Azadi Ka Amrit Mahotsav

FICCI

BEYOND INCREMENTALISM

A pulse check on India's circular transition

accenture

FICCI CIRCULAR ECONOMY SYMPOSIUM 2021

Warming Stripes for India (1901-2020) adopted from the work of Professor Ed Hawkins at University of Reading (https://showyourstripes.info/)

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Foreword

Our economy has undergone a seismic change in the past two years. We have started adjusting to the new normal after a series of pandemic induced lockdowns. India's monumental success in administering one billion vaccine doses has accelerated the economic recovery. Recent figures released by CAIT show that sales of INR 1.2 lakh crores during the 2021 Diwali festive season have exceeded the 10-year record. Similarly, the domestic air traffic has increased 67% on y-o-y basis.

The indicators of economic recovery and increasing resource consumption provide a suitable backdrop for the fourth edition of the FICCI - Accenture paper, this year's topic being "Beyond Incrementalism: A pulse check on India's circular transition". In the inaugural report, we saw that the size of the circular economy opportunity in India is worth $0.5tn and after four years, it is a good idea to conduct a status check to see how far we have come and where we want to go from here. The global supply chains are getting reconfigured in the aftermath of the pandemic, and it's an opportune moment for India Inc. to incorporate circularity and resource efficiency while driving sustainable growth. FICCI Circular Economy Symposium along with this year's paper dive into the status of circular economy in India, the emerging trends, and the imperatives for the future.

Both the public and private sectors have undertaken several initiatives. The MoEFCC had released a draft on National Resource Efficiency Policy in 2019 outlining a broad policy and institutional framework on the topic. The Government has set up 11 committees (organized by NITI Aayog and MoEFCC, led by respective line ministries) to prepare comprehensive plans to move from a linear economy to a circular economy in their respective areas in addition to actively formulating rules on recycling and waste management. New sectors e.g., Tyre and rubber, used lubricants, Li-ion batteries, hazardous waste where the opportunities for value creation, and reduction in environmental footprints as well as social costs are huge were deliberated in detail by committees and action plans have been finalised. The broad approach has been to address both regulatory and developmental issues holistically, encouraging new business models albeit without impacting ease of doing business. The private sector has also adopted multiple innovative business models and practices as discussed in the paper.

We must also realize that circular can also contribute to country's decarbonization agenda. With the recent bold commitments made by PM Narendra Modi on Net Zero by 2070 at COP26 held in Glasgow, the need for accelerating circular agenda is even more apparent. Research by the Ellen MacArthur Foundation shows that circular has potential to address up to 20% of the total emissions, and hence circular can play a key role in India's low carbon economy transition plans.

I am happy this paper has taken an integrated and pragmatic view on circularity, providing perspectives on the ecosystem development, policy reforms, technologies, market drivers, barriers, etc. I appreciate the efforts of FICCI, Accenture, and participating organizations for their inputs in shaping this thought capital. I encourage all stakeholders to leverage the insights and recommendations as we move forward in seizing the opportunity of circular economy in India.

(Amitabh Kant)

Place- New Delhi
Dated- 19/11/2021

स्वच्छ भारत
एक कदम स्वच्छता की ओर

PREFACE FROM FICCI

Dilip Chenoy
Secretary General
FICCI

Circular Economy as a topic is evolving rapidly, and we at FICCI are enabling members to keep a close eye on how it is acting as a driver and a barrier for industry.

The key word here is "Circular" that highlights a shift in the mindset from linear value chains to circular value chains, that enables greater emphasis on product life extension & resource efficiency that in-turn enhances the end of the life utilization of the products. This transition is critical at this juncture to address the acute resource shortage.

FICCI is encouraging incorporation of circular economy by firms not only in their core business priorities but also across the value chain. Circular economy business models and development of ecosystems are essential to support the transition.

As the voice of India's industry and business, FICCI is committed to assist industry to address this challenge – the Circular Economy Symposium 2021 represents our continued efforts in this direction.

We are pleased to share this study of national importance jointly conducted by Accenture Strategy and FICCI. This study analyses the current maturity of circular economy, the outlook and as well as the interlinkage with decarbonization. The study also presents several global and local case studies to showcase the good work already happening in this space.

We would like to take this opportunity to thank Accenture, associated FICCI team and all the organizations that have contributed to this critical study. We hope their efforts and contributions, as captured through this study, will pave way for the much-needed transformation and impact at scale in the coming years.

Dilip Chenoy

PREFACE FROM ACCENTURE

Sanjay Dawar
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India is facing a conundrum to drive sustainable, inclusive growth for its 1.4bn strong family. India has taken a significant goal of becoming Net Zero by 2070. Meeting this goal while ensuring India's domestic consumption continues to push its growth story is undeniably a massive challenge. This further gets exacerbated in the fact that India's current Domestic Material Consumption stands as 5.5 tons per capita, which is lowest when compared to OECD countries. Thus, India will continue to draw upon its limited resources. Transitioning to a circular economy model is essential to maximize current resource efficiency and ensure sustenance of the masses while staying sustainable.

Circularity is in India's DNA and that came up time and again in the interactions we had with sustainability leaders. The opportunity is to seize $0.5 trillion worth of India's GDP value by 2030 through adoption of circular business models while reducing overall GHG emissions by up to ~20% across key industrial sectors. In this edition, we are exploring how are India's business leaders planning to explore this opportunity and to what extent they will align the circular agenda of their organizations with their decarbonization goals.

The overall pulse check suggested that the sentiment across sectors is upbeat, and the leaders are ready for the challenge. As per the study more than 80% of the business leaders understand that CE has value potential across their value chain which they are planning to tap in the coming 3-5 years. We though discovered contradictions to this sentiment while analyzing the public commitments declared by the top 100 listed companies by market capitalization which we detail in the report. Its henceforth an imperative to understand the key barriers to circular adoption in the Indian context. It's important to highlight that the key drivers to change will continue to be technology and collaboration. Building ecosystems and providing platforms that foster cooperation at scale are essential enablers. The truth is, it's the mental model that needs to change. Growth, profitability, and sustainability will need to exist together and with equal emphasis.

We would like to thank FICCI and all the participating organizations for bringing out rich insights that we share in this study. This study will not be possible without the inputs of all the sustainability leaders who provided their reflections through the survey and the interviews. We would also like to thank Peter Lacy, Accenture's chief responsibility officer and global sustainability services lead, for his pioneering work on circular economy which continues to be our inspiration. Lastly, we extend our appreciation to the Accenture team for their thought leadership and passion.

01

Executive Summary

EXECUTIVE SUMMARY

As we end 2021, the first year of "decade to deliver", the year that saw the world got wrecked by climate disasters of intensifying degree, the key question looms - are we doing enough? In the backdrop of India declaring a net zero target by 2070 at COP26, this question becomes more pertinent. With the ever-rising demand of earth's limited resources by the growing economy, this edition of the study focuses on covering two aspects:

- A diagnostic of the CE landscape in India and what the future holds
- The role India's CE transition can play in the decarbonization journey

The survey responses strengthen the view that Indian business leaders are increasingly aware about the commercial value CE can bring and its role in decarbonization. 82% of those surveyed agree that CE is a comprehensive approach that extends to each part of the value chain while only 18% view it as a waste management and recycling concept. However, the review of public commitments by top 100 listed companies by market capitalization indicates that action needs to catch up with the awareness. Adoption of targets, on both CE and net zero, is lagging in corporate India. Only 27% of these companies disclose initiatives or targets around circularity (Figure i), while only 25% companies have a net zero target (Figure ii).

Our diagnosis of CE business models shows that traditional CE concepts such as resource recovery and circular inputs are largely prevalent. More mature and transformative concepts such as product as a service, product use extension and shared platforms are yet to be fully exploited. Our survey also indicates a continued high focus on operational dimensions of CE. While the maturity on organization & culture and ecosystem capabilities gathers momentum, Indian companies continue to deprioritize circularity in product design. From a stakeholder perspective, boards and customers are currently the most influential actors. In near term though it is expected that the policymakers will be playing a much more significant role (Figure iii).

India's net zero by 2070 ambition is a significant milestone that will have wide ramifications over the material economy. The country would need to peak its emissions by 2040 to meet the 2070 target and accordingly, emissions from most businesses and economic activities would need to peak around the same time horizon. As per research by Ellen MacArthur Foundation, CE strategies in four key industrial materials (cement, aluminum, steel, plastics) and in food system - can address 20% of the total carbon emissions from these areas in 2050. Remaining 80% will have to be addressed through low-carbon energy as well as carbon removals through carbon capture and storage etc. Fortunately, we have a consensus on the potential of CE towards decarbonization at both organizational and economic levels. 77% of Indian business leaders say they are focusing on CE to meet their decarbonization goals.

The outlook on CE adoption remains bullish. An overwhelming 94% of the leaders believe that CE business models can become mainstream and widely adopted across industries in a timeframe of 3-5 years. This is particularly applicable in the case of Basic Materials, FMCG and Consumer Durables industries, as closing on the loop on these would be essential to partially secure the long-term supply of raw materials.

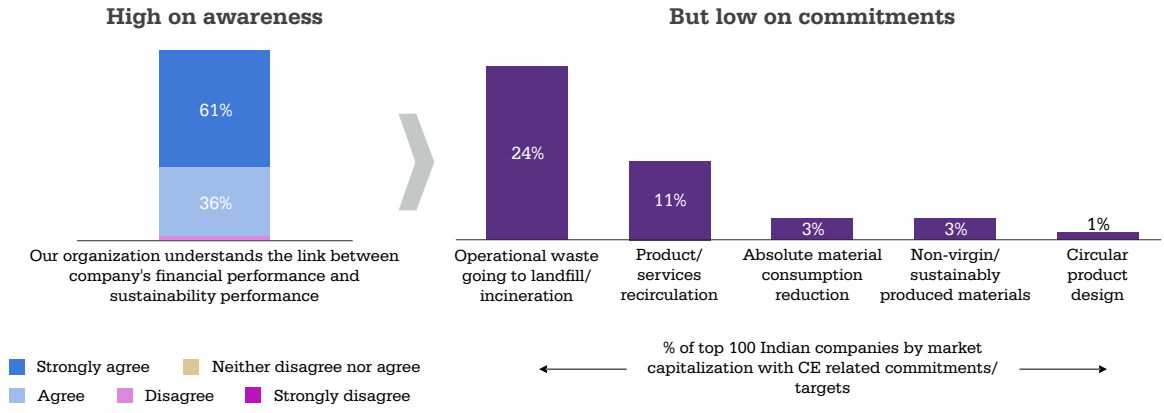


FIGURE i A) PERCENTAGE BREAKDOWN OF LEADERS' AWARENESS ON LINKAGE OF SUSTAINABILITY AND FINANCIAL PERFORMANCE B) PERCENTAGE BREAKDOWN OF CIRCULARITY TARGETS AND COMMITMENTS OF TOP 100 INDIAN COMPANIES BY MARKET CAPITALIZATION

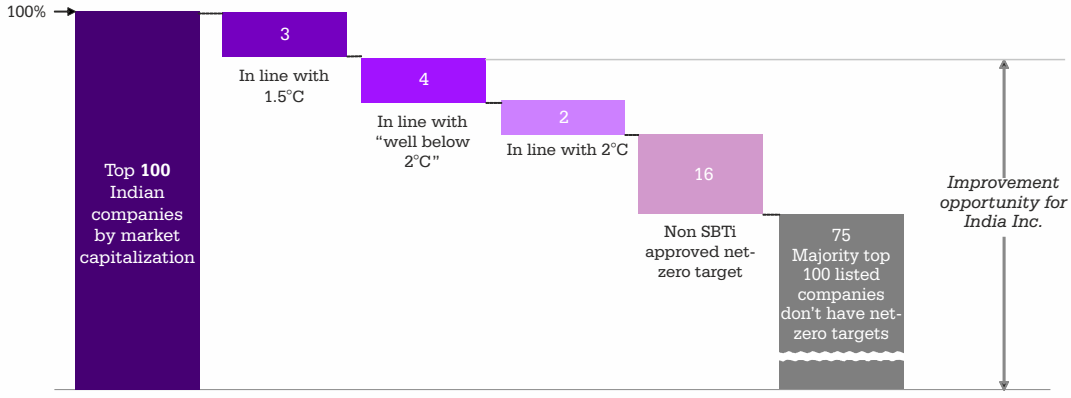
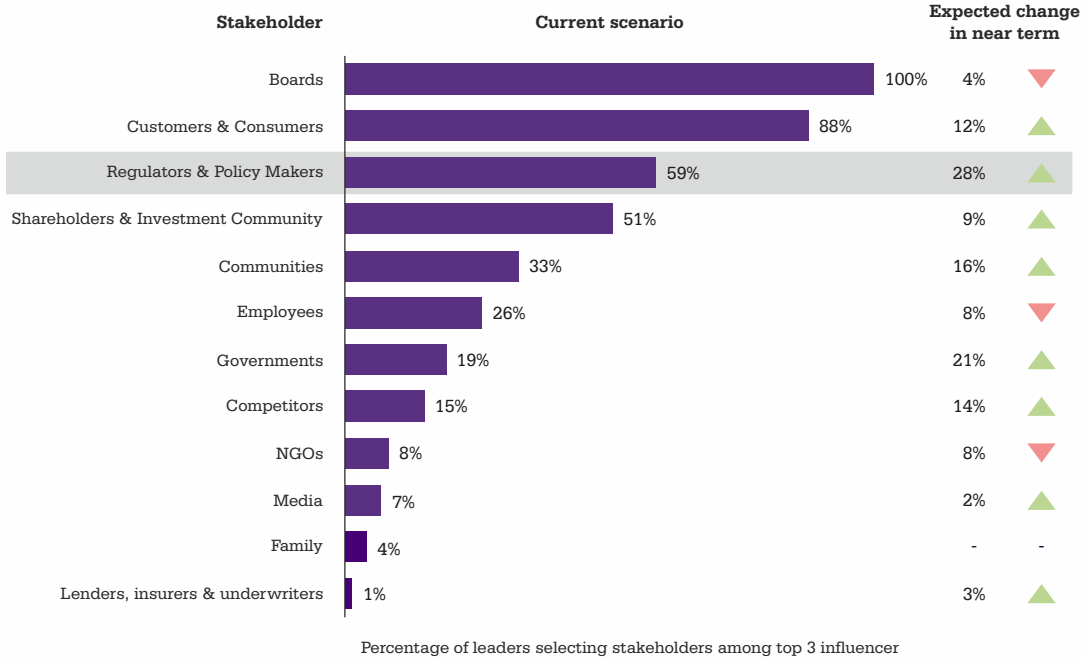


FIGURE ii BREAKDOWN OF THE EMISSION REDUCTION TARGETS OF TOP 100 INDIAN COMPANIES BY MARKET CAPITALIZATION



Survey Question: According to you, which of the following stakeholders will have the most influence over the circularity agenda in your business over the next 3-5 years

FIGURE iii PERCENTAGE OF LEADERS SELECTING STAKEHOLDERS AMONG TOP 3 OVER THEIR INFLUENCE ON CIRCULAR TRANSITION

To ensure a smoother transition, multiple key barriers to adoption need to be eliminated. Our survey highlighted five main barriers to CE that 70% of all respondents could relate to. These included both, industry-wide factors as well as the internal organization of the companies. To overcome these barriers, we propose five call-to-actions for leaders to accelerate the CE agenda:

01

Establish a national CE framework

02

Strengthen the CE ecosystem

03

Accelerate technology adoption

04

Supercharge the operating model

05

Invest in creating a market demand

1. **National CE framework:** a unified framework (either by government or voluntarily by industry bodies) for measuring circularity and to steer standardized reporting and benchmarking, standardized methodology to define carbon related savings from circular initiatives to have synchronized decarbonization efforts
2. **CE ecosystem:** joint product development and route-to-markets, pre-competitive platforms to reduce the overall execution cost, CE-enabled carbon offset strategy and open-source knowledge sharing
3. **Technology adoption:** indigenization of OEMs and other key technology plays, increased R&D investments e.g., through circular accelerator programs and strategic focus on physical and biological technologies such as development of low-carbon version of materials
4. **Operating model:** powerful sustainability governance that has CEO sponsorship and jointly steered by sustainability leads in close collaboration with all the functional leads to embed sustainability by design in all that the organization does, ESG-linked performance incentives for C-suites, internal capability development for carbon and material intelligence, ring-fenced funds for CE and carbon projects
5. **Market demand:** circular consumer value proposition with minimal green premiums, stronger communication of sustainability benefits, national-level awareness campaigns and push for inclusion of CE in school curriculum through CSR initiatives

In conclusion, business leaders in India are keen to forge ahead on adopting CE principles across their value chain and understand the relevance of CE as a decarbonization lever. It's the pace of adoption and the scale, not just by sectoral leaders but by sectors at large, that needs acceleration.

02

Setting the Context

SETTING THE CONTEXT

Globally, circular economy transition presents a ~$4.5tn in value at stake by 2030 through a radical departure from traditional 'take, make, waste' production and consumption systems. This would entail eliminating the concept of waste altogether (i.e., eliminating waste not in the traditional sense of rubbish, but any underutilization of natural resources, products, and assets). In our inaugural report, we developed an econometric model to quantify the potential for India and found out that ~$0.5tn in value could be unlocked by 2030[1], which is ~11% of global size of the prize.

FIGURE 1 ADOPTION OF CIRCULAR BUSINESS MODELS IN INDIA CAN HELP PROTECT HALF-A-TRILLION-DOLLAR WORTH OF GDP BY 2030

Accenture has analyzed 1,500 case studies to identify five underlying business models which can help companies capture this value[2]. These five business models are Circular Inputs, Resource Recovery, Product Life Extension, Sharing Platforms and Product as a Service. In the past years, companies across sectors and geographies have conceptualized and launched innovative interventions across these five business models. Besides this financial value, CE business models have the potential to play a major role in country's decarbonization journey as well.

We took a sector-wise deep dive into average emission intensity of Indian companies across sectors and calculated the EBITDA value at risk. As shown in table below, the emission intensity of sectors such as Basic Materials and Utilities, amongst others, is quite high as compared to global benchmarks. The reasons could be varied ranging from difference in fundamental economic structure to share of renewable energy in the energy mix or deployment of material efficient technologies. At the same time, there are certain sectors, where Indian emission intensity is lower as compared to global, which is a positive trend.

Value at risk estimations show that a carbon price of $40/Ton CO_2e will wipe-off more than 80% of EBITDA in Basic Materials and Utilities sectors.

Sector	Emission Intensity [tCO_2e emitted / crores of revenue]		EBITDA value at risk from carbon pricing
	India	Global	India
Basic Materials	380	153	21-86%
CDGS	9.4	11.7	2-6%
Energy	51.5	91	3-13%
Finance	4.0	0.7	1-5%
FMCG	16.3	6.6	2-6%
Healthcare	13.8	4.0	1-4%
Industrials	4.0	6.2	1-2%
Information Technology	1.3	10.5	0.1-0.4%
Telecom	0.4	8.5	0.02-0.1%
Utilities	1665	91	74-294%

Notes: 1. Sector classification as per BSE 2. Revenue is for FY2021 3. Only Scope 1 and 2 data has been used 4. For Indian benchmark, top 100 companies by market capitalization are used 5. For Global benchmarks, top 10 companies globally by market cap were considered (without adjustment of purchasing power parity) 6. EBITDA value at risk (%) is based on impact of cost of carbon prices on organization's EBITDA 7. Range of carbon pricing is $10/Ton CO_2e to $40/Ton CO_2e 8. EBITDA value at risk greater than 100% shows negative profitability

TABLE 1 EMISSION INTENSITY OF INDIAN SECTORS (VS GLOBAL BENCHMARKS) AND EBITDA VALUE AT RISK

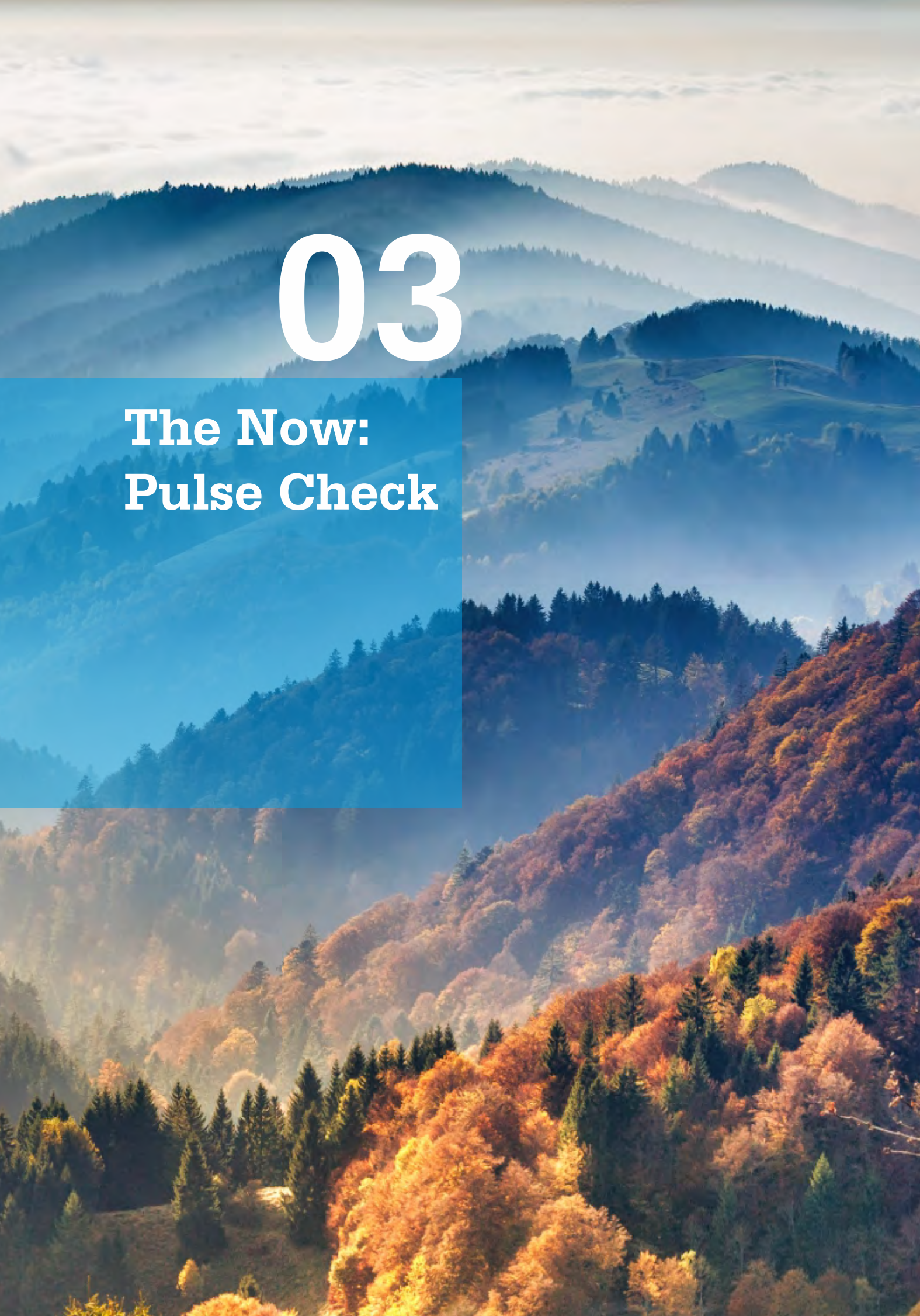
Ambition announced by the government at COP26 to become a net zero country by 2070 is a game changer. This national ambition now needs to be translated into sectoral and company-wise net zero targets urgently. A significant share of this target should be met through CE initiatives. Private sector leaders across industries, including hard-to-abate sectors, have already made bold moves. However, the speed and scale of change remains a challenge, particularly as the classical CE interventions run out of steam.

We believe that main reason is the mindset where we have focused too much on the "what" and too little on the "how". As a result, while circular from waste management perspective is considered as integral part of India's DNA, embedding circular at the design stage itself is clearly not where the current focus exists at scale. In Circular Economy Handbook (2020), Accenture studied companies leading on the CE agenda across the world and found out that organizations must mature across four fundamental dimensions[3], as shown in the figure below, to successfully pivot on both, the "what" and the "how".

01	02	03	04
Operations	Products & Services	Culture & Organization	Ecosystem
Addressing the value lost through the operations and by-products of business processes	Rethinking the design, lifecycle & end of use to optimize usage, eliminate waste & close loops	Embedding circular principles into the organizational fabric through redefined working practices, policies, & procedures	Collaborating and partnering with public & private sector actors for collective transformation
Focus areas: ▪ Energy ▪ Emissions ▪ Water ▪ Waste	Focus areas: ▪ Design ▪ Consumer Use ▪ Use Extension ▪ End of Use	Focus areas: ▪ Vision ▪ Innovation ▪ People ▪ Governance	Focus areas: ▪ Sharing ▪ Collaboration ▪ Investment ▪ Policy

FIGURE 2 FOUR FUNDAMENTAL DIMENSIONS OF CIRCULAR ECONOMY

For moving across the maturity curve, companies not only need to change internally but also demand more from the ecosystem of external stakeholders such as regulators and investors. In India, the government set the ball rolling in 2015 with the announcement of Indian Resource Panel on Resource Efficiency and has continued the momentum through many material efficiency and climate change related policies. While it is still just the beginning, recent actions from Indian governments clearly signal an elevated policy push. As the path gets carved out for the next six decades, now is the time to reflect and take a pulse check on the progress so far and the outlook for next 3-5 years. To that end, Accenture and FICCI have jointly undertaken this study for which we reached out to the business and sustainability leaders of India Inc. through a survey and series of interviews, to bring together some actionable recommendations for this race against time.



03

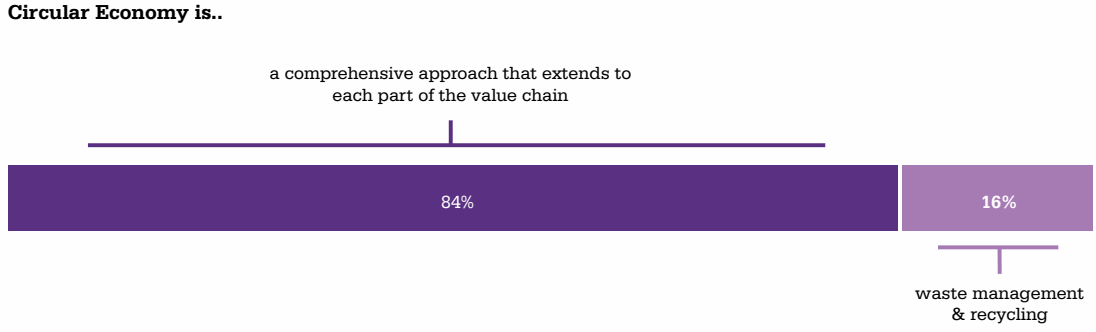
The Now: Pulse Check

THE NOW: PULSE CHECK

As we write this paper in the backdrop of COP26, a total of 71 countries have committed to ambitious net zero target till date[4]. India as well pledged to achieve net zero emissions by 2070. While, resource optimization has been part of the Indian DNA, solving the waste problem has been the dominant feature of the recent CE narrative. But the scope of circularity goes far beyond that. This section explores whether India Inc. is in sync with this evolution and is it ready to explore the full potential of CE for value maximization and decarbonization.

Awareness on CE and its linkage with decarbonization has increased

84% of the Indian leaders surveyed recognize CE as a comprehensive approach that extends across the value chain and not merely waste management or recycling aspects.



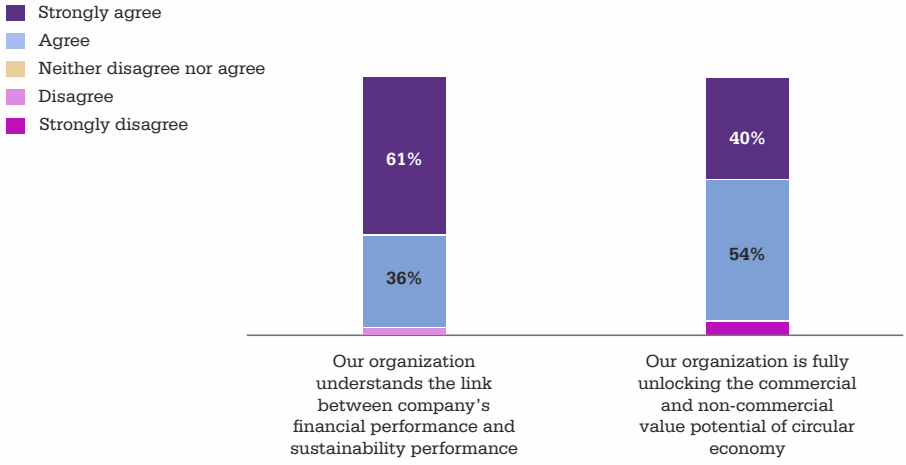
Survey Question: How well does the leadership in your organizations understand circular economy?

FIGURE 3 PERCENTAGE BREAKDOWN OF LEADERS BASED ON THEIR UNDERSTANDING OF CE

Substantial progress has been made on the leadership awareness front but translating that awareness into action by leveling up the ambition and securing resources to deliver is the next step. In addition, while the "what" of CE is getting clearer, the "how" and the "who" is yet to be crystalized.

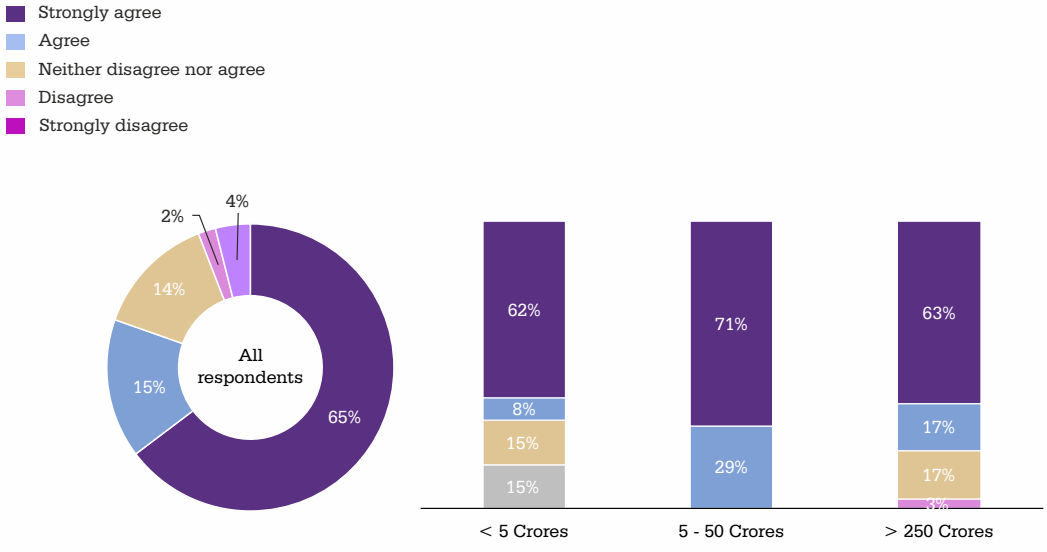
A positive finding from the survey is that 97% of the Indian business leaders understand the linkage between sustainability performance and financial performance of the company with CE being a key lever to achieve that. In fact, ~94% of business leaders surveyed claim that they are working towards unlocking this value potential. The remainining leaders acknowledge that more work needs to be done within their organizations in terms of spreading awareness and conducting training activities.

Another positive trend for India's climate agenda is that ~80% of the business leaders irrespective of their size believe that their organization understands the link between CE and decarbonization and a similarly large number of respondents believe that their organizations are leveraging principles of CE to achieve their decarbonization goals.



Survey Question: To what extent do you agree with the following statements on the circular economy?

FIGURE 4 PERCENTAGE BREAKDOWN OF LEADERS ON UNDERSTANDING AND UNLOCKING THE FINANCIAL VALUE FROM SUSTAINABILITY



Survey Question: Is your organization focusing on circular economy to achieve decarbonization goals?

FIGURE 5 PERCENTAGE OF LEADERS FOCUSING ON CE TO ACHIEVE DECARBONIZATION GOALS

Targets and commitments tell a contradictory story

Assessment of CE commitments

Despite a high level of understanding as claimed by the survey respondents, very few companies have announced CE-related public targets and commitments. Based on our analysis of the public disclosures by top 100 listed companies by market capitalization, we saw that majority of companies have disclosed some form of sustainability initiatives, around net zero, water conservation, renewable energy etc. However, when it comes to CE related targets and commitments, the picture is quite bleak.

Of the top 100 companies by market capitalization, only 27 companies have disclosed CE related targets, only 3 companies have disclosed targets on absolute material consumption reduction

	← % of companies that have targets around →				
Sector	**Operational waste going to landfill/ incineration[3]**	**Recirculation of product/ services[4]**	**Absolute material consumption reduction**	**Non-virgin and/ or sustainably produced materials**	**Circular product design**
Basic Materials	42%	17%	8%	17%	
Consumer Discretionary Goods & Services (CDGS)	21%	11%			
Energy	17%				
Fast Moving Consumer Goods (FMCG)	67%	33%	22%	11%	
Healthcare[2]	25%	13%			
Industrials	29%	14%			
Information Technology	33%				
Telecom		50%			50%
Utilities	14%	14%			

Notes:
1. Finance and Diversified sectors have been excluded as there are no companies that have relevant CE Targets.
2. Finance, Healthcare and Information technology are considered to have a low CE impact.
3. Operational waste excludes post consumer wastage.
4. Recirculation occurs through remanufacture, reuse, recycle, refurbishment, etc.

Source: *Accenture analysis on top100 Indian companies by market capitalization and their targets around circularity*

FIGURE 6 SECTOR WISE BREAKDOWN OF TOP 100 INDIAN COMPANIES BY MARKET CAP ON CIRCULARITY TARGETS

We evaluated the commitments on CE KPIs that are inspired by Ellen MacArthur Foundation's Circulytics framework, including:

a. **Disposal of operational waste (e.g., landfills):** FMCG sector is leading the pack with 67% of FMCG companies having announced a target. However, other material sectors like Energy, Discretionary Goods & Services (auto, retailers, textiles, etc.) and Utilities are behind, with fewer than 25% companies in each sector announcing targets

b. **Recirculation of products and services such as recycling, re-use etc.:** FMCG sector is again leading the pack. However, percentage of companies announcing targets across all sectors are relatively lower. Such targets are particularly relevant in case of Consumer Discretionary Goods, Basic Materials, Industrials, etc. Fewer than 20% of companies have announced targets around recirculation

c. **Targets such as on absolute material consumption, sustainably produced materials, circular design, etc.:** We saw that the adoption rate was incredibly low with only 3 of the top 100 listed companies by market capitalization publicly disclosing such targets. As a benchmark, leading global players, such as Philips[5], IKEA[6] and Unilever[7], have set circular targets which are quantified, ambitious and holistic:

FIGURE 7 CIRCULAR ECONOMY TARGETS BY GLOBAL CORPORATES

There two main reasons behind the low adoption of targets: a) the need to disclose targets and commitments publicly is still low given the low pressure from investors on the ESG front b) absence of a well-defined and industry accepted framework for CE. A standard measurement framework is needed as today most companies are following individualized approaches. Unlike GHG accounting, where the guidelines and methodologies have become comparatively mature, the CE frameworks are still at a nascent stage.

> "Measurement of circularity is definitely critical, at the level of products, at the level of BUs, and at the level of organization. But the approach needs to be simple and versatile enough that it is applicable to all sectors and industries."
>
> **Pradeep Panigrahi**
> Head, Corporate Sustainability,
> Larsen & Toubro

Assessment of net zero commitments

Low target adoption permeates the climate agenda as well. Our research shows, as of date, that only 25 out of top 100 listed companies by market capitalization have committed to net zero targets. This is low as compared to industry worldwide, for instance, as of August 2021, from the 1,000+ largest listed companies almost one-third have committed to reaching net zero by 2050.[8]

Aligning these targets with the climate science as per the science-based target initiative (SBTi) is the next step. We found that out of 25 largest companies with net zero targets in India, only 9 have their targets approved by the SBTi. Sectors with higher emission intensity or hard-to-abate emissions are distinctly missing. For instance, in Utilities and Construction sector, only 2 companies have SBTi approved net zero targets.

With Indian government taking an aggressive stand and matching the ambition of other large economies, India's corporate sector needs to follow suite. Indian sustainability leaders can take inspiration from companies like Wipro, which has shared a bold commitment to become net zero by 2040.[9] By 2030, the IT major has committed to reduce absolute Scope 1 and 2 GHG emissions by 59% from 2017 base year levels and reduce

Scope 3 GHG emissions by 55% from 2020 base year levels. Some companies, such as TCS, have set more aggressive net zero by 2030 targets but they are not approved by the SBTi yet.

75%+of the top Indian companies by market capitalization don't have concrete net zero targets at a time when the government has announced its 2070 net zero ambition

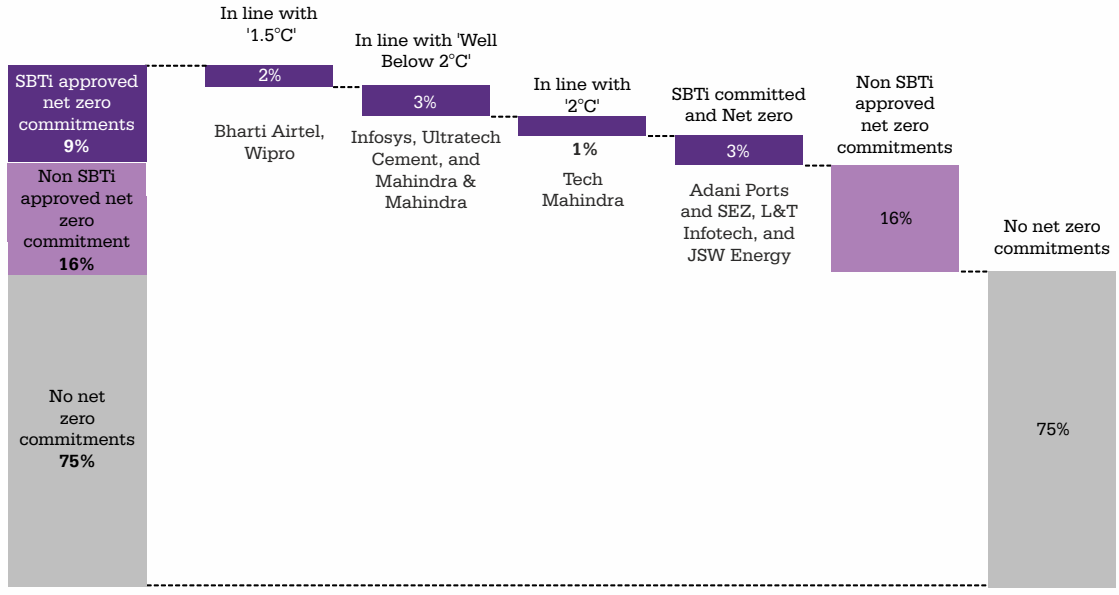


FIGURE 8 PERCENTAGE BREAKDOWN OF TOP 100 INDIAN COMPANIES BY MARKET CAPITALIZATION BASED ON THEIR EMISSION REDUCTION TARGETS

Progression by Indian firms has been incremental

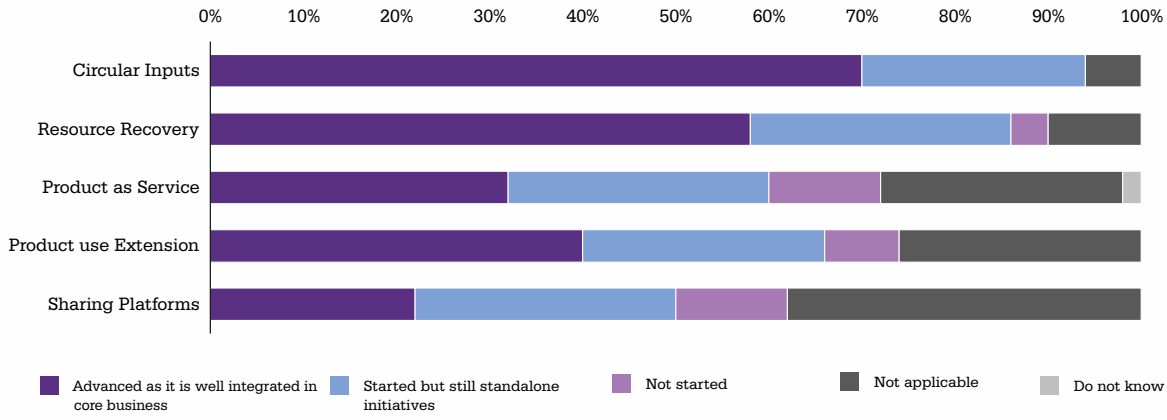
CE business model maturity

As a common trend, companies climb the CE maturity ladder by focusing first on the downstream (Resource Recovery) and then progressing gradually towards upstream. But potential for transformation in upstream value chain through Circular Inputs (e.g., use of new materials and circular product design) or through business models such as Product as a Service, Product Use Extension and Sharing Platforms is much higher. Leading Indian companies have started to embrace such CE models, albeit on piecemeal basis. Examples of success stories include:

Circular Inputs	Resource Recovery	Product as a Service	Product Life Extension	Sharing Platforms
Large Indian auto manufacturer	**Leading chemicals manufacturer**	**Urban living furniture renting platform**	**Refurbished electronics marketplace**	**Large steel producer**
One of India's largest auto manufacturers was under pressure to optimize the use of energy intensive aluminum while maintaining the quality. It has developed a new grade of aluminum alloy that accepts higher percentage of scrap.	India has many sugar factories and managing huge amounts of effluents after crushing of sugar cane is a challenge A successful product has been launched that is used for correcting soil properties by treating the effluents with microbes.	A leading Indian digital marketplace is changing the conventions associated with furniture by moving from selling to renting model. This helps in increasing utilization of assets and reducing extraction of new resources.	Rising penetration of smartphones along with shorter product retention cycles in India are exacerbating the challenge of e-waste The re-seller refurbishes smartphones and other electronics to extend their product life and reduce e-waste.	Two leading Indian steel producers have set up a joint venture to form the world's largest e-market for steel The platform provides buyers the opportunity to save money by utilizing byproducts and idle assets in the market.
50,000 tons of scrap has been reclaimed in one year alone	A plant with a capacity of 10,000 tonnes p.a. is proposed to be set up in Gujarat	Total app downloads have exceeded 1mn	More than 2.1mn devices have been resold on the platform	Total business volumes exceeded $20bn

TABLE 2 EXAMPLES OF INNOVATIVE BUSINESS MODELS ADOPTED BY INDIAN FIRMS

We asked about the uptake of these five business models in our survey. Almost 70% of the respondents mentioned that adoption of Circular Inputs and Resource Recovery is quite prevalent in their organizations. While popularity of Resource Recovery business model is understood, high level of adoption of Circular Inputs is very encouraging. On the other hand, Product as a Service, Product use Extension and Sharing Platforms have some catching up to do. As an example, Philips offers traditional LED lighting products as a service. The service offering is based on circular principles as Philips installs, maintains, and manages the entire lighting solution so customers don't have to invest in hardware. Other example being Gingko, an Italian company, that manufacturers umbrellas made of recycled plastic that extends the life of products in a sustainable manner.

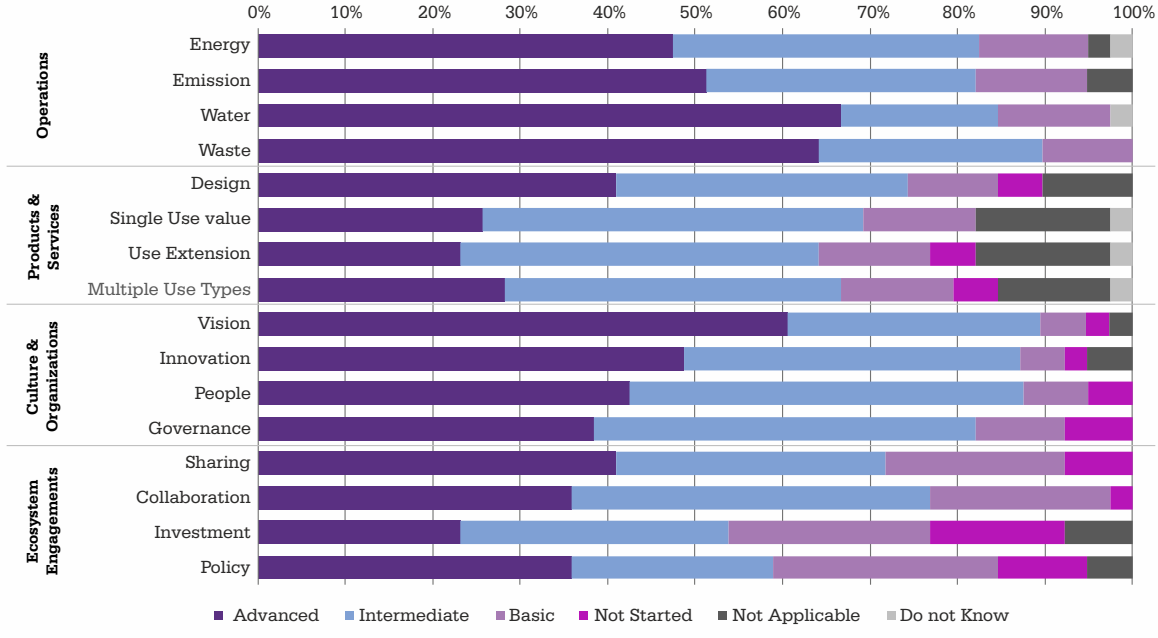


Survey Question: To what extent are the following business models adopted in your organization?

FIGURE 9 PERCENTAGE BREAKDOWN OF LEADERS' PERCEPTION ON MATURITY OF CIRCULAR BUSINESS MODELS

Maturity across four fundamental CE dimensions

To enable the CE business models described above, firms need to be ready on four fundamental dimensions 1. Operations 2. Product & Services 3. Culture & Organizations and 4. Ecosystem Engagements, as discussed in the previous chapter. We gauged the maturity of Indian companies on these four dimensions through our survey as shown below.



Survey Question: What is your organization's current maturity across the four fundamental dimensions of circular economy transition?

FIGURE 10 LEADER'S PERCEPTION ON CURRENT MATURITY ACROSS FUNDAMENTAL DIMENSION OF CIRCULAR ECONOMY TRANSITION

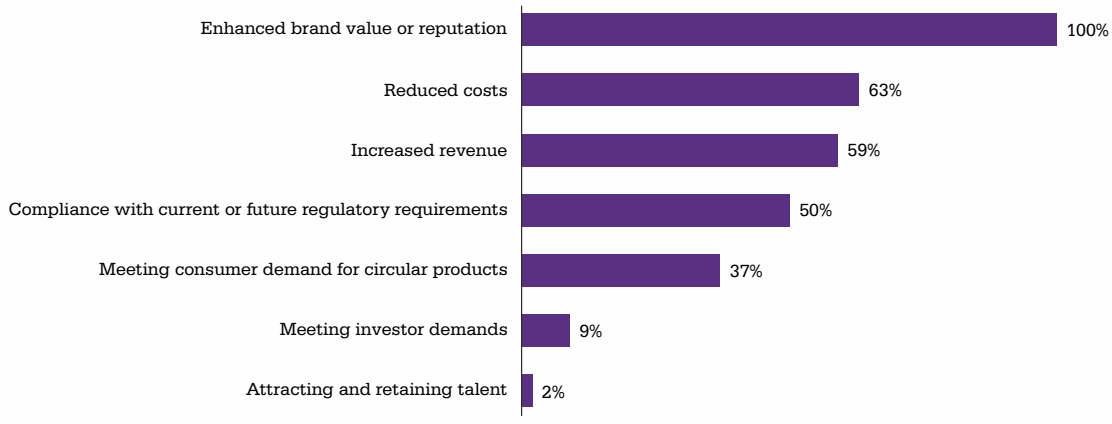
The findings are as follows:

- **High maturity:** Under Operations, more than 50% of the companies self-assess their maturity to be at an advanced state for aspects such as energy, waste, water, emissions, etc. Under Culture & Organization, more than half of the companies believe that they are mature on vision and innovative ways of working

- **Low maturity:** However, under Products & Services, aspects such as circular design and single use value maximization have not been fully embraced by most respondents. Under Culture & Organization, people and governance aspects are not as mature. Furthermore, the maturity on financial investment and policy advocacy aspects is also low

> "Circular Economy needs to include broader economic and ecosystem lens and not be confined to internal operations. Circular initiatives go beyond the boundaries of individual organizations and there needs to be a market that supports such initiatives."
>
> **Alka Upadhyay**
> AVP, Tata Sustainability Group

It is evident that the approach is short-term and tactical. To validate the understanding, we asked what the key drivers for the current CE initiatives at Indian corporates. We found that a large proportion of business leaders agree that it is the brand and reputation that drives them to adopt circularity. Cost reduction and increase in revenue as drivers of CE are secondary (only 63% & 59% of respondents ranked these among their top three drivers respectively). It would help the stakeholders to understand the value CE can bring across various financial and risk levers. Appendix – A presents an illustrative value driver framework for CE. India Inc. may communicate the same across customers, investors, & employees to enhance value led view of CE



Survey Question: What are the key drivers of circularity at your organization?

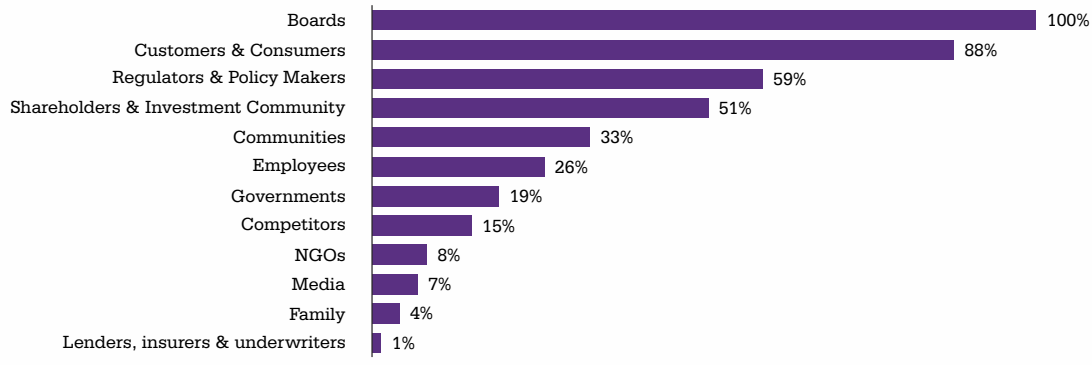
FIGURE 11 PERCENTAGE OF LEADERS SELECTING A DRIVER AMONG TOP 3 FOR DRIVING CIRCULARITY AT THEIR ORGANIZATIONS

Boards are influential in shaping the ambition in the current context

Recent findings[10] indicate that boards of 68% of the top European companies have at least one ESG metric in their incentive plans, indicating the push for ESG agenda by boards. Taking a stakeholder view for India, our survey shows that boards, followed by customers have the highest influence.

While the role of boards is strongly established, the push from customers is going to be the burning platform in near future. Research[11] indicates that up to 25% of Gen Z buyers would be willing to pay a 35% sustainability premium. Similarly, India's Gen Z population currently stands at around 375mn[12] and once the young population enters the workforce, employees will start exerting greater pressure on employers to be more sustainable. Organizations will increasingly use circularity and sustainability for employer brand positioning and for attracting top talent.

> "Heightened consumer awareness is driving a higher demand for sustainable products. High quality infrastructure and business model innovation become critical to enable sustainable portfolio across the value chain."
>
> **Ashok Menon**
> Director of Sustainability & CE, SABIC



Survey Question: According to you, which stakeholders have the most influential role in your company's transition towards circularity?

FIGURE 12 PERCENTAGE OF LEADERS SELECTING STAKEHOLDERS AMONG TOP 3 ON THEIR INFLUENCE OVER THEIR COMPANY'S CIRCULAR TRANSITIONS

> "The key task is to communicate the value of sustainability initiatives to the internal stakeholders. Things fall in place when you get the buy in. Even financing is no longer a challenge once the value proposition is communicated effectively."
>
> **Prabodha Acharya**
> Chief Sustainability Officer, JSW

Investors group is ranked 4th currently but changes in the countries green financing scenario shows hope. AUM under India ESG funds have surged to more than $1.5bn[13]. There are 11 such funds in India, out of which 8 were launched last year itself. Further, the green lending book as per RBI stands at around $4.8bn[14] across both public and private sector banks. However, based on stakeholder interviews, we are yet to see

resource efficiency pan out in a big way in lending criteria and strategic asset allocations.

Role of shareholders/ financers in geographies such as Europe is stronger, where shareholder activism on sustainability/ CE matters is much more prevalent. As per recent findings in Europe[15], companies in the bottom 50% of ESG performance are 24% more likely to be faced by an activist campaign.

In summary, the current state of CE in India has taken a significant leap in terms of awareness. However, we are yet to see such aspirations translate to formal targets and initiatives. High state of CE maturity was observed in operational areas and some aspects of product and services, but largely, maturity of the CE in the organizational DNA and ecosystem aspects is still low. Hence, boards will need to continue to take leadership in CE matters. The circle of influence lies mostly with boards, customers, and investors but these stakeholders are not leveraging their influence to increase the speed of transition. Perhaps, as the pressure from these stakeholders to act on climate change exponentially grows, cascading effects on circularity agenda will also be seen.

In next chapter we assess the trajectory in which India is headed and evaluate the near-term prospects of CE and decarbonization.

04

The Next: Near-term Outlook

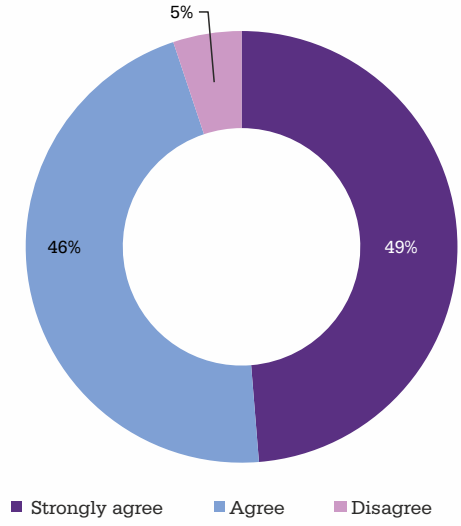
THE NEXT: NEAR-TERM OUTLOOK

In the previous chapter, we looked at the present status of CE in India. In this chapter, we gaze into the future by understanding the changing outlook for CE in the next 3-5 years. In addition, we also demystify the key hurdles Indian leaders perceive they need to overcome to take CE to the next level.

Mainstreaming of CE in India is imminent

49% of the respondents strongly agree that their industries will see wide adoption of circular business models in next 3-5 years

Respondents from sectors such as Basic Materials, Energy and FMCG are more bullish as compared to respondents in Commercial Services & Supplies or Consumer Durables. Naturally for material-intensive industries, closing the loop would be critical for securing long-term raw materials supply. For instance, most of the key players in Indian steel industry are already aggressively pursuing the scrap recycling opportunity in different ways and the ideas are moving past the curve towards scale-up. On the other hand, for companies in sectors such as FMCG, it will be more about social license to operate as plastic waste is expected to continue to dominate the agenda.



Survey Question: Do you agree circular business models would be mainstream in your industry over the next 3-5 years?

FIGURE 13 PERCENTAGE BREAKDOWN OF LEADERS' PERCEPTION ON MAINSTREAMING OF CIRCULAR BUSINESS MODELS IN THEIR INDUSTRIES OVER THE NEXT 3-5 YEARS

Besides resource-intensive sectors, service sectors such as IT and financial services also have a key role to play. Microsoft's CE initiatives goes beyond e-waste management and asset life extension to financing circular solutions and developing software solutions that help other companies adopt CE. Similarly, ING partnered together with ABN AMRO and Rabo Bank to create Circular Economy Finance Guidelines. The guidelines enable investors to identify, select and finance circular business models.[16] In India, State Bank of India along with European Investment Bank have launched a climate action and sustainable financing fund - Neev Fund II - to finance CE projects and other climate related projects in India. Similarly, Infosys is planning to reuse its existing technology stacks to create digital transformation products that are aligned with Circulytics, a CE performance measurement tool developed by the Ellen MacArthur Foundation. With a bullish sentiment around CE established, the next section explores the potential of CE in decarbonizing Indian economy.

> "There are three stages for waste / by product management- disposal stage, value unlocking stage, marketing stage. Indian Inc. needs to transition from disposal stage to value unlocking stage and then to marketing stage. Most Indian companies are still at disposal stage for their by-products."
>
> **Yogesh Bedi**
> Chief, Steel Recycling Business,
> Tata Steel

Circularity is a key piece in the decarbonization puzzle

There are three paths to decarbonization – reduction, offset and removal of GHGs.

FIGURE 14 STRATEGIES FOR DECARBONIZATION

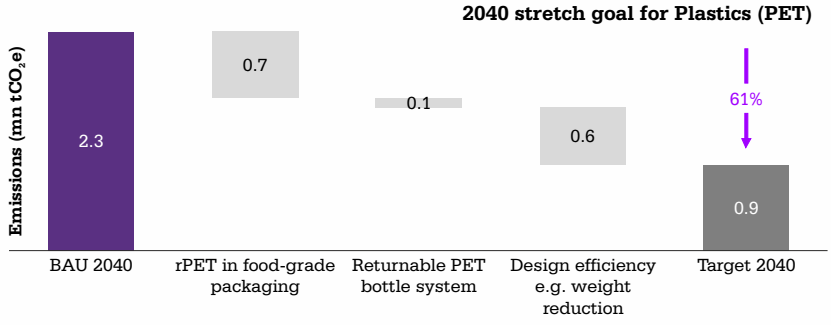
For carbon reduction, the role of energy focused measures such as energy efficiency and adopting clean energy are well recognized. However, research by Ellen MacArthur Foundation shows that with existing technologies, transition to renewable energy will only address 55% of the emissions.[17] For the remaining 45%, CE can play a crucial role alongside carbon capture and storage etc. In fact, applying CE strategies in 4 key industrial materials (cement, aluminum, steel and plastics) and in food system can help remove almost 20% of the total emissions. For India, this would mean a reduction of 1.6bn tons of CO_2e in 2050[18], which is roughly seven times the current carbon footprint of entire Indian steel industry. Remaining 80% will have to addressed through actions such as energy decarbonization, carbon capture and storage etc. Along similar lines, Alka Upadhyay, AVP, Tata Sustainability Group, states "We have estimated that resource efficiency levers can directly impact 15 – 20% of the overall decarbonization goals for industries like steel, manufacturing, chemicals, etc."

> "There is a direct linkage between circularity and decarbonization. CE transition enables greater resource efficiency and helps avoid emissions for virgin materials."
>
> **Arvind Bodhankar**
> Jt. Executive President & Chief Sustainability Officer, UltraTech Cement

However, the real potential could be much higher. A study done for European heavy industry (comprising of steel, aluminum, cement and plastics) found that CE can cut the annual emissions of respective areas by 56% by 2050.[19] There are examples of stretched goals being set. In an ambitious move, ArcelorMittal is making its Sestao plant in Spain a full-scale zero carbon-emissions steel plant for which the company is increasing the proportion of circular and recycled scrap in its metallic input. The Sestao plant is expected to produce 1.6mn tons of zero carbon-emissions steel by 2025[20], thereby avoiding total emissions of ~3mn CO_2e.

For Indian economy to decarbonize, therefore, it is imperative for the industry to embed CE in their net zero strategy. We have modelled emissions of four highly carbon intensive sectors to demonstrate potential reductions using various CE interventions through the year 2040.

CE interventions can potentially reduce ~50-60% of total carbon emissions, depending on industry or material.

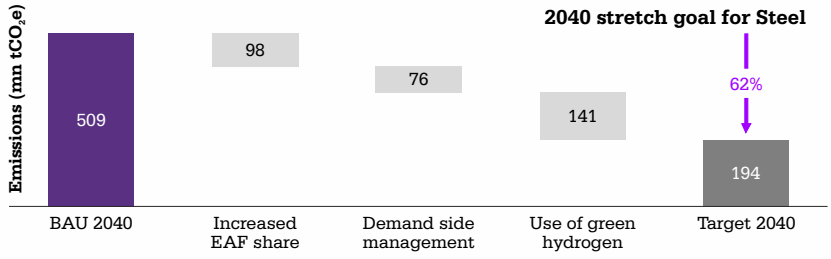


Assumptions

1. 50% rPET content assumed in food and beverage containers 2. 10% of total volumes assumed to be sold in returnable format, total 8 rotations per bottle 3. 20% reduction in weight possible through light-weighing etc.

Sources

WBCSD, IBEF, Alliance for an Energy Efficient Economy, Accenture research

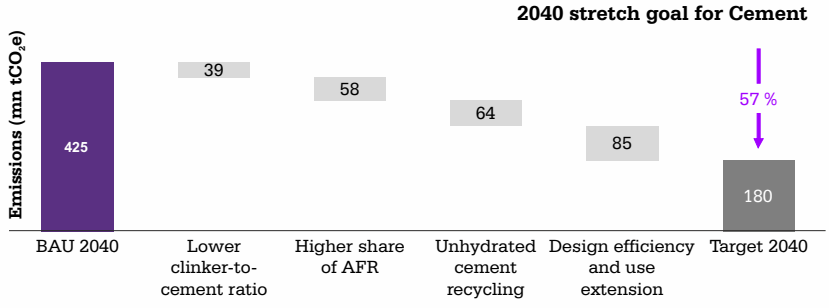


Assumptions

1. Increase in share of Al scrap from 34% to 75% based on EU benchmarks 2. Emission factor of recycled Al 0.3 t CO_2eq/ton of production and of primary Al 13.5 t CO_2eq/ton of production

Sources

IBEF, Ministry of Mines, Material Economics, CRISIL, Accenture research

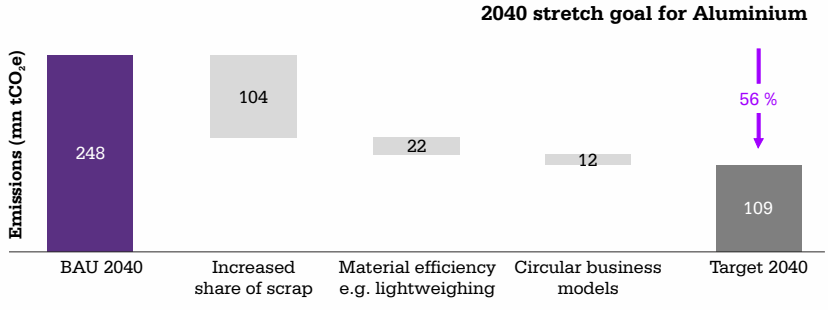


Assumptions

1. Standard emission reduction potential of clinker-to-cement ratio reduction and AFR increase assumed 2. 20% emission reduction potential of design efficiency and use extension 3. 15% emission reduction through recycling of unhydrated cement

Sources

WBCSD, IBEF, Alliance for an Energy Efficient Economy, Accenture research



Assumptions

1. Increase in share of Al scrap from 34% to 75% based on EU benchmarks 2. Emission factor of recycled Al 0.3 t CO_2eq/ton of production and of primary Al 13.5 t CO_2eq/ton of production

Sources

IBEF, Ministry of Mines, Material Economics, CRISIL, Accenture research

FIGURE 15 DEEP-DIVE INTO FOUR KEY MATERIALS (CEMENT, STEEL, ALUMINUM, AND PLASTIC)

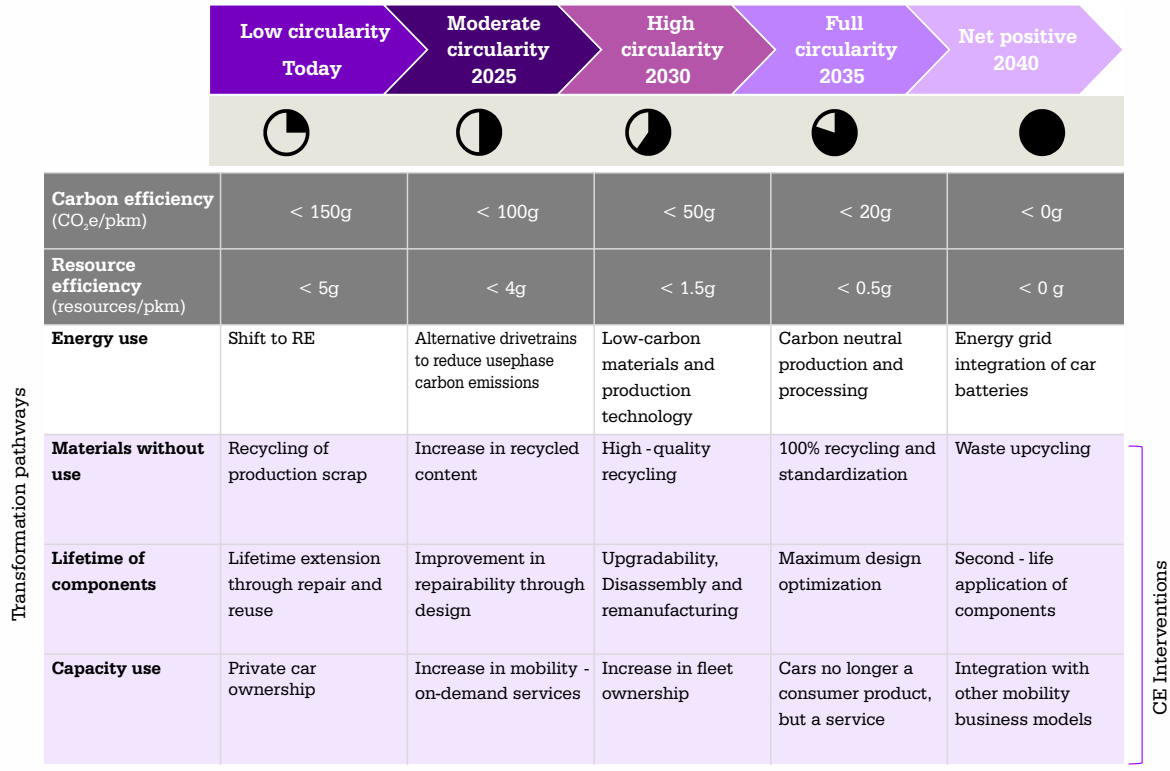
Net positive & 100% circular is the art of the possible

> "Adopting policy recommendations that takes into consideration the lifecycle perspective is necessary to accelerate the transition towards a circular economy"
>
> **Ashok Menon**
> Director of Sustainability & CE,
> SABIC

Tapping the full potential of CE towards decarbonization requires innovative actions along the whole life cycle of products. The current efforts are largely limited to downstream measures (such as recycling) and the companies need to innovate on the upstream measures such as product design and asset utilization maximization. Sharing models, for example, lead to fewer number of products required to meet the demand leading to increase in material productivity. Sharing models in mobility and buildings has the potential to save 62mn tons of CO_2e per year by 2050 for the European heavy industry.[21] Combinatorial impact of two CE business models on the same product could be even more appealing. For instance, sharing model for passenger cars coupled with lifetime extension can save 35% i.e., 0.65 tons of primary steel per million passenger kilometers. CE needs to be managed as an engine for job growth as well. In case of automotive scrap itself, there is a potential of new 50,000 jobs after the introduction of new vehicle scrappage policy.[22]

Beyond the incrementalism lies the real art of the possible and that is net positive system and 100% circular. A study conducted by Accenture and WEF on circular automobile highlights the potential of CE in decarbonizing the automobile sector and reach net positive status.[23] The analysis shows that CE measures can reduce the CO_2e emission by ~ 50% in 2030. It will help in confining the emissions well below the 1.7bn ton CO_2e budget for the automotive industry. For the resource use as well, linear model would increase the non-circular resource consumption per year to 188mn tons from 113mn tons but the CE measures can reduce it to 35mn tons.

Actions are needed across four thematic transformation pathways to transition from status-quo of low circularity to full circularity as shown in Figure 16. The performance is measured using two parameters - carbon efficiency and resource efficiency. The carbon efficiency is measured as CO_2e generated across the life cycle of the car (grams/passenger kms or pkm). It is expected to reduce from less than 150g CO_2e /pkm to zero in a net-positive scenario. Similarly, resource efficiency is measured as non-circular resource consumption/pkm and has the potential to reduce from less than 5g/pkm to a net positive value by 2040.



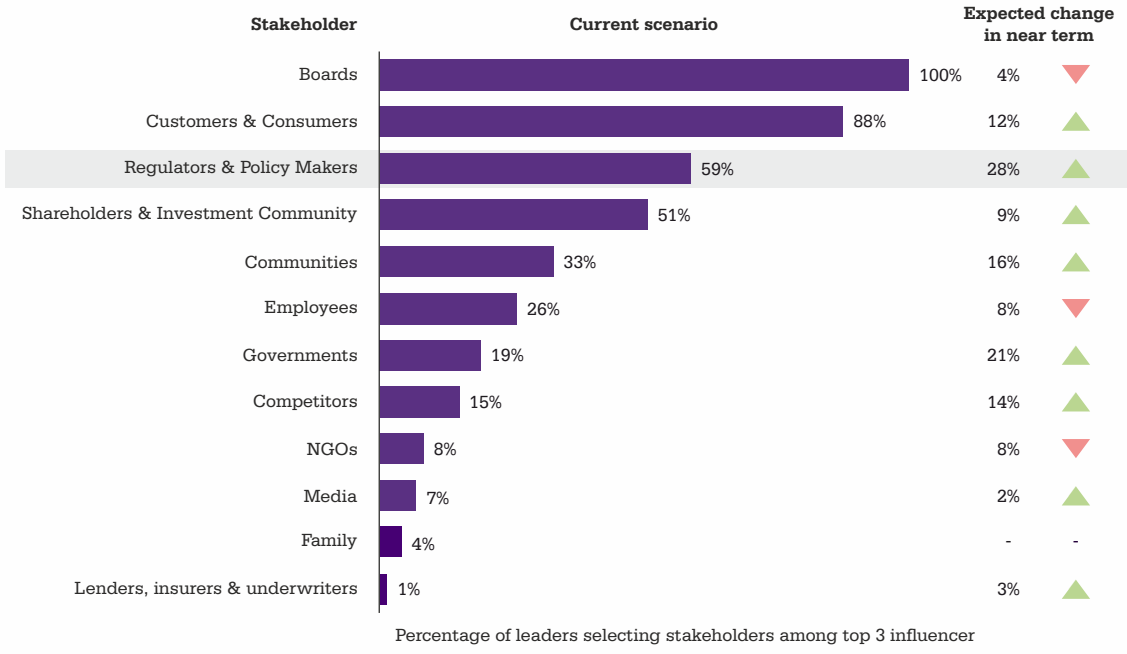
Carbon efficiency (CO_2e/pkm)	< 150g	< 100g	< 50g	< 20g	< 0g
Resource efficiency (resources/pkm)	< 5g	< 4g	< 1.5g	< 0.5g	< 0 g
Energy use	Shift to RE	Alternative drivetrains to reduce usephase carbon emissions	Low-carbon materials and production technology	Carbon neutral production and processing	Energy grid integration of car batteries
Materials without use	Recycling of production scrap	Increase in recycled content	High -quality recycling	100% recycling and standardization	Waste upcycling
Lifetime of components	Lifetime extension through repair and reuse	Improvement in repairability through design	Upgradability, Disassembly and remanufacturing	Maximum design optimization	Second - life application of components
Capacity use	Private car ownership	Increase in mobility - on-demand services	Increase in fleet ownership	Cars no longer a consumer product, but a service	Integration with other mobility business models

FIGURE 16 INCREASING LEVEL OF CIRCULARITY FOR AUTOMOBILES

Indian businesses have made substantial progress in grasping the implications and potential of CE in decarbonization agenda. Barring a few sectors and opportunities within those sectors, the adoption and implementation is still rudimentary in terms of scale and propensity to disrupt. Certain key stakeholders will play a crucial role in giving the next required push as discussed in the following section.

Stronger regulatory action will drive CE agenda in near term

87% of respondents believe that regulators will be a key influencing factor in next 3-5 years as compared to 59% now



Survey Question: According to you, which of the following stakeholders will have the most influence over the circularity agenda in your business over the next 3-5 years

FIGURE 17 PERCENTAGE OF LEADERS SELECTING STAKEHOLDERS AMONG TOP 3 OVER THEIR INFLUENCE ON CIRCULAR TRANSITION OVER THE NEXT 3-5 YEARS

When compared to the results of survey on the current context (Figure 12), the results of the survey from a future perspective indicate a shift in stakeholder groups that will have higher influence. While customers and boards continue to dominate, business leaders responding to the survey believe that influence of regulators would grow the steepest. It is not surprising given the recent momentum on policy front. From steel scrap recycling policy and provisional allowance of recycled plastic in food-contact packaging to 40% CO_2 reduction target for telecom companies, policymakers have shown a commendable conviction. However, absence of a national overarching policy directive is a vacuum. China, for example, legislated a circular economy promotion law in 2008 and later introduced CE Development Strategies Action Plan in 2013, outlining implementation at three levels - company, industrial park and city or region[24]. Lately China has included CE in its 5-year plan. Similarly, the EU as part of the Green Deal, has included CE action plan (CEAP) as one of its building blocks.[25] Such overarching policy directives will be essential in preserving the natural capital as rising consumption will put higher stress on the limited resources. As per recent studies[26], 30% of the land in India is under degradation. India's resource extraction of 1580 tons/acre is much higher than world average of 450 tons/acre. 351 key river stretches[27] in India have been deemed polluted. The remediation measures are complex in nature for such challenges but CE can offer solutions.

Survey respondents ranked investors and shareholders fourth from top on their ability to influence in the coming 3-5 years. If we draw a parallel to how investors have influenced the decarbonization goals, they can have a significant role to play in the CE agenda. Blackrock announced in January 2020 that it would not be making any direct investments in companies generating revenues greater than 25% from thermal coal production. A recent report showed that 1,485 institutions representing $39.2tn of assets under management have publicly committed to fossil fuels divestment. It also showed that since 2014, the number of institutional commitments has grown by staggering 750%.[28]

Priorities will evolve only marginally without significant thrust across all CE dimensions

Besides operations, focus on organization and ecosystem is expected to increase. However, product circularity remains low on the priority list.

Survey Question: What is your organization's current maturity across the four fundamental dimensions of circular economy transition?

Note: 1. Current scenario: represents the maturity of organizations on dimensions of circular transition 2. Scenario in 3-5 years: represents investment priorities on dimensions of circular transition over the next 3-5 years

FIGURE 18 CURRENT CIRCULARITY TRANSITION MATURITY AND FUTURE INVESTMENT PRIORITIES FOR CIRCULARITY TRANSITION

Three trends emerge from the survey analysis:

- Continued prioritization of certain focus areas, primarily in Operations, where maturity is comparatively already high
- "Soft wiring" such as transforming Organization & Culture will be prioritized. The desired scale of transformation requires enhanced focus on vision, people, and governance. In the absence of such focus, innovations run the risk of hitting a pilot

paralysis. Focus on Ecosystem Engagements is another critical enabler which companies expect to elevate

- Focus on a key "hard wiring" area i.e. circularity in Product & Services is inadequate. Indian companies need to put substantially more thrust on aspects such as product design, business model innovation and product-use extension. Rajesh Sharma, AGM Sustainability, Hero MotoCorp cited that, "OEMs will have to start working with their design partners to bring circular metrics like % of recycled components in the drawing itself. Once these metrics are accepted at that stage rest of the value chain follows."

> "We started with ensuring zero waste to landfill and have added focus on resource efficiency in product design. Circularity by design could add 100x higher value over the life cycle compared to creating value from waste."
>
> **Anirban Ghosh**
> Chief Sustainability Officer,
> Mahindra Group

Sectoral leaders have initiated projects focusing on one of the four fundamental dimensions.

Dimension	Illustrations
Operations	**AB InBev** has setup a target of 100% purchased renewable energy by 2025. Their breweries adhere to zero waste and are approaching "grid independence"[29] **Bharti Airtel** aims to meet over 50% power requirements of its data centres across India through renewable sources by FY22[30]
Product & Services	**Enel** has developed the Enel X Score to rate product from level 1-5 basis degree of circularity. It applies score to its own product portfolio and is also offered to its clients[31] **HUL** has started to source soda ash made using carbon capture in production of cleaning and laundry products, initiative is expected to reduce carbon footprint of formulation by 20%[32]
Organization & Culture	**Danone** has a Chief Cycles and Procurement officer. This reflects the essential overlap required between different verticals e.g., sustainability and procurement in an organization[33] **Tata Steel** established Industrial Byproduct Management Division (IBMD) as a dedicated team of young MBAs for marketing their secondary materials and byproducts to other industries[34]
Ecosystem	**P&G** has partnered with circular innovator, TerraCycle Loop, to launch reusable and refillable packaging[35] **Ultratech** has signed an MoU with Punjab Renewable Energy Systems Pvt. Ltd to scale-up use of agri-waste as fuel in cement.[36] It has also tied up with 35 municipal corporations to co-process non-biodegradable municipal waste.[37]

TABLE 3 CASE STUDIES ON FOUR FUNDAMENTAL DIMENSIONS OF CE

However, analysis of successful CE leaders tells us that a holistic approach across all four dimensions is a key success factor. A classic example of an ambitious, holistic, and CEO-sponsored CE agenda is that of Zalando. The company has implemented CE measures across the four dimensions. Some of these include[38] :

- committed to generating 20% of its Gross Merchandise Value (GMV) with more sustainable products by 2023
- launched a new category for pre-owned apparels and a 100% sustainable private label
- piloted reusable e-commerce packaging model with a startup
- partnering with CE think tanks such as Fashion for Good & Ellen MacArthur Foundation
- committed to 30% reduction in Scope 3 GHG emissions from private label and 90% of its suppliers having SBTi approved target by 2025

Implementation of CE ideas is at the core of business strategy for such organizations, and they effectively use it to drive top-line improvement, increase ESG performance and secure societal license to operate. In the next chapter, we discuss the call to action that would make this transition possible for aspiring organizations.

05

The Pivot: Call to Action

THE PIVOT: CALL TO ACTION

In the previous two chapters, we did a pulse check of corporate India and analyzed the near-term outlook for CE and decarbonization. In the process, we prioritized five key barriers that the business leaders face (70% of all survey respondents could relate to the five main barriers). These included both market/economy level barriers such as policy uncertainty, lack of eco-system partners, absence of market pull; and localized barriers such as difficult operating environment and immature technology. Accordingly, we synthesized five call to actions:

01
Establish a national CE framework

02
Strengthen the CE ecosystem

03
Accelerate technology adoption

04
Supercharge the operating model

05
Invest in creating a market demand

FIGURE 19 CALL TO ACTIONS FOR PIVOTAL TRANSITION

1. Establish a national CE framework that aligns sectoral initiatives

Our survey demonstrates that public policy wish-list by India Inc. is highly diverse. Majority of respondents demand removal of hurdles towards waste management (hazardous waste, in particular), provision of tax incentives, and green public procurement. Moving beyond sectoral silos, MoEFCC released a draft in 2019 on National Resource Efficiency Policy (NREP) with objective to follow a holistic and integrated approach towards resource efficiency policies, develop cross sectoral and regional policies and track indicators. However, we are yet to see NREP and NREA materialize at the time of writing this paper. A centrally coordinated CE framework can help augment existing efforts towards circularity through the following:

- **Vision and targets:** Setting a clear unified and sector-specific vision, at the intersection of resource and carbon efficiency, and bolstering it with enforceable targets

> "We foresee the need for standardized and unified CE measurement and reporting framework which is locally customizable and relevant for India. Digital technologies need to be leveraged to enable high-quality real-time data across the value chain."
>
> **Naresh Tyagi**
> Chief Sustainability Officer,
> Aditya Birla Fashion and Retail Ltd.

- **Standards and guidelines:** Providing clear and granular view of the execution pathway through guidelines and standards (e.g., eco-design guidelines and secondary quality material grade classification standards) that help execute the vision and targets
- **Financing & taxation:** Incentivizing initiatives with positive impact while increasing the cost of negative social or environmental effects (e.g., carbon pricing), and reward actions that are beneficial (e.g., tax incentives in PLI for sustainable production)
- **Circularity measurement framework:** Developing a simplified and locally-relevant guidance based on frameworks such as WBCSD's Circular Transition Indicators (CTI) and Ellen MacArthur Foundation's Circulytics can help set a performance bar across sectors. A standardized methodology to define carbon related savings from circular initiatives will also help synchronize decarbonization efforts

2. Strengthen the CE ecosystem through multi-stakeholder collaboration

> "In order to be successful, typical CE initiatives need the whole ecosystem to develop concomitantly. Singularly, the initiative would achieve little. Ecosystem-level alignment would ensure support, scale-up & success."
>
> **Yogesh Bedi**
> Chief, Steel Recycling Business,
> Tata Steel

We need to rapidly advance towards a scaled-up pre-competitive CE ecosystem to bring the overall cost of implementation down. For instance, there are multiple examples of million-dollar joint ventures among waste management companies, brand owners and chemical players for secured access to materials and technology. In contrast, HUL has helped set-up small and micro enterprises that procure crop stubble from farmers and convert them into briquettes, which the company uses to replace fuel oil in their boilers thus bringing the cost of energy down. Key outcomes of any such collaboration entail joint product development, pooling of resources & investments and creation of a shared infrastructure at scale e.g., formation of Loop, a multi-brand reusable packaging platform by Terracycle, with a funding of $25mn by players like P&G, Nestlé and SUEZ .[39]

Role of industry bodies, academia and think tanks is also critical. One of the best examples is the role that Ellen MacArthur Foundation has played across the world in pushing the circular economy agenda. Starting from building a case study repository and publishing ground-breaking work to creating CE measurement framework (signed-up by 1,250 businesses) and organizing global commitments (500+ signatories), Foundation's contribution is noteworthy. In India, we feel the need for a local organization(s) on similar lines (either one sector-agnostic or multiple sector-specific) to bring the much-needed alignment, peer benchmarking on the progress and aggressive policy advocacy. We have started to make some progress, for instance, India Plastic Pact and other similar sector-specific collaborative platforms are encouraging signals. On the decarbonization agenda, a strong CE ecosystem can

support creation of new carbon offset programs. The governance processes of industry groups and ecosystem partners can ensure much needed transparency and authenticity in the carbon offsetting programs.

3. Accelerate technology adoption across digital, physical, and biological dimensions

Business leaders with a sustainability mandate need to work with their CTOs to ensure the technology roadmap is geared to support the sustainability goals of the organization. We recommend that leaders evaluate CE technologies across 3 major dimensions, as applicable to their business a) digital: includes technologies such as AI and IoT that enhance traceability and efficiency within the supply chain b) physical: technologies based on properties of materials, energy, and related interactions. e.g., Robotics, CCUS, 3D Printing, Material Science, etc. c) biological: technologies related to biological aspects. e.g., bio-based materials, bioenergy, hydroponics, cellular engineering etc.

We asked the survey participants which technologies will be critical for driving circularity in near future. Waste collection & sorting, advanced recycling and advanced materials have the highest desirability, but this goes on to show a continued focus on downstream. Undoubtedly, India has progressed a lot on use of digital technologies for waste management but there is scope to advance on two addition fronts

- **Digital for circularity and carbon measurement:** SAP is building a new module around Responsible Product Design and Production that can help companies leverage data from core Enterprise Resource Planning (ERP) processes and enable determining waste compositions and calculating EPR fees across product lines. Similar solutions are needed to understand the carbon footprint of products for e.g., through AI-based LCA tools.
- **Physical and biological technologies (e.g., low-carbon materials, green chemistry):** There are certain high-impact indigenous innovations such as development of Pusa tablets[40] by IARI to decompose stubble into farm manure or the launch of nanotechnology-based urea fertilizer by IFFCO to preserve the nutrient cycle. However, a strong lab-to-commercial launch engine like the one that exists for digital technologies is still missing for physical and biological technologies.

To achieve adoption of critical technologies, organizations need to increase budgets for R&D, government needs to support indigenization of OEMs across sectors and investors need to set-up dedicated funds for acceleration of CE-based startups.

4. Supercharge the operating model for increased sustainability performance

Business leaders have the responsibility to be the CE catalysts within their organizations. Based on the survey, we have identified the need to double-click on

three areas that can help improve the sustainability performance of the organization:

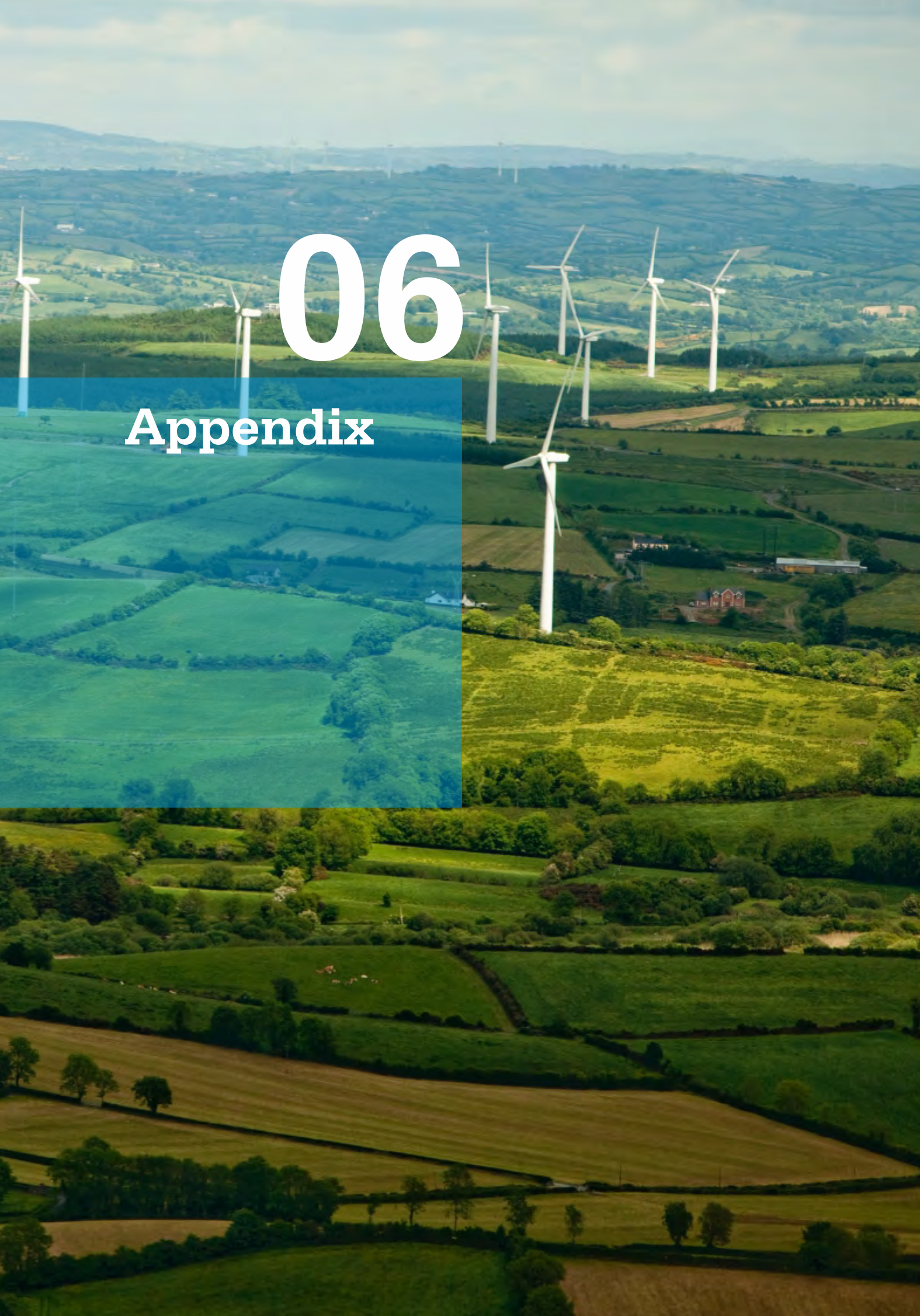
- **Governance:** Creating a sustainability governance that has CEO sponsorship and is jointly steered by sustainability leads in close collaboration with the functional leads, exploring internal carbon pricing and ring-fenced funds for net zero and CE transition
- **People:** Setting-up a defined CE curriculum for the various levels in the organization to increase awareness and foster action, creating ESG-linked performance incentive plans and KPIs for senior leaders.
- **Process:** Performing detailed analysis (financial & non-financial) and value case assessment for circular initiatives to secure the budgets, establish product design circularity metrics, and then measuring and monitoring the progress.

5. Invest in creating a market demand for long term strategic advantage

Leaders need to be more patient and take a longer-term view of demand for sustainable products from customers and consumers. Market demand, especially in case of B2C takes time to emerge due to macro-economic and cultural aspects. Demand in B2B models emerges relatively faster once the supply side has been established and the value case is strong. There are two major areas for leaders to focus:

- Product innovation: Finding the right product-market fit with minimal green premium and compromise in quality, if any at all, and branding it effectively. As an example, Tata Steel[41] has commissioned a 0.5 MnTPA steel recycling plant in Haryana and effectively branding the high-quality scrap bales as Tata FerroShred™ and Tata FerroBaled™ to meet the demand by electric arc furnaces, induction furnaces and foundries
- Aggressive communication: For competitive advantage, leaders need to be ready with the right messaging and sustainable brand proposition before the trend fully kicks in. Organizations need to educate their consumers on the value of sustainability, which would also get reflected in the brand's purpose. The initiatives need not necessarily come out of the product marketing budget, organizations can come together with industry associations and not-for-profits to embark on a national awareness campaign and to reach the grass roots level. Greater inclusion of CE and climate change in the school curriculum can play a big role in accelerating long term cultural change. As noted by Willem Uijen, Executive Director, Supply Chain of HUL, "Shift in consumer habit is most difficult to achieve and brands need to do more on making consumers aware and conscious of their buying decision. Key is to find a right solution which doesn't compromise on quality and price but is still sustainable."

In conclusion, circularity in India has been firmly established as a sustainability imperative. India Inc. needs to play a central role in leveraging CE business models and principles for achieving business resilience and turning the dial on climate change mitigation. Business leaders have a larger role to play in gearing their organizations beyond incrementalism, and towards stretched goals. This should be the decade to deliver.



06

Appendix

APPENDIX

A: Potential business value that can be unlocked by CE

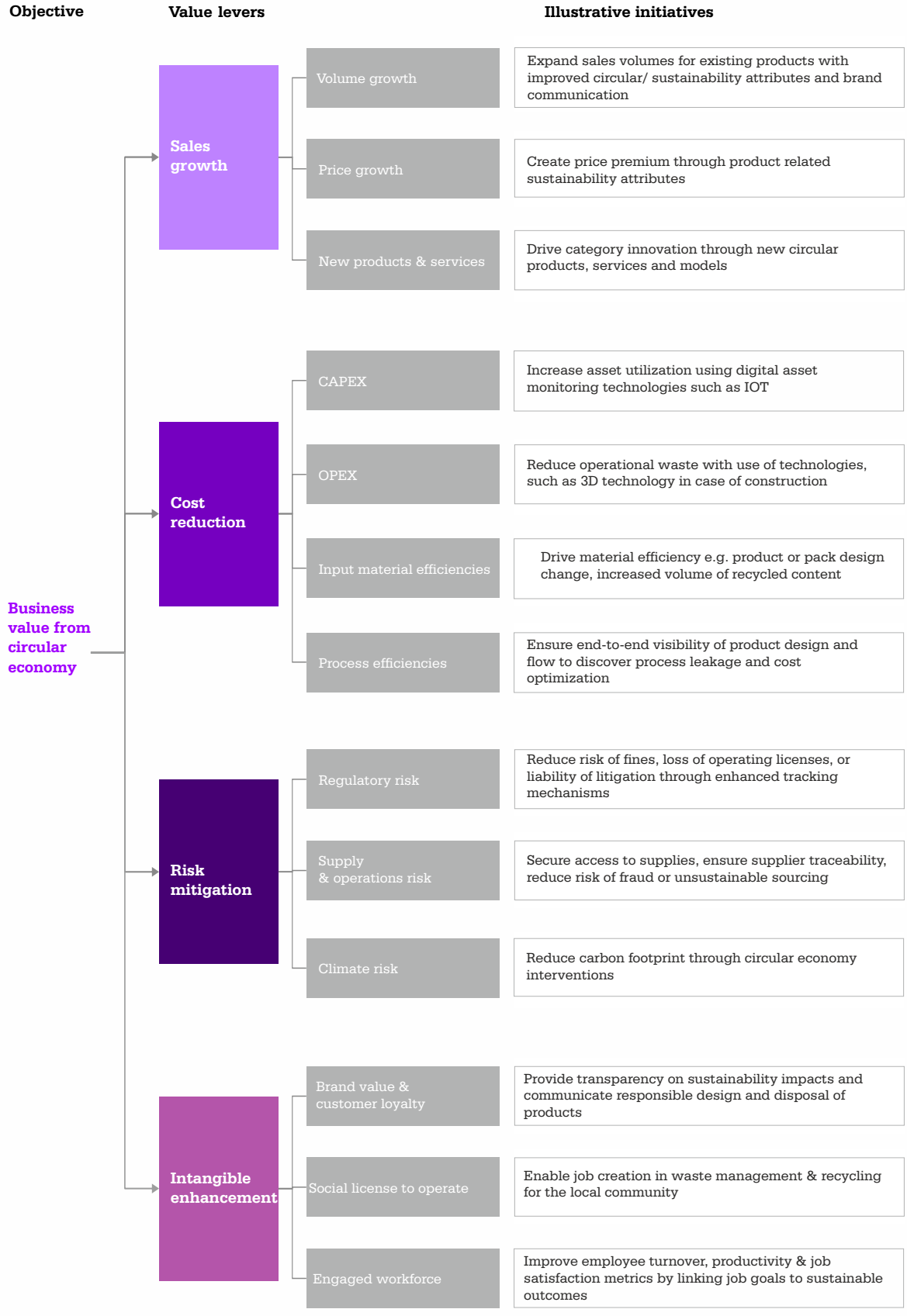


FIGURE 20 FRAMEWORK FOR ANALYZING BUSINESS VALUE FROM CE

B: Methodology

The report derives its insights from three sources a) survey administered on business and sustainability leaders b) one-to-one interviews with leading thought leaders across various industries and c) desk research including in-depth analytics of publicly announced commitments and targets.

50

respondents to the survey

Analysis of survey response from over 50 business and sustainability leaders. Survey consists of 18 questions and encapsulates the current and outlook of Circular economy in India

10

one-on-one interviews

More than 10 in-depth one-on-one interviews to validate the survey findings and to get a nuanced view of key topics

100

top Indian companies by market capitalization

Analysis of top 100 Indian companies by market capitalization to benchmark CE practices and check the overall understanding of organizations towards CE

The total sample size of the survey was 50 + (conducted over the period of September 2021 to November 2021) and the demographic split of respondents is as follows. The list of respondents is available in the next section under participating organizations. Throughout the paper, sector and industry classification provided by BSE have been used.

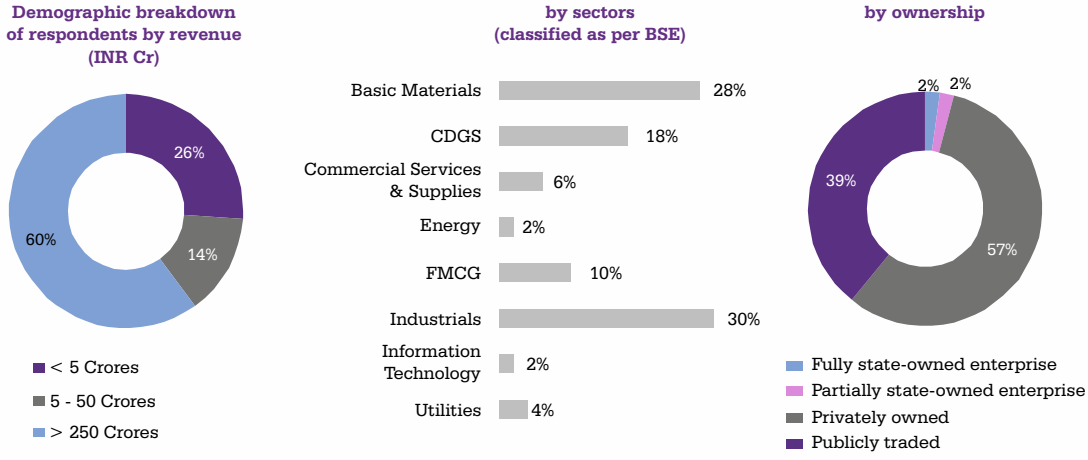


FIGURE 21 SURVEY DEMOGRAPHICS

We also analyzed top 100 listed companies by market capitalization (2nd Nov 2021, BSE) for their commitments on net zero and circularity ambition based on public disclosures, CDP reports and SBTi website.

C: Participating organizations

The authors would like to thank the following companies for providing valuable insights and sharing resourceful information.

Aarti Industries

Aditya Birla Fashion and Retail Limited

Apar Industries

Axis Bank

Banka BioLoo

Cambi ASA

Carbon Masters India

Celanese Chemicals India

CMR Green Technologies

Dabur India

Earth Tatva Innovation

Eastman Chemical India

Eco eMarket

Ecovision Environmental Resources

Engineers India

E-Parisaraa

Global Cement and Concrete Association India

Goli Soda Sustainable Solutions

Grasim Industries (Aditya Birla Textiles)

Hero MotoCorp Limited

Hindustan Coca-Cola Beverages

Hindustan Unilever Limited

Hydromet Technology Solutions

IAPMO India

Indian Oil Corporation Limited

Infinitive Co.

JSW Group

Kabadiwalla Connect

Larsen & Toubro

Luthra Group

Mahindra Holidays & Resorts

Mahindra Lifespace Developers Limited

Mahindra & Mahindra

Merino Industries

Pashupati Excrusion

Pashupati Polytex

PepsiCo India

Ramky Enviro Engineers

Rubamin

Saudi Basic Industries Corporation (SABIC)

Srishti Lifescience

Steel Authority of India Limited

SustainMantra

Swacchh Sustainable Solutions (ReCircle)

Tata Consultancy Services

Tata Motors

Trans Water System

UltraTech Cement

Vedanta

YES Full Circle Solutions

D : Glossary

AI	Artificial Intelligence
AUM	Assets Under Management
B2B	Business to Business
B2C	Business to Consumer
BSE	Bombay Stock Exchange
BOO	Build, Own, Operate
CCUS	Carbon Capture, Storage & Utilization
CDGS	Consumer Discretionary Goods & Services (e.g., auto, retail, etc.)
CO_2e	Carbon Dioxide Equivalent
CEO	Chief Executive Officer
CIO	Chief Information Officer
CSO	Chief Sustainability Officer
CE	Circular Economy/ Circular
CTI	Circular Transition Indicator
CAIT	Confederation of All India Traders
COP	Conference of Parties (UN Climate Change)
EIP	Eco Industrial Parks
EBIDTA	Earnings before Interest, Debt, Tax and Amortization
EPR	Extended Producer Responsibility
ESG	Environment, Social, Governance
GHG	Green House Gases
FMCG	Fast Moving Consumer Goods
IARI	Indian Agricultural Research Institute (Pusa)
ICRA	Indian Credit Rating Agency
IOT	Internet of Things
KPI	Key Performance Indicator
MnTPA	Million Tonnes Per Annum
MoEFCC	Ministry of Environment, Forest and Climate Change
NREA	National Resource Efficiency Authority
NREP	National Resource Efficiency Policy
OEE	Overall Equipment Effectiveness
PET	Polyethylene terephthalate
RBI	Reserve Bank of India
SBTi	Science-Based Targets initiative
UNGP	United Nations Global Compact
WBCSD	World Business Council for Sustainable Development
WEF	World Economic Forum

E : FICCI – Accenture joint thought capital on CE

Series of study papers on CE jointly launched by Accenture and FICCI over the past few years

2018

ACCELERATING INDIA'S CIRCULAR ECONOMY SHIFT

Future-proofing growth in a resource-scarce world

Setting the context for CE in India and evaluation of the opportunities, enablers, and success factors

2019

MAKING PLASTICS CIRCULAR

Insights and actions to transform India's plastic waste management

State of circularity of plastics in India and imperatives for its acceleration across the value chain and stakeholders

2020

STRATEGIES FOR SUSTAINABLE PLASTIC PACKING IN INDIA

A USD 100 Billion Opportunity till 2030

Three-pronged approach towards sustainable packaging in India and recommendations on system-level accelerators

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Established in 1927, FICCI is the largest and oldest apex business organisation in India. Its history is closely interwoven with India's struggle for independence, its industrialization, and its emergence as one of the most rapidly growing global economies.

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