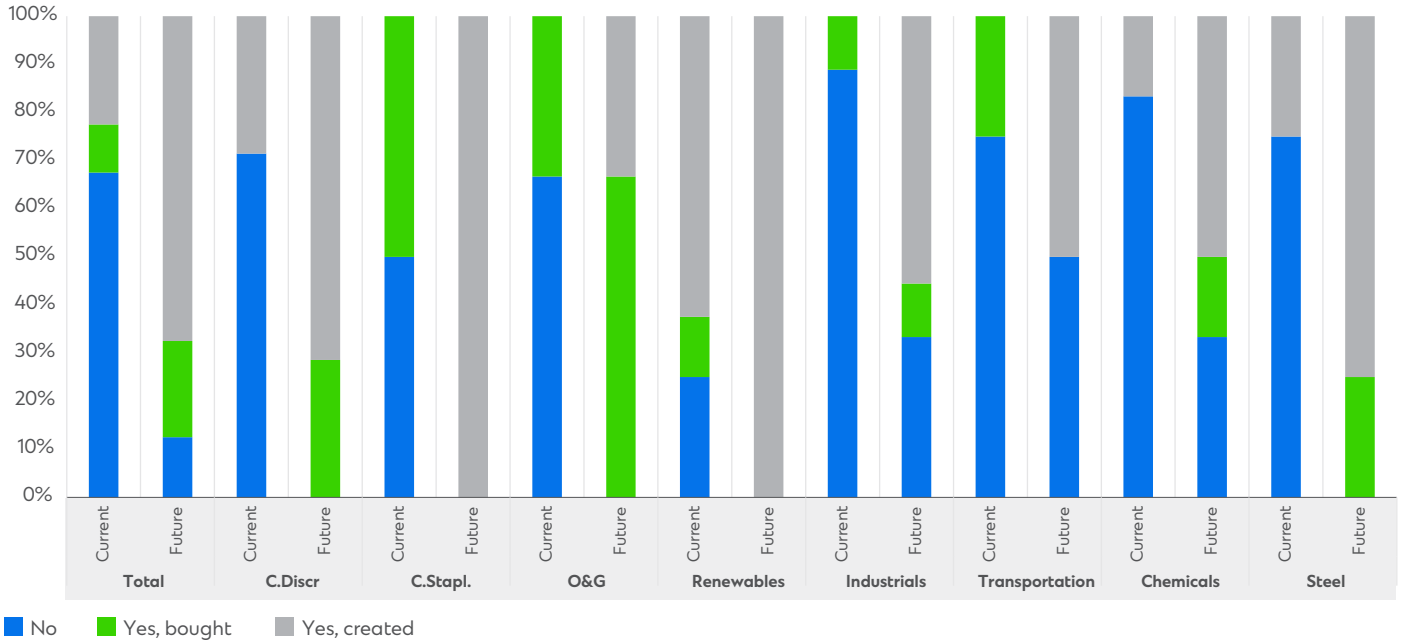


Source: Standard Chartered

As part of the survey, Indian corporates were asked about their intention to engage with the voluntary carbon market. At present 68% of respondents have not done so, while 10% have bought carbon credits to reduce their net emission profile and 23% have created carbon credits for sale (Figure 18). This latter group is, not surprisingly, dominated by renewables, 63% of which have created carbon credits.

FIGURE 18

Have you engaged with voluntary carbon credits (currently and in the future)?
(% share of respondents)



Source: Standard Chartered

When asked about their intention regarding voluntary carbon credits in the future, the data showed that 88% of companies expect to do so, with 20% of companies expecting to use carbon credits as part of net emission reduction strategy and 68% expecting to sell carbon credits (Figure 18). This potential increase in engagement with carbon credits is observed across all of surveyed sectors. The potential greater engagement with voluntary carbon credits by Indian corporates may well be aided by the recent policy announcements from the Indian government such as the CCTS.

03

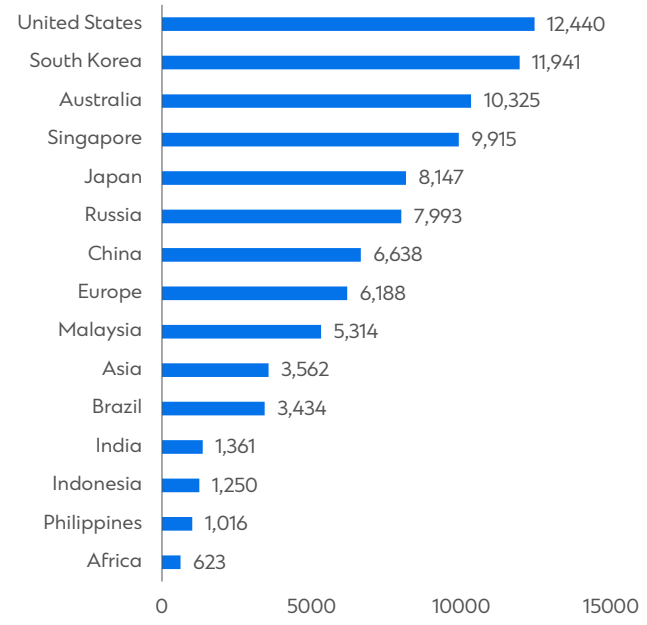
Appendix

India's energy transition: framing the challenge

India has one of the fastest growing economies in the world with an annual average GDP growth rate during the past four years of 8.3% (World Bank, 2025) and with Standard Chartered economists expecting growth to reach 6.9% in 2025 and 6.5% during each of the following two. To continue the improvement in living standards of India's population of more than 1.4 billion in a way that ensures the integrity of the country's ecosystems and limits the impact on the environment is a major challenge. India is already the third largest emitter in the world after China and the US even though its per capita emissions are 75% and 85% below those two countries respectively.

FIGURE 19

Per capita electricity demand
kWh, 2023



Source: OurWorldInData, EMBER, Standard Chartered

India's power demand is growing fast but remains low compared to peers

Rapid growth in electricity consumption during the past 25 years has meant that India's electricity consumption now accounts for almost 7% of global electricity demand, up from 3.7% in 2000 (Figure 20). The potential for India's electricity consumption to grow further appears high as its per capita electricity demand was less than 1,400kWh in 2023. This is more than 60% lower than the average for Asia and circa 80% lower than levels seen in Europe and China (Figure 19).

Total electricity demand may grow 200% between 2022 and 2042

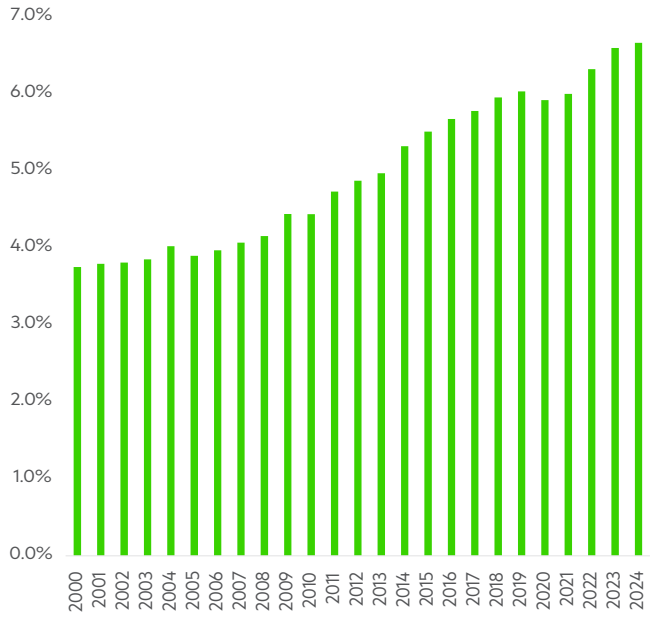
Estimates from various organisations suggest that growth in electricity demand in India will remain high. India's own Central Electricity Authority (CEA) expects total electricity consumption to increase more than 200% from just over 1GWh for the year ending March 2022 to almost 3.5GWh by the year ending March 2042 (Figure 21).

The IEA notes that India's electricity demand is to grow at an annual average rate of 6.3% until 2028 driven by strong economic growth and by rising demand for air conditioners as average temperatures increase. This latter point is significant as calculations by the IEA suggest that by 2030 cooling equipment may contribute one-third to India's peak electricity load. Furthermore for every incremental degree of daily average temperature, the IEA estimates that daily peak electricity demand may increase by 11GW by 2027 or more than 3x the level seen in 2019 (Demand – Electricity 2025 – Analysis - IEA).

The electricity consumption scenarios for India as projected by the CEA and IEA may not be the most optimistic, considering that for India to achieve electricity consumption levels seen in Asia or other developing countries such as Brazil would require increases of 250-260%, while achieving Chinese levels would require an almost 5-fold rise (Figure 22).

FIGURE 20

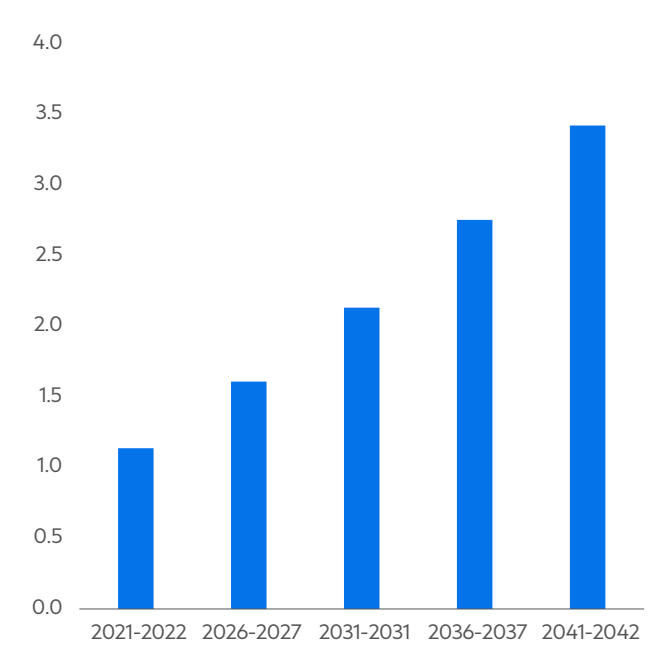
Electricity demand: India share of global
%



Source: OurWorldInData, EMBER, Standard Chartered

FIGURE 21

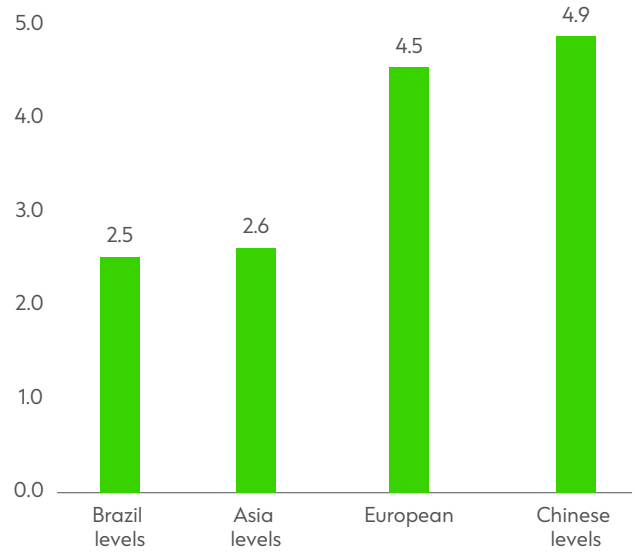
India expects electricity demand to rise 2x



Source: Central Electricity Authority (CEA), Standard Chartered

FIGURE 22

Increase in total electricity demand if India levels were to reach those seen in other countries currently



Source: OurWorldInData, Standard Chartered

India's need to transition appears greater than for other countries

As a result of India's strong economic expansion, the country has experienced an almost 12-fold increase in its per capita Green House Gas emissions (GHG) since the 1950s (Figure 24). However, with per capita emissions 50% and 75% below levels seen in the rest of Asia and China respectively (Figure 23) some might argue that India's need to transition away from fossil fuel power sources is lower than in case of other countries. Such a no-change scenario, however, would ignore the impact that the current energy intensity of India's electricity generating sector will have on emissions, as per capita electricity demand continues to rise.

India's power mix makes emission targets challenging

The carbon intensity of electricity generation in India is among the highest in the world at 713 grams of CO2 per kWh (Figure 25). The main reason for this is that India currently generates more power using fossil fuel and especially coal. Fossil fuel made up almost 80% of India's power sources used to generate electricity in 2024. This compares to 62% in China, 59% for the world and as low as 10% in case of Brazil (Figure 26).

The rapid increase in renewable power generating capacity should help reduce India's exposure to fossil-fuel based power generation. This is relevant as continued strong growth in electricity consumption in India would otherwise lead to a rapid increase in emissions. For example, The CEA's electricity production forecasts until 2042 and current emission intensity of 713gr CO2/kWh imply that in a no change scenario, emissions associated with electricity production in India could double to almost 2.6Gt of CO2 by 2040. This implies that if India's electricity sector was a country, it alone would be the third highest emitter in the world after China and the US.

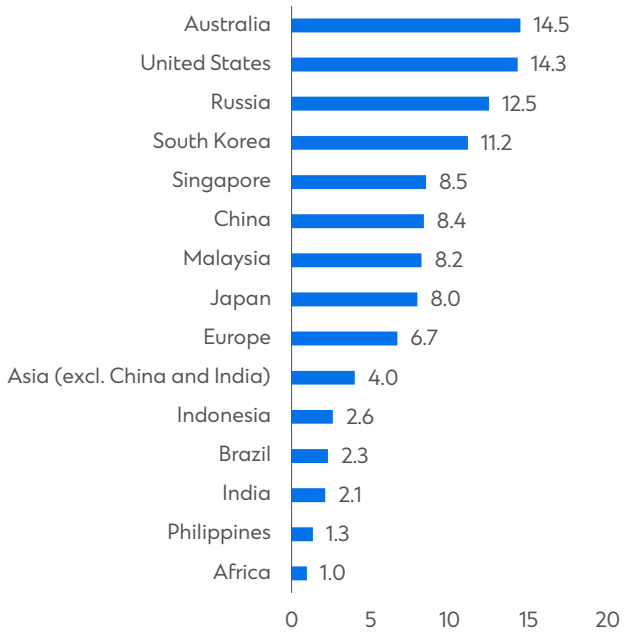
Transitioning to renewable power improves India's economic resilience

The need for India to transition away from fossil fuel usage is not just related to the emission intensity of electricity production. Improving its economic resilience and energy security are other key factors that support such a change.

Data from the World Bank suggest that India's reliance on fossil fuel imports is one of the highest in the world as measured by fuel import as percentage of total import (Figure 27). In addition, data from India's Ministry of Petroleum and Gas show that India's reliance on petroleum import to fuel domestic consumption has grown consistently since the late 90s (Figure 28).

FIGURE 23

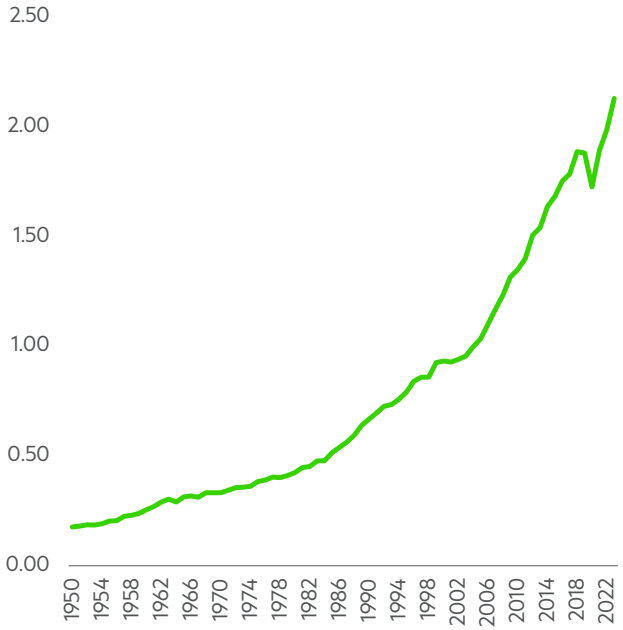
India's per capita emissions are below average
CO2/capita (t)



Source: OurWorldInData, Standard Chartered

FIGURE 24

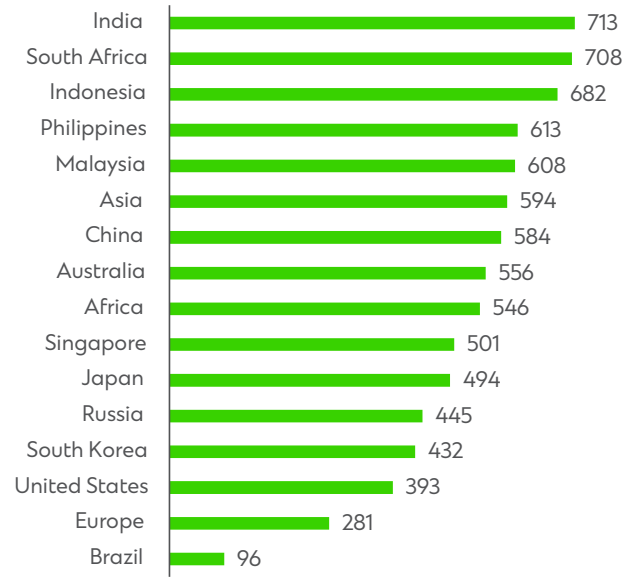
India's per capita emissions increased 12x since the 50s (CO2/capita)



Source: OurWorldInData, Standard Chartered

FIGURE 25

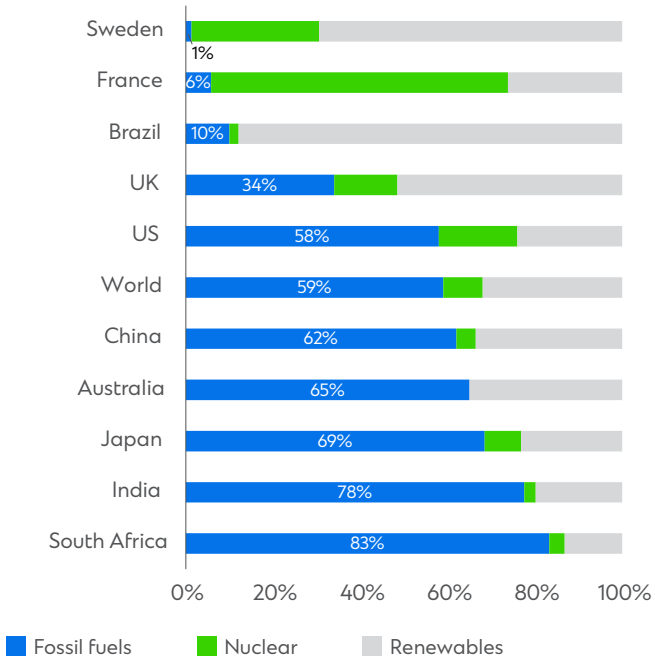
Carbon intensity of electricity is high in India
CO2/kWh (g)



Source: OurWorldInData, Standard Chartered

FIGURE 26

India's electricity is heavily reliant on fossil fuel
Electricity generation by source, 2024



Source: OurWorldInData, EMBER, Energy Institute Standard Chartered

India's growing reliance on fuel imports to power its vibrant local economy not only raises foreign exchange risk but it can also make the country more vulnerable to supply shocks than is the case for countries that are less reliant on imports. Creating an economy that makes optimal use of locally produced low carbon power sources such as solar, wind, hydrogen and nuclear, that has sufficient energy storage capabilities to create energy grid stability and that has a transport sector not reliant on fossil fuel would lower these risks and support India's further economic development.

India's decarbonisation: targets, results and sector strategies

India has developed a range of policies aimed at supporting economic growth and environmental sustainability and achieve net zero emissions by 2070. The focus is on expanding low carbon power capacity, developing low carbon transport, urban and industrial capabilities and to regenerate natural resources. To achieve net zero emissions may require annual investments of up to USD300 billion per year, however, this should be more than offset by the economic and geopolitical benefits that these investments create.

FIGURE 27

Fuel import as % of total merchandise import
By value, 2022-2024 average

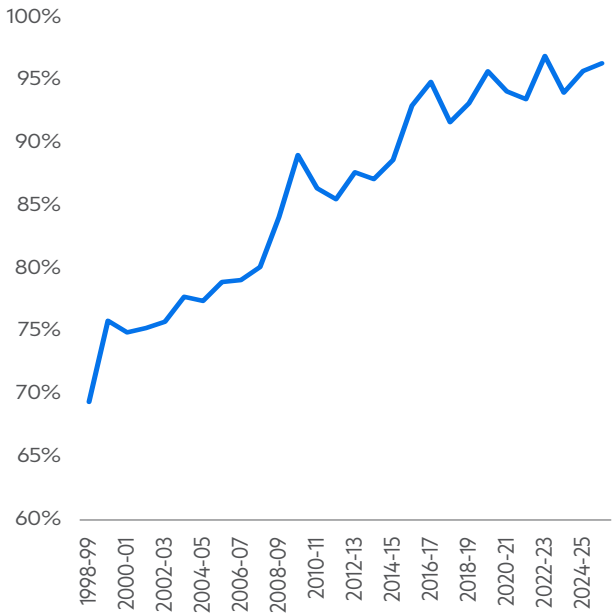
Source: World Bank, Standard Chartered

India's decarbonisation: policies and targets

To increase living standards, ensure energy security and combat climate change India has developed a range of policies and programmes. Central to these are the country's climate commitments

FIGURE 28

India: Net petroleum import as % of domestic consumption



Source: Ministry of Petroleum & Natural Gas, Standard Chartered

included in its Nationally Determined Contributions (NDC) formulated as part of the United Nations Framework Convention on Climate (UNFCC). The key commitments included in India's NDC are:

- Reach net zero emissions by 2070
- Non fossil fuel sources will make up at least 50% of India's cumulative installed electric power capacity by 2030
- Reduce emission intensity by 45% by 2030 compared to 2005 levels
- Create an additional carbon sink of 2.5-3.0 billion tonnes of CO2 equivalent by 2030

To transition towards a low-carbon economy and meet these targets the Indian government has established a range of individual strategies for key industries with associated targets and goals (Ministry of Environment, Forest and Climate Change, 2022). The most relevant of these are included in Figure 29.

Figure 29: Strategies developed by India to create a low-carbon economy

Strategy	Selection of current targets and goals	Elements of a long-term low-carbon development strategy
Develop low carbon electicity system	- Renewable energy to provide 50% of non-fossil capacity by 2030 - Strengthen renewable energy (RE) transmission networks in eight RE-rich states - Provide financial incentives to solar development - Promotion of hydropower and energy storage obligations - Three-fold rise in nuclear installed capacity by 2032 - Develop energy management at household level including star rating of appliances	- Expand renewable adoption and strengthen the grid - Explore greater role for nuclear energy, green hydrogen, fuel cells and biofuels - Develop energy demand and energy efficiency measures - Rational usage of fossil fuel resources - Enable local manufacturing and develop capable, agile and responsive local institutions
Develop a low-carbon transport system	- 20% ethanol blending in petrol (2025 target) - EV package includes local manufacturing of parts and batteries, investments in charging infrastructure and demand aggregation - Indian railways to become net zero by 2030 - Enhance the share of public non-motorized transport	- Reduce fuel demand and GHG emissions through improved fuel efficiency - Phased adoption of cleaner fuels including hydrogen - Modal shift towards public and low emission modes of transport - Electrification across multiple transport modes
Promote sustainable urban development including adaptation in urban design and energy and material-efficiency in buildings	- Provision of housing for low- and middle-income groups - India Cooling Action Plan - Sustainable public transport development - National water policy - Construction and demolitiono waste management rules - Extended producer responsibility - Plastic waste management rules	- Mainstream adaptation into urban planning - Enhance energy and resource efficiency and low-carbon development in urban planning - Climate responsivwe and resilient building design, construction and operation - Resource efficiency and management of water and solid and liquid waste
Promote development of low-emission industrial system and decoupling of economic growth and emission generation	- Enhanced energy efficiency and sustainable habitat, Standards and labelling scheme - Promote natural gas and national policy on bio-fuels - Material efficiency through policies on resouce efficiency, plastic and e-waste and steel recycling - Green hydrogen technology and infrastructure promotion - Decarbonisation of hard-to-abate sectors including steel and cement	- Improve energy efficiency - Process and fuel switching and electrification in manufacturing - Enhance material efficiency and recycling - Promote green hydrogen and infrastructure - Explore low-carbon options in hard-to-abate sectors - Low-carbon and sustainable development of micro, small and medium-sized enterprises
Enhance natural resources, preservation of resource heritage and promote biodiversity	- Create additional carbon sink of 2.5-3 billion tonnes of CO2 equivalent by 2030 - Restore 26 million hectares of degraded land by 2030 - Adoption of 12 national biodiversity targets in line with 20 global Aichi biodiversity goals - Major greening efforts of the national highway authority of India and Indian railways	- Restoration, conservation and management of forest cover including mangrove forests - Restoration, conservation and management of trees outside forests - Large scale enhancement of tree and green cover in urban and peri-urban areas - Promote agro-forestry to increase farming income and meet wood products demand - Infrastructure develoment
Adopt CO2 removal and related engineering solutions		

Source: Ministry of Environment, Forest and Climate Change, Government of India, Standard Chartered

India achieved its non-fossil target 5 years ahead of schedule

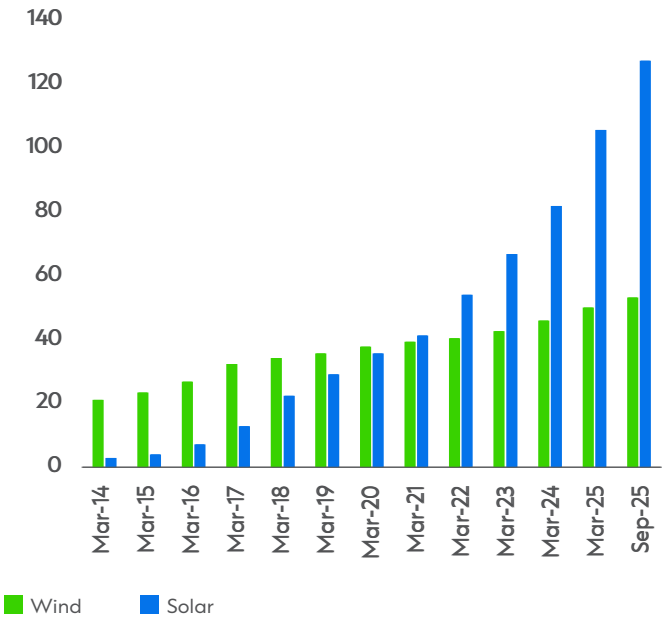
India's power generation capacity is already rapidly diversifying towards low carbon technologies. The country's total solar capacity stood at just 2.8GW in early 2014, however, by September 2025 this had increased 45x to 127GW (Ministry of new and renewable energy, 2025). Total wind generating capacity reached 53GW in September this year, up from 21GW in 2014 (Figure 30).

The rapid growth in low carbon electricity capacity in India during the past 10 years has allowed the country in September 2025 to achieve its target of having 50% of installed electric power capacity from non-fossil fuel sources five years ahead of schedule (India Ministry of Power, 2025) (Figure 31). Another way to indicate the speed of transition taking place in the Indian power sector is that during the April – September 2025 period the country added 28GW of non-fossil capacity or 5.5x the added fossil-fuel capacity.

Despite the strong growth in installed non-fossil power capacity achieved to date, India will need to increase its efforts if long term emission targets are to be achieved. The IEA believes that India's renewable capacity should reach 582GW by 2030 (IEA, 2025) which is more than double the country's current non-fossil capacity and higher than the implied target included in the National Electricity Plan produced by the Central Electricity Authority (CEA) in 2023 (Central Electricity Authority, 2023). During its past two fiscal years India installed an average of 26GW of solar and wind capacity per year. During the first six months of the current fiscal year a total of 28GW of non-fossil capacity was added in India which implies an annual run rate of 56GW. To achieve the IEA's 2030 target would require India to improve its annual run rate to 67GW. Bloomberg's net zero pathway scenario for India provides an even stronger test as this requires annual solar and wind capacity to average 71GW between 2026 and 2032 (Bloomberg, 2025) compared to 46.5GW that is implied by the CEA target.

FIGURE 30

Total solar and wind capacity in India
GW



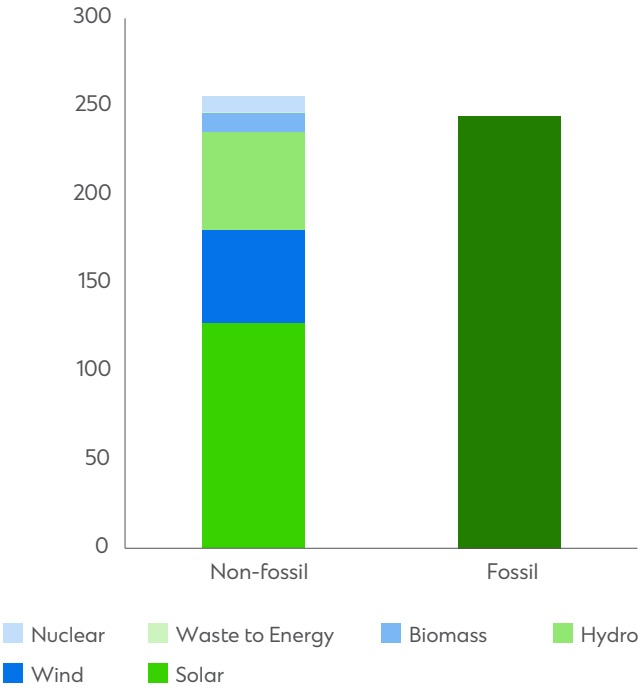
Source: Ministry of new and renewable energy, Standard Chartered

The case for further renewable growth in India is very strong

India has strong potential to achieve long term implied targets for non-fossil fuel capacity. For example, estimates for the theoretical solar power potential by country shows that India ranks very well across Asia (Figure 32). In 2014, India's National Institute for Solar Energy (NISE) estimated that the country had total technically deployable solar potential of almost 750GW. However, in a recent update NISE provided a much more detailed assessment of India's solar potential which it now believes is as high as 3,343 GW (NISE, 2025). To put this in context, this would suggest that India's solar potential is more than 30x larger than its currently installed solar capacity and more than 6x the country's overall installed electricity (India Ministry of Power, 2025).

FIGURE 31

India electricity capacity by source
GW, September 2025



Source: Ministry of new and renewable energy, Ministry of Power, Standard Chartered

Solar and wind generated electricity is cheap compared to traditional sources

The argument in favour of investing in renewable power in India is not only based on its large potential for the country but also by the fact that it makes economic sense to opt for renewable power rather than traditional power sources. Data from IRENA suggests that the cost of solar and wind power in India has declined by 77% and 54% respectively during the 2013-2023 period (IRENA, 2025). Data from Bloomberg shows that it was cheaper in India to produce electricity using coal or gas in 2015, however, improving economies of scale meant that by 2025 solar and wind power cost were 47-52% lower than the cost of producing electricity using gas or coal (Figure 33).

Industry estimates indicates that the cost of solar and wind power is only set to decline further. This coupled with their generation potential makes them obvious low carbon options for the Indian government to pursue.

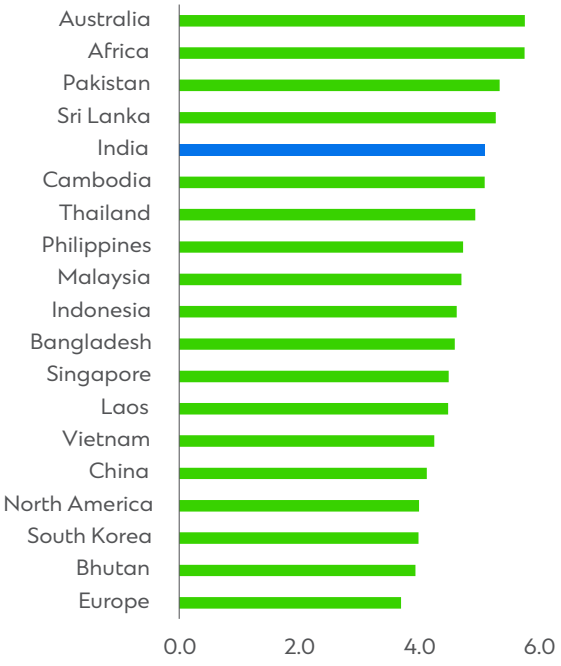
Household demand for solar should be strong due to a low payback period

To successfully transition India to a low carbon economy not only requires the development of low carbon supply but also strong consumer and corporate demand. Our calculations for the retail solar market in India suggest that consumer demand for solar power should be strong given that the payback period for investing in solar installations for households is low at just a few years.

Using solar installation costs from several Indian companies, average household electricity consumption data and government subsidy scheme details, the average payback periods for low-, middle- and high-income households across nine regions in India were calculated. Calculations suggest that the average payback period ranges between 2 and 4 years across the regions if solar households are able to generate 100% of their electricity demand with solar panels (Figure 34).

FIGURE 32

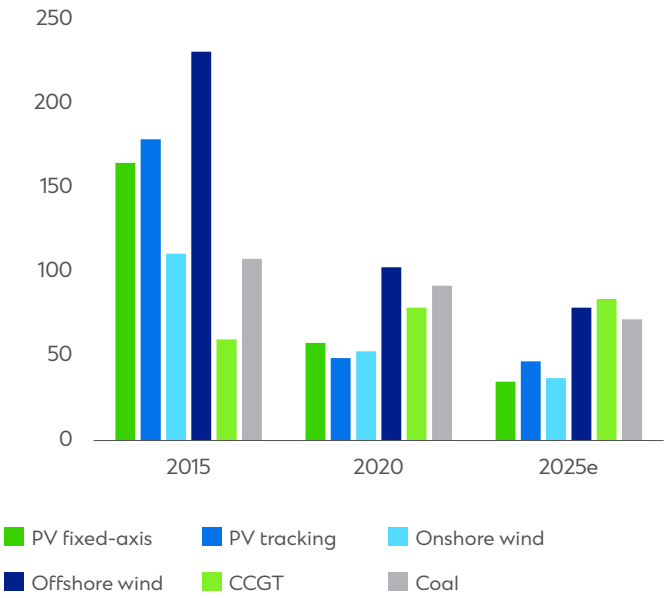
Theoretical solar potential per day
kWh/m2



Source: Solargis, Ember, OurWorldInData, Standard Chartered

FIGURE 33

Solar and wind are now cheaper than gas or coal-based electricity in India
(LCOE, USD/MWh)



Source: Solargis, Ember, OurWorldInData, Standard Chartered

Investment costs may reach up to USD300bn per year

The investment requirements associated with decarbonising India's economy and creating sufficient power generating capacity to support broader economic and social development goals are substantial.

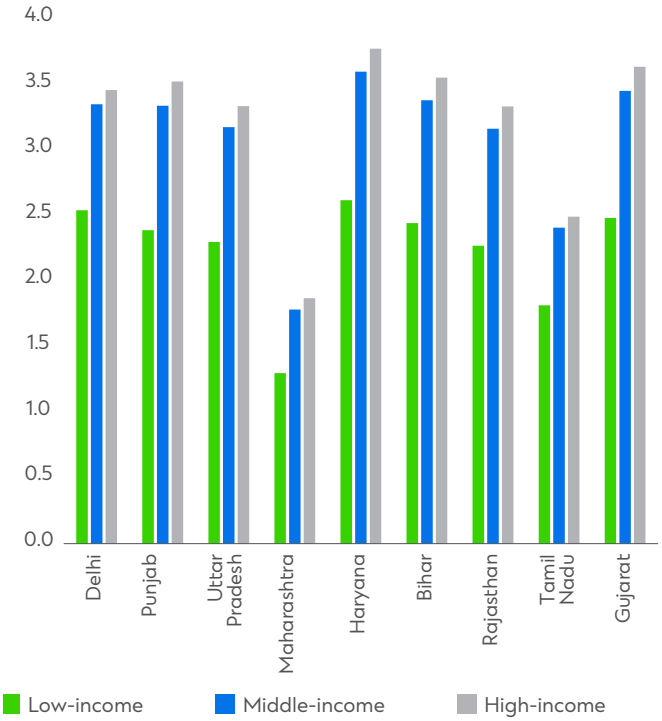
Various organisations have provided estimates for India's transition costs. These range from a low of USD42 billion per year until 2030 in case of the NEP 14 plan from CEA to almost USD300 billion per year until 2050 based on Bloomberg's Net Zero pathway calculations (Figure 35).

India may be faced with total decarbonisation-related investment requirements of up USD12 trillion if the estimates provided in Figure 35 are correct. A significant share of these investments relates to the need for India to expand its electricity grid. Calculations from the Energy Transition Commission for example show that India needs to expand its grid by 9 million kilometres between 2023 and 2050 (Figure 36). Bloomberg calculations show that expanding its grid to support a net zero pathway may cost India USD1.6 trillion between 2025 and 2050. One possibility that the Indian government may want to explore in this regard is whether these grid investments can be reduced by expanding the development of more decentralised renewable power capabilities with energy storage solutions.

FIGURE 34

Payback calculation for switching to solar

Years, Using a 1, 3 and 4KW solar system for low-, middle- and high-income households respectively



Source: Indian solar companies, Standard Chartered

Sector-specific pathways and strategies

India's energy transition is entering a decisive decade, shaped by ambitious Nationally Determined Contributions (NDCs) and a strong policy ecosystem driving low-carbon growth across sectors. The government's push for decarbonisation—through various policy initiatives helping different industries align their business models with national net-zero ambitions. The following sections outline sectoral pathways and strategic responses to accelerate India's transition.

Energy sector (Oil, Gas, Power, Renewables)

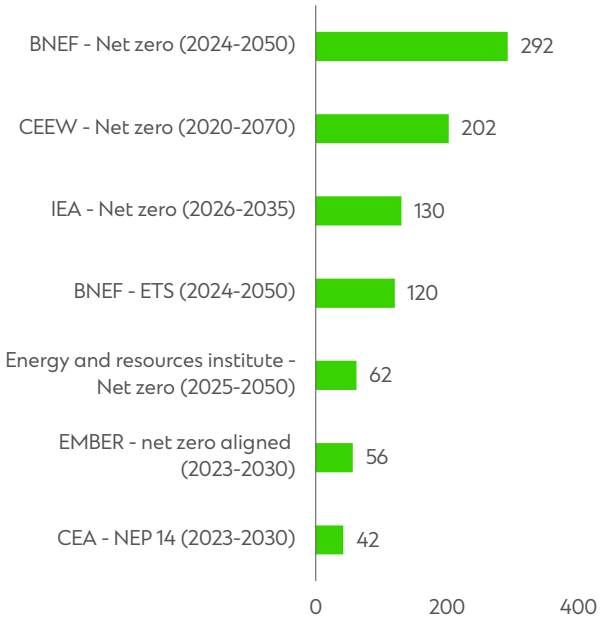
Key policy initiatives —such as Renewable Purchase Obligations (RPOs), Green Energy Open Access Rules (2022), and the PLI Scheme for High-Efficiency Solar PV Modules—encourage utilities, industrial consumers, and developers to scale renewable capacity. India has set a long-term RPO trajectory, rising from 24.61% in FY2022–23 to 43.33% by 2029–30 (Ministry of Power, Enerdata)

The Green Energy Open Access Rules have spurred growth in India's renewable energy market by expanding eligibility to smaller consumers. These obligations enable commercial consumers to directly source affordable renewable power and reduce fossil fuel dependency. Electricity distribution companies (DISCOMs) are also mandated to purchase renewable energy, boosting investment in solar and wind infrastructure. However, challenges remain, including delays in signing power purchase agreements (PPAs), challenging coordination between state agencies and distribution companies (DISCOMs) and state-level deviations from the rules, which can hinder implementation (Challenges in India RE Tender Market , State RE Capacity Addition Roadmap).

FIGURE 35

Annual estimated investment requirements

USDbn

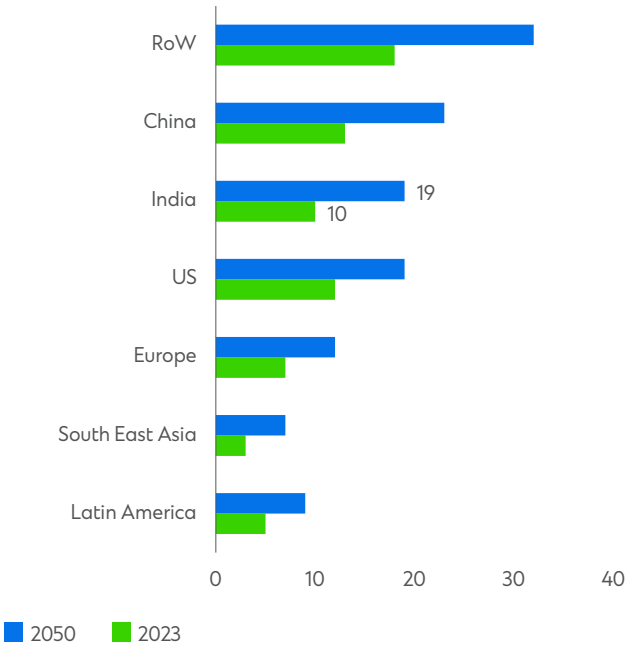


Source: Mentioned institutions, Standard Chartered

Companies in the energy sector may pivot toward renewables and grid support as India is actively promoting renewable investment (83% of 2024 power-sector CAPEX was in clean energy [14]), so oil & gas firms can deploy capital into utility-scale solar/wind and energy-storage projects. They can also adapt gas infrastructure for cleaner fuels; for instance, blending green hydrogen into pipelines, repurposing refineries for biofuel and ammonia production and invest in carbon capture for existing plants.

FIGURE 36

Expansion into solar may reduce grid investment needs
(mln km of grid length)



Source: Energy Transitions Commission, Standard Chartered

Materials sector (Steel, Cement, Chemicals)

These "hard-to-abate" sectors face steep decarbonisation challenges due to process emissions and energy intensity. India's Perform, Achieve and Trade (PAT) mechanism and Green Credit Programme incentivise efficiency improvements and green investments through tradable certificates and emerging credit markets. The Green Steel Taxonomy—currently under development by the Ministry of Steel—will define standards and disclosure frameworks for low-carbon steel, enabling both domestic procurement and future exports aligned with the EU's Carbon Border Adjustment Mechanism (CBAM).

The Bureau of Energy Efficiency, Government of India has helped industries achieve and trade energy saving certificates. It targets designated energy intensive industries such as cement, commercial buildings, chemicals, textiles, iron and steel production, etc. PAT cycle 6 was expected to achieve a total energy savings of 1.277 MTOE which is approx. 3.3 million tonnes of CO2 equivalent using carbon factors from ENERDATA (National Mission on Enhanced Energy Savings). Despite scaling up industrial participation, these mechanisms face persistent challenges. PAT guidelines are often considered too lenient, making them easily achievable and resulting in only marginal emissions reduction – less than 3% in some key sectors and many designated consumers delay in purchasing of these mandatory energy savings certificates, with some failing to company by official deadlines (PERFORM, ACHIEVE AND TRADE (PAT) SCHEME OF THERMAL POWER PLANTS A CRITICAL ANALYSIS). Such instances show lack of enforcement and regulations around penalties for companies failing to comply which undermines the program integrity.

Emission reduction strategies for these industries include Carbon Capture & Storage (CCS). Leading steel companies are also exploring scrap-based electric-arc furnaces, hydrogen direct-reduction, and CCUS to cut emissions [15]. Indeed, 67% of surveyed steel firms expect decarbonization to help if H2/CCS costs fall. Policy support will be crucial: European carbon border rules (CBAM) and subsidies can incentivize CCUS uptake, which is currently uneconomic (JSW Steel estimates CCUS would take ≥20 years to pay off [16]). Cement firms likewise should optimize kiln efficiency, use alternative binders (e.g. fly-ash and slag), and consider post-combustion carbon capture. Energy efficiency and material recycling are also critical – nearly all sectors already use recycling (up to 77% of surveyed firms) to reduce emissions.

Industrial and manufacturing sector

India's industrial and manufacturing sector has seen strong environmental engagement due to policies like FAME-II and PME-drive which has driven adoption of EVs and charging infrastructure. This policy was leveraged to launch new electric vehicles including 2 and 3 wheelers and expand the EV market share. S&P Global Mobility estimates that India's 2024 passenger EV production has increased by 22.5% year-over-year, to about 125,500 units, however, this still only accounts for about 2.5% of all cars sold in 2024. The report also suggests that at the current penetration rate of EV adoption in India (i.e. at 2% approx.), to achieve its 2030 goal of 30% EV market share the annual increase in penetration should almost double to at around 3.8%. (India's EV Market: Trends and Future Prospects | S&P Global).

The PLI Scheme for Advanced Chemistry Cells (ACC) has allocated INR 18,100 crore (USD 2.5 billion) in subsidies over 5 years, with the aim of installing 50 gigawatt hours (GWh) of domestic battery manufacturing capacity by 2026 (Unlocking Supply Chains for Localizing Electric Vehicle Battery Production in India). This could potentially unlock lower costs for EV vehicles with domestic production of batteries.

General manufacturing firms should emphasize mature measures such as maximize energy efficiency (LED lighting, motor drives, heat recovery) and switch to renewables. On-site solar or long-term power purchase agreements can hedge energy costs while cutting CO2. For process heat, firms can test green hydrogen or biomass where electrification is hard.

Consumer Goods & Retail (Discretionary and Staples)

Consumer-facing industries are integrating sustainability as a strategic priority, spurred by both regulatory mandates and shifting consumer expectations. Rooftop solar and distributed generation incentives have enabled leading FMCG and retail firms to reduce energy expenditures and increase energy efficiency at the same time. With growing green consumer demand, these firms are focusing on energy efficiency, circular manufacturing, and low-carbon logistics. ESG-aligned procurement – including sustainable packaging and recycled materials – is being adopted widely, supported by government measures on Extended Producer Responsible and Waste Management (CPCB | Central Pollution Control Board). Although many companies are willing to adopt deeper sustainability measures, the current policy framework and regulations alone are insufficient to catalysed widespread action, and there is limited publicly available research on such sectors and incentives available in India.

Figure 37: Survey questionnaire

Question	Answer
Environment: Current state and overall targets	
How concerned are you about the state of the environment globally?	Not concerned at all, Not concerned, Neutral, Concerned, Very concerned
How concerned are you about the state of India's environment?	Not concerned at all, Not concerned, Neutral, Concerned, Very concerned
Most countries aim to achieve net zero emissions by 2050. How likely is this in your view?	Extremely unlikely, Unlikely, Neutral, Likely, Very likely
How likely is it in your view that India will achieve net zero by 2070?	Extremely unlikely, Unlikely, Neutral, Likely, Very likely
Can you rank the following factors in terms of relevance to achieving net zero?	
Stricter regulation, policies and targets	*Very important, important, neutral, not important, Irrelevant*
Regulation needs to be harmonised between countries and regions	*Very important, important, neutral, not important, Irrelevant*
Greater financial/tax/subsidies support for low emission products	*Very important, important, neutral, not important, Irrelevant*
Easier access to affordable financing for transition investments	*Very important, important, neutral, not important, Irrelevant*
Greater consumer willingness to switch behaviour to low emission products	*Very important, important, neutral, not important, Irrelevant*
Environment: General approach and drivers	
Has your company adopted a business strategy to achieve net zero emissions in the future?	Yes/No
Is your company investing in solutions that lower your company's environmental impact?	Yes/No
If "Yes" Which of the following solutions does your company use or has exposure to? (Tick all that apply)	*Solar, Wind, Hydrothermal, Energy saving technologies, Biofuels, Electric transport, Carbon capture and storage, Carbon credits, Material recycling, Other*
If "No" which of the following factors are the reason for this? (Tick all that apply)	*Too expensive, No business need, Investments will not make a difference, No legal requirement to invest, Other*
Which of the following factors drive your company's approach to sustainability (Tick all that apply)?	Our own views, Legislation, International pressure, Growing competitive pressures, Customer/consumer demands, Provides market opportunities for us
Looking ahead which of the following statements best describes your company's approach to addressing environmental concerns?	
I do not expect environmental concerns to influence our business and investment strategy	*Yes/No*
My company will incorporate sustainability into our overall strategy but I do not expect significant changes	*Yes/No*
We will invest as much as is needed to become sustainable but we do not take an active role trying to persuade others to do the same	*Yes/No*
We aim to become sustainable leaders in our sector and will try to persuade others to do the same	*Yes/No*
During the next five years do you expect your company to increase investments in low emission energy solutions?	Yes/No
How might the development of a low carbon economy impact your company's growth outlook?	Very negative, Somewhat negative, No impact, Slightly positive, Very positive
What of the following reasons might cause your company to delay investing in lower emission energy solutions ?	
Related investment costs are too high	*Yes/No*
We are unable to transfer higher costs to customers	*Yes/No*
Solutions not yet available at sufficient scale	*Yes/No*
There is no mandatory requirement for us to invest in these solutions	*Yes/No*
Our customers or consumers do not require us to do so	*Yes/No*
Which of the following are needed in your view to accelerate the transition towards a low carbon economy (Answer all)?	
Stricter and mandatory government legislation	*Yes/No*
Customers and consumers must be willing to pay for low carbon solutions	*Yes/No*
Financing for low carbon investments needs to become cheaper	*Yes/No*
Corporates and consumers need to change purchasing behaviour	*Yes/No*
Energy transition solutions	
When thinking about existing energy sources how do you rate the outlook for each of the following?	
Coal/Oil/Natural gas	*Completely phased out well before 2050, Largely phased out by 2050, Significant reduction by 2050, Limited reduction by 2050, Increase in usage by 2050*
When thinking about alternative energy sources how do you rate the capacity outlook for each of the following?	
Solar, Wind, Hydrogen, Hydrothermal, Nuclear power	*Much larger than is currently expected, Somewhat higher than current expectations, In line with expectations, Much lower than is currently expected*
Which of the following alternative energy sources does your company currently use?	
Solar, Wind, Hydrogen, Geothermal, Hydrothermal, Biofuel, Nuclear power, None of these	*Yes/No*
Does your company have a policy to increase the usage of electric transport modes (EVs, electric motorcycles)?	Yes/No
Do you believe that the car and motorcycle fleet in India will become largely electric by 2050	Yes/No
If "No" which of the following factors are the reason for this? (Tick all that apply)	
EVs are unlikely to become cheap enough	*Yes/No*
Battery range too low	*Yes/No*
Charging infrastructure unlikely to be sufficient	*Yes/No*
Other	*Yes/No*
In relation to batteries and energy storage which of the following apply to your company (Tick all that apply)	
This is not relevant for our business	*Yes/No*
We want to use batteries but supply is too low	*Yes/No*
We use batteries for energy storage	*Yes/No*
We want to use batteries but they are too expensive	*Yes/No*
What is your company's approach to biofuel as a potential fuel alternative source? (Tick all that apply)	
Biofuels are not relevant for our business	*Yes/No*
We want to use biofuels but it is too expensive	*Yes/No*
We want to use biofuels but it is not supplied in sufficient quantity	*Yes/No*
We do not use biofuels as we are not convinced about the benefits	*Yes/No*
Other	*Yes/No*
Of the following powersources can you indicate your top three with the strongest growth potential in India during the next 25 years?	Solar, Wind, Hydrogen, Geothermal, Hydrothermal, Biofuel, Nuclear, LNG
Financing-related questions	
Has your company financed any investments through the use of sustainable finance schemes such as green loans or bonds?	Yes/No
If "Yes" please answer the following	
Raising sustainable finance has been easier than expected	*Yes/No*
Sustainable finance is cheaper than traditional finance.	*Yes/No*
Bank are becoming more active in offering sustainable finance schemes to my company	*Yes/No*
If "No" please answer the following	
My company's banks do not engage with us on sustainable finance	*Yes/No*
Sustainable finance is too expensive	*Yes/No*
My company does not see a need or benefit for adopting sustainable finance schemes	*Yes/No*
Does your company expect to use sustainable finance schemes in the future to finance investments?	Yes/No
If "Yes" which of the following sustainable finance instruments might your company use? (Tick all that apply)	
Green bond or loan, Blue bond, Sustainability linked bond or loan, Social bond, Blended finance, Other	*Yes/No*
Is your company engaged with buying or selling of carbon credits?	Yes (we have bought carbon credits), Yes (we have sold carbon credits), No
Do you expect your company to be engaged with carbon credits in the future?	Yes (we will be buying carbon credits), Yes (we will sell carbon credits), No

Source: Standard Chartered

About the author

Eugène Klerk is the Head of Sustainability Insights at Standard Chartered. In this role, Eugène is responsible for generating and coordinating Standard Chartered's sustainability-related content.

Prior to his current role, Eugène was the Global Head of ESG Research at Standard Chartered. In this role, he was responsible for developing ESG related investment and trading strategies across the major asset classes. Eugène joined Standard Chartered from Credit Suisse, where for 10 years he was responsible for sustainable thematic and ESG research and managed the Global ESG research team. In addition Eugène was the head of the Sustainability pillar of the Credit Suisse Research Institute.

Eugène started his career in the mid-90s as an emerging markets fixed income and equity analyst. During this time, he was responsible for the EMEA Research team at Credit Suisse First Boston and he achieved multiple top 3 rankings in major surveys.

Eugène holds a master's degree in applied mathematics.

Eugène Klerk
Head of Sustainability Insights, Standard Chartered
eugene.klerk@sc.com

Acknowledgements

Thanks to Akshay Ram Gurunathan, net zero delivery analyst of Standard Chartered and Aditya Pal, sustainable finance analyst of Standard Chartered for their data analysis and sector input.

References

ACEA. (2024).
Motorisation raters in the EU, by country and vehicle type. Retrieved from www.acea.auto.

Bloomberg. (2025).
BNEF New Energy Outlook 2025.

Central Electricity Authority. (2023).
National Electricity Plan: Volume 1 generation.

IEA. (2025). Renewables 2025:
Analysis and forecasts to 2030. Retrieved from https://www.iea.org/reports/renewables-2025.

IIF. (2025).
Challenges drive innovation in sustainable debt markets.

India Ministry of Power. (2025).
India achieved historic milestone in power sector. Retrieved from https://www.pib.gov.in/PressReleasePage.aspx?PRID=2183866.

IRENA. (2025).
Solar and Wind costs by country. Retrieved from https://www.irena.org/Data/View-data-by-topic/Costs/Solar-costs.

Lee, E., & Sahay, A. (2025).
The aftershock: Global and India outlook.

Ministry of Environment, Forest and Climate Change. (2022). India's Long-Term Low-Carbon Development Strategy.

Ministry of new and renewable energy. (2025).
Year wise achievement: installed renewable energy capacity. Retrieved from https://mnre.gov.in/en/year-wise-achievement/.

Ministry of Road Transport and Highways. (2025).
Annual report 2024-2025.

NISE. (2025).
Solar PV potential of India: Ground mounted.

The State Council. (2022).
China registers 415 million motor vehicles, 500 million drivers. Retrieved from https://english.www.gov.cn/archive/statistics/202212/08/content_WS6391cafcc6d0a757729e41bc.html.

World Bank. (2025). GDP growth (annual %). Retrieved from https://data.worldbank.org/indicator/NY.GDP.MKTPKD.ZG?end=2024&locations=IN&start=2021&view=chart.

[1] Press Release: Press Information Bureau
https://www.pib.gov.in/PressReleasePage.aspx?PRID=2183866

[2] [3] [4] [17] Press Note Details: Press Information Bureau
https://www.pib.gov.in/PressNoteDetails.aspx?id=154717&NoteId=154717&ModuleId=3

[5] [6] [14] India – World Energy Investment 2025 – Analysis - IEA
https://www.iea.org/reports/world-energy-investment-2025/india

[7] [8] India accelerates Hydrogen mobility with new pilot projects
https://www.gh2.org.in/india-accelerates-hydrogen-mobility-with-new-pilot-projects

[9] Electrical Components in Green Hydrogen Production: Why they matter?
https://www.gh2.org.in/parth-sharma-programme-associate-gh2-india

[10] Executive summary – Global Hydrogen Review 2024 – Analysis - IEA
https://www.iea.org/reports/global-hydrogen-review-2024/executive-summary

[11] [12] [13] What are the drivers and prospects for India's Nuclear Energy Mission | S&P Global
https://www.spglobal.com/en/research-insights/special-reports/india-forward/shifting-horizons/what-drivers-prospects-for-indias-nuclear-energy-mission

[15] [16] IFC India: JSW Steel and Cement and the Quest to Capture Carbon in Hard to Abate Sectors - Blog - Business & Environment - Harvard Business School
https://www.hbs.edu/environment/blog/post/IFC-India-2024-Carbon-Capture

Disclaimer

Forward-looking statements

The information included in this document may contain 'forward-looking statements' based upon current expectations or beliefs as well as statements formulated with assumptions about future events. Forward-looking statements include, without limitation, projections, estimates, commitments, plans, approaches, ambitions and targets (including, without limitation, ESG commitments, ambitions and targets). Forward-looking statements often use words such as 'may', 'could', 'will', 'expect', 'intend', 'estimate', 'anticipate', 'believe', 'plan', 'seek', 'aim', 'continue' or other words of similar meaning to any of the foregoing. Forward-looking statements may also (or additionally) be identified by the fact that they do not relate only to historical or current facts.

By their very nature, forward-looking statements are subject to known and unknown risks and uncertainties and other factors that could cause actual results, and the Group's plans and objectives, to differ materially from those expressed or implied in the forward-looking statements. Readers should not place reliance on, and are cautioned about relying on, any forward-looking statements. In particular, there is additional uncertainty around the evolution, impact and risk surrounding climate change that cannot be evaluated in the same way as more conventional financial risk due to the long-term, complex and novel nature and the different interaction with non-climate-related risks and vulnerabilities.

There are several factors which could cause the Group's actual results and its plans, targets and objectives to differ materially from those expressed or implied in forward-looking statements. The factors include (but are not limited to): changes in global, political, economic, business, competitive and market forces or conditions, or in future exchange and interest rates; changes in environmental, geopolitical, social or physical risks; legal, regulatory and policy developments, including regulatory measures addressing climate change and broader

sustainability-related issues; the development of standards and interpretations, including evolving requirements and practices in ESG reporting and the development of sustainability-related metrics and methodologies; the ability of the Group, together with governments and other stakeholders to measure, manage, and mitigate the impacts of climate change and broader sustainability-related issues effectively; changes in how sectoral pathways for high-carbon sectors develop, the methodologies used to quantify the impact of investment in transition activities, and the metrics and methodologies used to measure attainment in respect of concepts such as 'just transition' and transition activities; risks arising out of health crises and pandemics; risks of cyber-attacks, data, information or security breaches or technology failures involving the Group; changes in tax rates or policy; future business combinations or dispositions; and other factors specific to the Group, including those identified in this document. To the extent that any forward-looking statements contained in this document are based on past or current trends and/or activities of the Group, they should not be taken as a representation that such trends or activities will continue in the future.

No statement in this document is intended to be, nor should be interpreted as, a profit forecast or to imply that the earnings of the Group for the current year or future years will necessarily match or exceed the historical or published earnings of the Group. Each forward-looking statement speaks only as of the date that it is made. Except as required by any applicable laws or regulations, the Group expressly disclaims any obligation to revise or update any forward-looking statement contained within this document, regardless of whether those statements are affected as a result of new information, future events or otherwise.

Please refer to the latest Annual Report and the financial statements of the Group for a discussion of certain of the risks and factors that could adversely impact the Group's actual results, and cause its plans and objectives, to differ materially from those expressed or implied in any forward-looking statements.

Financial instruments

Nothing in this document shall constitute, in any jurisdiction, an offer or solicitation to sell or any securities or other financial instruments, nor shall it constitute a recommendation or advice in respect of any securities or other financial instruments or any other matter.

Basis of Preparation and Caution Regarding Data Limitations

This section is specifically relevant to, amongst others, the sustainability and climate models, calculations and disclosures throughout this document.

The information contained in this document has been prepared on the following basis:

I. Certain information in this document is unaudited;

II. All information, positions and statements set out in this document are subject to change without notice;

III. The information included in this document does not constitute any investment, accounting, legal, regulatory or tax advice or an invitation or recommendation to enter into any transaction;

IV. The information included in this document may have been prepared using models, methodologies and data which are subject to certain limitations. These limitations include (but are not limited to): the limited availability of reliable data, data gaps, and the nascent nature of the methodologies and technologies underpinning this data; the limited standardisation of data (given, amongst other things, limited international coordination on data and methodology standards); and future uncertainty

(due, amongst other things, to changing projections relating to technological development and global and regional laws, regulations and policies, and the current inability to make use of strong historical data);

V. The models, external data and methodologies used in information included in this document are or could be subject to adjustment which is beyond our control;

VI. Any opinions and estimates should be regarded as indicative, preliminary and for illustrative purposes only. Expected and actual outcomes may differ from those set out in this document (as explained in the "Forward-looking statements" section above);

VII. Some of the related information appearing in this document may have been obtained from public and other sources and, while the Group believes such information to be reliable, it has not been independently verified by the Group and no representation or warranty is made by the Group as to its quality, completeness, accuracy, fitness for a particular purpose or noninfringement of such information;

VIII. For the purposes of the information included in this document, a number of key judgements and assumptions have been made. It is possible that the assumptions drawn, and the judgement exercised may subsequently turn out to be inaccurate. The judgements and data presented in this document are not a substitute for judgements and analysis made independently by the reader;

IX. Any opinions or views of third parties expressed in this document are those of the third parties identified, and not of the Group, its affiliates, directors, officers, employees or agents. By incorporating or referring to opinions and views of third parties, the Group is not, in any way, endorsing or supporting such opinions or views; whilst the Group bears primary responsibility for the information included in this document, it does not accept responsibility for the external input provided by any third parties for the purposes of developing the information included in this document;

X. The data contained in this document reflects available information and estimates at the relevant time;

XI. Where the Group has used any methodology or tools developed by a third party, the application of the methodology or tools (or consequences of its application) shall not be interpreted as conflicting with any legal or contractual obligations and such legal or contractual obligations shall take precedence over the application of the methodology or tools;

XII. Where the Group has used any underlying data provided or sourced by a third party, the use of the data shall not be interpreted as conflicting with any legal or contractual obligations and such legal or contractual obligations shall take precedence over the use of the data;

XIII. This Important Notice is not limited in applicability to those sections of the document where limitations to data, metrics and methodologies are identified and where this Important Notice is referenced. This Important Notice applies to the whole document;

XIV. Further development of reporting, standards or other principles could impact the information included in this document or any metrics, data and targets included in this document (it being noted that ESG reporting and standards are subject to rapid change and development); and

XV. While all reasonable care has been taken in preparing the information included in this document, neither the Group nor any of its affiliates, directors, officers, employees or agents make any representation or warranty as to its quality, accuracy or completeness, and they accept no responsibility or liability for the contents of this information, including any errors of fact, omission or opinion expressed.

As standards and practices continue to evolve, it may mean subsequent transition plans do not allow a reader to compare metrics, data points or targets between transition plans on a direct like-for-like basis. In addition, the Group's climate related risk capabilities, its net zero transition strategy, targets and transition plan, and its approach towards nature-related impacts, dependencies, risks and opportunities remain under development and the data underlying these, and market practice in relation to the disclosures made in this transition plan, will evolve over time. As a result, certain of such disclosures are likely to be amended, updated, recalculated and restated in future transition plans.

You are advised to exercise your own independent judgement (with the advice of your professional advisers as necessary) with respect to the risks and consequences of any matter contained in this document.

The Group, its affiliates, directors, officers, employees or agents expressly disclaim any liability and responsibility for any decisions or actions which you may take and for any damage or losses you may suffer from your use of or reliance on the information contained in this document.

It is not intended that any of the information contained in this document includes commercially sensitive information in respect of the Group.


standard
chartered