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of Commerce & Industry

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for Economic & Management Studies

Bombay Chamber of
Commerce & Industry presents

The Road to Net Zero

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> What is needed today is Mindful and Deliberate Utilisation, instead of Mindless and Destructive Consumption
>
> **- Prime Minister Shri. Narendra Modi at COP26 in Glasgow**

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INDUSTRY INSIGHTS

SHRI BHUPENDER YADAV

Union Minister for Environment, Forest & Climate Change and Labour & Employment, Government of India

The science of climate change particularly the recent IPCC report has established that our Planet has already crossed one degree centigrade heating from the pre-industrial period. If the world continues to move on the current path, we will face at least three degrees of global heating by the end of the century. Therefore we need to act decisively now to achieve Net Zero emissions and arrest any additional temperature.

Our honorable prime minister Narendra Modiji has launched the One World

One Grid initiative during COP26 to ensure availability of clean energy from a worldwide grid everywhere at all times.

Building on this, our prime minister announced India's contribution to enhanced climate commitments Panchamrit including our commitment to reach Net Zero by 2070.

We need innovative, scientific and urgent steps to secure our Planet for future generations. India's announcement at COP26 to reach Net Zero by 2070, is a great step considering that our country is not the cause for climate change and has not been a historic contributor to greenhouse emissions.

Having said that, India as a responsible global power realises that only collective global action can combat climate change and its challenges.
India has already been pursuing a gradual transition to 'Net Zero' while striking a balance between ecology, economic development and sustainability.

Private sector plays an important role in our journey towards Net Zero. I appeal to Bombay Chamber that your actions, resources, capacity to innovate and greater reach are vital to swiftly decarbonise sectors, infrastructure, value chains and the products and services they provide. Private sector players are already playing a key role in this climate fight, with 64 Indian companies having pledged to reduce greenhouse gas emissions last year.

Higher capital is expected to be diverted to companies at the forefront of the climate transition with huge financing for companies lagging behind. The Indian cement industry has already achieved one of the biggest low carbon milestones across the world.

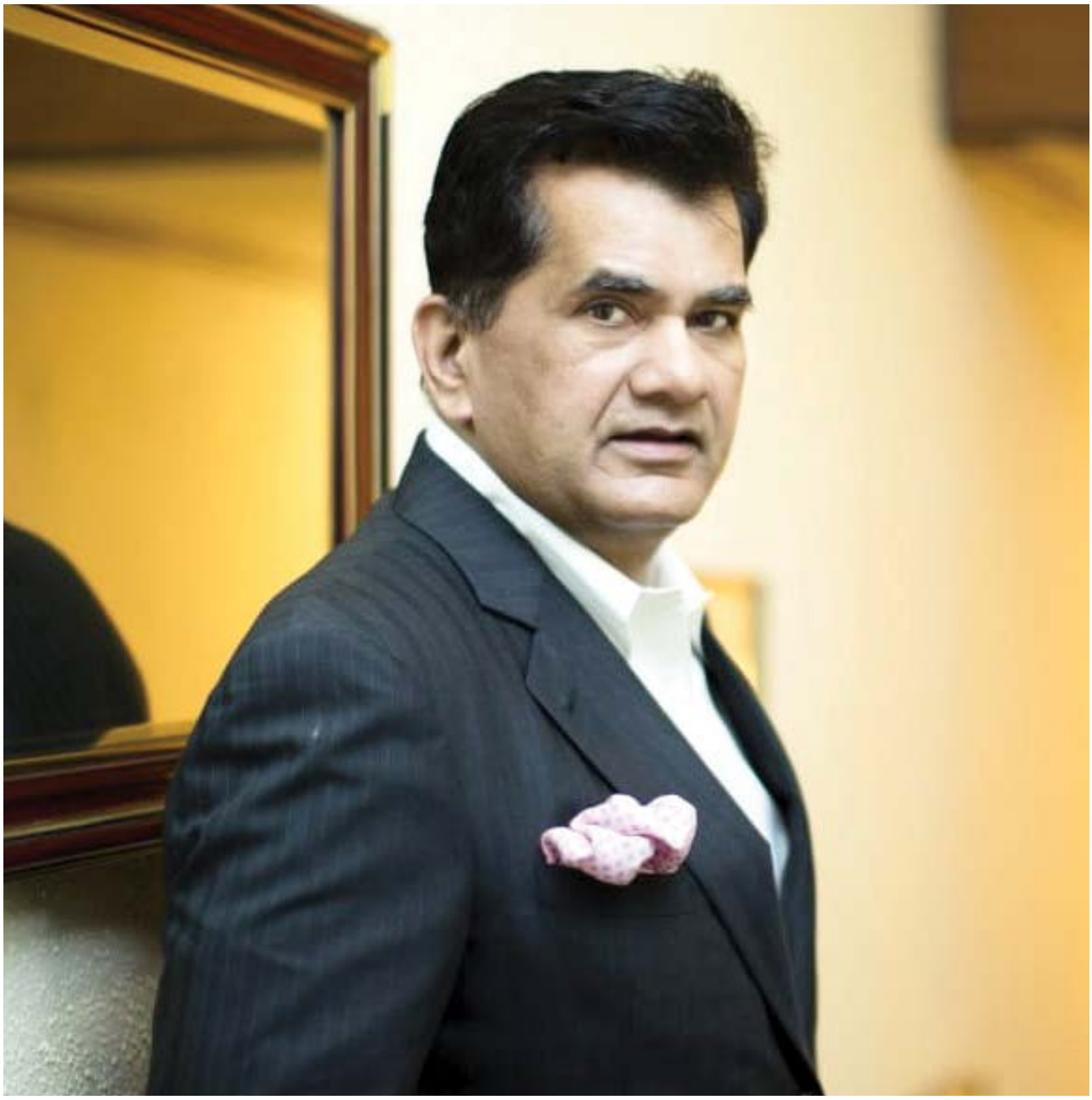
There has been a greater synergy of India's climate policy with the action and commitment of its private sector. We must ensure that sustainable lifestyle and climate justice are at the core of this journey.

I am hopeful that with active cooperation from the private sector, India will be able to reduce our carbon emissions and achieve the Net Zero target.

Let's remember that we have not inherited this Planet from our ancestors, but instead we have borrowed it from our children and hence must leave it green and clean.

SHRI AMITABH KANT

CEO, NITI Aayog



The world is racing against Nature, human greed, and more critically time to limit global warming to 1.5 degrees Celsius by 2100. The COP26 conference in Glasgow was the seminal moment in this race. Our Prime Minister Narendra Modi presented his 5 point agenda or the Panch Amrit while delivering the national statement at the COP26 conference.

India is probably the only country to have achieved the targets spelled out at Paris COP25. India's ambitious targets in COP26 should be studied in the context of her consistent demand and domestic push towards clean technology.

India is today investing billions of dollars in electric vehicle subsidies, ethanol blending and gasoline, solar PV and battery manufacturing. Despite our track record in emissions, India has already undertaken multiple initiatives for reducing economy wide emissions especially those from the energy sector. Energy transition in India is happening in four forms: increasing electrification, higher penetration of cleaner fuels in the energy mix, accelerated adoption of energy efficient technologies and driving digitalisation.

We have ambitious targets. India is presently the third largest energy consumer and is the world's fourth largest renewable energy installed capacity in the world. India's grid connected renewable and electricity capacity has already crossed the milestone of 100 gigawatts excluding hydro.

Our belief is that the future will be digital and will be green and, companies that go digital and green will both, add valuation and attract capital.

Green hydrogen has been given a major push and the Prime Minister has announced that by 2047 when India completes 100 years of Independence, we will become independent of fossil fuel imports. This would require the country to give a major push to green hydrogen, its innovation, technology development, and financing will be key for making this a reality.

At COP26, along with presenting India's Panch Amrit climate action policy goals, Prime Minister Modi also announced the unique concept of life. Lifestyle for the Environment is about individuals making environment and climate friendly lifestyle choices and life becoming a mass movement or Jan Andolan.

I am very optimistic that given the commitment to climate action at the topmost level, India will emerge as a world leader in emission reduction and will also show the world the most sustainable way to achieve it. ■

ANJALI BANSAL

President. Bombay Chamber of Commerce & Industry

Sustainability will be for the next 20 years what digitisation was for the last 20. Just as today, digitisation is embedded in all aspects of business, similarly, businesses will have to innovate and integrate sustainable practices across their value chains. Integrated business models are emerging that are sustainable with respect to both, the environment, as well as capital and returns.

Corporate stakeholders, including consumers, employees, investors as well as the government are emphasising the importance of sustainability, as it redefines sectors by disrupting consumption and production, shifting profit pools and creating new opportunities.

India, which is the world's 3rd largest emitter of carbon and yet one of the poorer nations in terms of GDP per capita, will have to strike a balance between decarbonisation and growth, while simultaneously addressing the pandemic recovery problem. As India seeks to achieve its target of Net Zero emissions by 2070, it cannot afford to trade-off people and profits against Planet.

Technology and innovation can help address this difficult trade-off and solve developmental challenges by unlocking exponential scale and accelerating inclusion. The intersection of technology and innovation with sustainability can already be seen in paradigm-shifting solutions such as electric vehicles, solar power, carbon capture and storage technology, etc.

Sustainability and ESG are no longer confined to boardrooms, and are becoming important drivers of business strategy. The need of the hour is to catalyse sustainable consumption and production through the use of technology and innovation.

Sustainable investing is also gaining prominence the world over. Sustainable long-term risk adjusted return generation is the key. In this context, a few geographies such as Europe have been early adopters of the theme of sustainability. In India, while the concept is gaining importance, we are still at a nascent stage of the journey. The regulatory framework is also evolving to strengthen adoption.

Climate is a global system, and the effects of climate change are trickling down into all aspects of India's economy. However, achieving Net Zero emissions will not take place with a silo approach. India's shift to sustainable business models will need to integrate all its stakeholders, across government, policy-making, and corporates as well as the innovation ecosystem.

Our coffee table book titled The Road to Net Zero seeks to provide these very insights into the sustainability approaches by stakeholders, both government and private. We are grateful to Shri Bhupender Yadav, Union Minister for Environment Forest and Climate Change; and Labour and Employment, Government of India and Mr Amitabh Kant, CEO, NITI Aayog, who were the Keynote Speakers for our Sustainability Conclave: Target Net Zero.

We also thank all industry leaders who are part of this book for their contribution to increasing awareness about our Net Zero goals.

We hope this book will help in creating dialogue around topics such as the ESG landscape in India, sustainable supply chains, technology and sustainability, renewable energy transitions, funding for sustainability, sustainability in health care and shipping, among others.

By presenting a holistic view on sustainability, Bombay Chamber of Commerce & Industry hopes to be the catalyst in enabling the sustainability shift in Indian industry. ■

CREATING A SUSTAINABLE TOMORROW

It goes without saying that building a Sustainable Tomorrow must start Today.

Is your company's business development plan aligned to the UN's 17 Sustainable Development Goals (SDGs)? Many organisations are already taking initiatives to address Climate Change, positioning their businesses to succeed both in the marketplace and in improving the world for future generations. It is essential that all stakeholders in the Climate Change crisis - companies, governments, and citizens - must adopt sustainable practices in their agendas and must see Sustainability as a business opportunity for the greater good.

India has announced a pledge to achieve 'Net Zero' carbon emissions by 2070 at the Conference of Parties (COP26) Climate Summit held recently in Glasgow. To discuss the significance for Indian industry, Bombay Chamber of Commerce & Industry's Sustainability Conclave held in December 2021, was themed around Target Net Zero and India's road to reach that target.

The two-day virtual Conclave saw Indian industry's leading minds discuss, debate and have a meaningful dialogue on why businesses can change from being part of the problem to being a part of the solution.

To take the dialogue further, Bombay Chamber of Commerce & Industry presents The Road to Net Zero.

In the first part of this coffee table book, we will briefly describe the Knowledge Sessions at our Sustainability Conclave and how they covered most aspects of Sustainability: from why it makes business sense to how to fund your Sustainability linked performance targets. The challenges to Making Net Zero real and the use of Technology to drive transformation in energy storage and renewable energy adoption and clean hydrogen.

The second part of this book features insights by industry leaders on Sustainability in their respective fields of expertise, from renewable energy and ESG compliance to health care and shipping.

We hope this book will enhance the dialogue on Net Zero and exemplify the Chamber's role as a Catalyst of Change. ■

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SUSTAINABILITY MAKES BUSINESS SENSE

The panel discussion on Sustainability Makes Business Sense saw some of the country's leading CEOs sharing their insights on the topic. The panelists included R Mukundan, MD & CEO, Tata Chemicals; Neeraj Akhoury, CEO, Holcim India and MD & CEO, Ambuja Cements; Anita Marangoly George, Executive Vice-President, Deputy Head - CDPQ Global and Anjali Bansal, President, Bombay Chamber and Founder, Avaana Capital. The panel was moderated by Vinod Mahanta, Senior Editor, The Economic Times. Some highlights of the discussion

ANJALI BANSAL
President, Bombay Chamber and Founder, Avaana Capital

R MUKUNDAN
MD & CEO, Tata Chemicals

ANITA MARANGOLY GEORGE
Executive Vice-President, Deputy Head - CDPQ Global

NEERAJ AKHOURY
CEO, Holcim India and MD & CEO, Ambuja Cements

VINOD MAHANTA
Senior Editor, The Economic Times

Riteish Tiwari, Executive Director, Finance & IT and Chief Financial Officer, Hindustan Unilever introduced the panel by saying that as industry leaders we are equally responsible towards all our stakeholders – be it community, consumers, stakeholders, amongst others. It is imperative to not only deliver consistent growth but also to do that responsibly. It is therefore not about purpose at the cost of business but driving business through purpose.

Vinod Mahanta opened the session by saying that we're in the middle of a black swan event and if the pandemic has taught us anything, it's that every leader needs to think hard about survival and future proofing their business. He said, "It's very clear that businesses now need to think beyond profits and now the whole conflict with the Planet has to be solved. It's very clear that this is the golden opportunity for businesses to think beyond profit."

Speaking on how the sustainability conversation has moved beyond compliance R Mukundan said, "I come from a very fortunate bunch of people who joined the Tata group whose purpose itself was improving quality of life for everybody, that put the Planet and the people at the center of what we do. All of us are grappling with how to make the shift and make the change. So firstly in my view, it starts with refining and defining your core purpose - that it's not in conflict with working for the goodness of the Planet. Secondly, I would say one needs to have a mindset shift and thirdly which I often say is that, disclosure is not transparency. We need to get to a point from disclosure to being more and more transparent, willing to sort of tell the story as it is. It is a journey that is exciting and challenging, but one that must be done."

> "Across the global economy, a lot of collaborative action is taking place - so it is not optional but much required - whether it is in your R&D or product development or supply chains, energy transition, waste management, water - all of these are very significant issues that impact every element of a business"

Sustainability is not a choice

Anjali Bansal elucidated, "Today sustainability is not a choice - it is a requirement. If we rewind 20 years ago when we didn't actually know what digitisation was, technology used to be something embedded some two or three levels below in the organisation. We thought of it as a more IT systems really. Today, we cannot imagine a business, any business - whether it is manufacturing or consumer or financial services - without the use of digital as a horizontal that is embedded across the business system. Similarly in sustainability today, we have thought of ESG and CSR, but it is not yet fully embedded. But that time is, if not here already, coming soon. One of the reasons it's not optional is that consumers are demanding better choices so at the same price point they would prefer to consume more responsibly. Of course, in countries like India, affordability is very important. Secondly, employees, particularly our young people, are far more conscious and they'd rather go work for a company that they think is responsible and more sustainable than otherwise."

She further pointed out that big capital has already made its move with a lot of actions by big pension funds and the big global institutional investors and there have been significant price movements in stocks of companies that are in hard-to-abate industries. "Across the global economy, a lot of collaborative action is taking place - so it is not optional but much required - whether it is in your R&D or product development or supply chains, energy transi-

tion, waste management, water - all of these are very significant issues that impact every element of a business and indeed our lives as consumers as employees and as employers," she added.

Explaining that CDPQ are the pension fund managers of the province of Quebec in Canada and the country's second largest pension fund manager, Anita George shared that sustainability has been a part of CDPQ's DNA with the founding members of the UN Principles of Responsible Investment (PRI) - a set of six principles that set a global standard for responsible investing. She said, "We have always said that it's not just good enough for us to make reliable returns for our pensioners, but we also have to contribute to the development of not only Quebec but also of wherever we make investments. This sort of dual hat and role has influenced the way CDPQ makes investments with the long-term perspective."

> During COP26 the IFRS's subsidiary, the International Sustainability Standards Board has come out with metrics on measuring ESG factors and so there is now a common language, a common yardstick by which companies can follow and be compared to each other

She added, "The big change that we see is a role of stewardship, of bringing along others to also join forces with us. We are co-founders of the investor leadership network which is a group of 14 of us institutional investors, insurance companies and pension funds with 9 trillion US dollars under management and what we are doing is really agreeing among ourselves that we'll have collective focus on climate change and biodiversity, diversity equity and inclusiveness as well as governance. For example, we've already come out with the policy that for all listed companies that firstly don't have a sustainability plan or end up not following

that plan and not delivering on the metrics put forward, this collective of investors actually have the right to vote out board directors or management etc. So there is teeth - both positive incentives and disincentives."

Sustainability in the value chain

The panelists agreed that it all boiled down to the impact which you can create on your extended supply chain - it starts with consumer, goes through the value chain, the ecosystem and then there's a regulatory framework - when all this happens, the work begins to move forward in the right direction and the good news is the work which many of the companies have done in the last 10 years so the needle has begun to move.

The panel also discussed the impact of sustainability in the boardrooms and felt that it's very important that all three levels – shareholders, boards as well as management - and then below as well at the working levels, heads of departments and divisions, are also very key in terms of how sustainability gets integrated into operations.

During COP26 the IFRS's subsidiary, the International Sustainability Standards Board has come out with metrics on measuring ESG factors and so there is now a common language, a common yardstick by which companies can follow and be compared to each other.

Neeraj Akhoury shared his insights by saying, "Today what is good for business is also good for environment. The kind of initiatives that we are talking about like changing our factory power needs from grid power to wasted recovery - it is good for the business in the sense that power cost comes down and it is good for the environment as well. Or when we use biodiesel in our ships, again it is good for the environment and good for the business. You need to bring in those technologies that change the way you produce, the way you transport, the way you build. But as we move forward, we know we will now be faced with some of the toughest choices where we will have to take a clear view - whether we will take good-of-the-environment steps or good-for-business steps."

He pointed out that, "At Holcim India and our two companies ACC and Ambuja, half of what reduction targets that we have taken are where the balance is perfect – which means it's good for business and good for environment. But it is in areas like carbon capture where we really need to understand the whole economics of this business and make it run in a viable way. Overall, I think that we will have several other alternatives which will allow us to do good for the business as well as good for the environment."

As we move forward, we know we will now be faced with some of the toughest choices where we will have to take a clear view - whether we will take good-of-the-environment steps or good-for-business steps

The panel also reiterated that there's never an easy solution and this is a bridge that industry needs to cross together. It's a transition period that first started with companies then it became sectoral and now there is a cross-sectoral impact.

The panelists also agreed that technology actually will provide many of the solutions. The cost of sensors has come down so you can actually put IoT and sensors into every device, you can put it on farms, even Indian small holder farms and make them more productive and effective. A new unit of solar now finally costs less than a new unit of thermal!

As new technology develops and the cluster-based approaches come through, we will actually see a lot of innovation and solutioning, whether it is in food systems or agriculture supply chains, manufacturing and mobility as well as energy transition. ■

For full panel discussion please visit Bombay Chamber YouTube channel

SUSTAINABILITY NEEDS FUNDING

The second panel discussion at the Bombay Chamber's Sustainability Conclave focused on the topic Sustainability Needs Funding. The panelists included Rokas Peciulaitis, Founder & Managing Partner, Contrarian Ventures; Sridhar Narayan, Managing Partner, GEF Capital; Dr Arunabha Ghosh, CEO, Council on Energy, Environment and Water (CEEW) and Ruchira Shukla, VC Regional Lead for South Asia, IFC. The panel was moderated by Anjali Bansal, president, Bombay Chamber and Founder, Avaana Capital. Some of the highlights of the panel discussion

ROKAS PECIULAITIS
Founder & Managing Partner,
Contrarian Ventures

SRIDHAR NARAYAN
Managing Partner,
GEF Capital

DR ARUNABHA GHOSH
CEO, Council on Energy,
Environment and Water
(CEEW)

RUCHIRA SHUKLA
VC Regional Lead
for South Asia, IFC

ANJALI BANSAL
President, Bombay Chamber
and Founder, Avaana Capital

The panel discussion on Sustainability Needs Funding elucidated on the opportunities in climate financing, the need for blended finance, emergence of startups/unicorns in the green financing space and the maturity of sectors like renewable energy, electric mobility, waste and water treatment which have moved or are moving from being subsidy and government support dependent to being more standalone and commercially viable business models.

Mahesh Chandak, Head of HSE – South Asia & HSE Business Partner for Crop Science Division - Asia Pacific, Bayer Group, introduced the panel by saying, "We all know we expect our investors to take ESG considerations into account when making funding decisions, we expect a transparency to highlight the risks and the mitigation measures related to ESG in this journey and hence sustainability finance has a key role to play in delivering on our India Net Zero aspiration by 2070."

Opening the session Anjali Bansal said that capital has a big voice and one of the big movers really in the sustainability dialogue has been large capital. And as India is targeting Net Zero by 2070, both public and private capital have to play a very significant role. She invited Dr Arunabha Ghosh, who was very much a part of the COP26 dialogue, to share his thoughts on the key takeaways from the event and what is the road ahead for India.

He said, "Our prime minister's statement was a statement not of an energy transition but of or rather for an economic transformation. Net Zero by 2070 does not mean just that you'll have more renewables or more electricity but it basically means that every single sector is going to change. It means that how you make automobiles to how you make steel to how you make a shirt, everything is going to be now evaluated on a completely different set of metrics. Therefore, we have to ask ourselves: what is the near term and then what is the long term. The near term target of say 500 gigawatts of non-fossil capacity most of which would be renewables by 2030 effectively translates into the fact that India should deploy another 10 and a half megawatts of fuel every working hour, 10 hours a day, 6 days a week, 52 weeks a year for the next nine years - we have to be deploying at that intensity, which means every time there is even the sound of a tender, then taps need to turn on and finance needs to flow. The second thing that needs to happen is that we need to get very real about de-risking. Our estimation at CEEW is that the Net Zero road will require a 10.1 trillion dollar investment at 2020 prices. But of that 10.1 trillion dollar investment, we need about one and a half trillion dollars as the lower cost or the hedging capital that would be needed to lower the cost of finance and crowded additional investment."

> "This will only happen if large capital begins to flow through innovative mechanisms into many types of small projects, whether it's in urban areas, very urban areas or rural areas"

Dr Ghosh added that there is no chance of getting to big green infrastructure without getting serious about large-scale de-risking of investments in India and other emerging markets. "The road to Net Zero for India and for other developing countries has to be one where the energy transition comes closer to people. Otherwise you will not get the political sustainability for sustainability; we will not get the political dividends coming in the form of votes for political leaders beyond the current government to actually keep driving this agenda; and this will only happen if large capital begins to flow through innovative mechanisms into many types of small projects, whether it's in urban areas, very urban areas or rural areas which allow for a more distributed, digitised and decarbonised economy," he said.

Gestation risks

Commenting on the appetite for global capital to invest very early and take gestation risks

> The renewable energy sector was very largely dependent on subsidies and policy benefits, and that sector has now matured to being a market-based more competitive sector

and on the other hand the kind of opportunity of the pipeline, Rokas Peciulaitis said, "Every discussion about Net Zero needs to start with where the capital flows now and where it will eventually flow. Whether it's a country a company or a city, you always want to start with the accounting question -where does the emissions come from and then you'd establish the baseline of where the opportunity lies. Majority of the opportunities are actually in infrastructure because what we think of as an infrastructure now, for example, a solar or wind device, was a technology just 12 years ago. What we do as a fund is we actually invest in technologies that are technologies now but will become infrastructure in 10 to 12 years."

Sharing his insights on the different cycles in sustainability and climate investing and the differences or similarities therein, Sridhar Narayan said, "There's been a significant change in the last 15 odd years that we've been investing in India. We've certainly seen a marked maturity in some of the environment related sectors. The renewable energy sector is a great case in point where when we first started investing in 2007-8 in this sector, it

was very largely dependent on subsidies and policy benefits, and that sector has now matured to being a market-based, more competitive sector and as a result there is a whole clutch of entrepreneurs also who have now got into that sector because they see this as a viable industry that can stand on its own without the need for a lot of subsidies from the government. We see similar transitions underway in some of the other sectors like waste and water treatment, among others."

He added, "This presents a lot of investing opportunities for us. That's really the transition that we as investors also hope to play, that you come into a sector where you're still at a somewhat late stage on the early growth path and then we ride out the whole transition to mid stage, that's where we think we can create an alpha as investors."

Sustainable and viable business models

Joining the discussion, Ruchira Shukla stated, "On the back of COP26, there is now an urgent call to action and what I've seen change in the last decade is, if the sensitivity to carbon and to creating a low carbon economy was present even a decade ago, it was a nice to have and now, it's a must-have. It's an imperative that nobody can avoid and we're seeing that shift in the minds of all stakeholders. Regulators across the world are making commitments and trying to make the right changes happen just to make that shift pan out. We are seeing entrepreneurs think differently about their business models that are more climate friendly and sustainable in the long run and thinking about the future of the Planet."

She added, "There is a very distinct assessment of how the fund meets UN SDGs and how the fund meets various development impact objectives including creating a low carbon Planet and we're seeing that also in a lot of innovations. So there are innovations that will require blended finance and maybe a long gestation period patient capital, but there are some that can get economically viable in the short term and we are seeing a lot more of them these days. I think we're heading towards the future where capital will come because the viability of these models will eventually get established and I am very bullish on being able to meet these goals."

> There are innovations that will require blended finance and maybe a long gestation period patient capital, but there are some that can get economically viable in the short term

The panelists also discussed about public financing and that the first big signal coming out of India should be that we are reforming the power sector in order to drive the next stage of growth in green energy investments. India also needs to combine its obsession of having more unicorns with making sure that those unicorns also emerge in the clean energy space. This means you need a different kind of patient capital along with some kind of publicly funded, whether it's tax incentives or other kinds of incentives, that enable the digitisation folks and the clean energy folks to come together and develop business models that are best for markets like India.

One thought that came out from the discussion was that public finance is needed in the de-risking of critical infrastructure in the face of severe climate change. If we want to build a bridge that's not energy financed but if the bridge is going to get washed away in 15 years out of its 50-year lifespan because of an extreme weather event, you need to be able to create the insurance cushion that allows that bridge to be financed. So whether you're looking at bridges, roads, telecoms or airports, making climate resilient infrastructure means that there will be a delta that will need to be covered for non-linear climate risks and that again will need to come from public finance or innovative internationally funded insurance mechanisms. ■

For full panel discussion please visit Bombay Chamber YouTube channel

MAKING NET ZERO REAL

The second day of Bombay Chamber's Sustainability Conclave started with a panel discussion that deliberated on the topic: Making Net Zero Real. Industry leaders on the panel included Sunil Mathur, MD & CEO, Siemens; Nilesh Shah, Group President & MD, Kotak Mahindra AMC; VS Parthasarathy, Coach, Mentor & Entrepreneur, Ex-GCFO & President, Mahindra Group and Member of GEB, and Rajiv Anand, Deputy Managing Director, Axis Bank. The panel was moderated by Siddharth Sharma, Group Chief Sustainability Officer, Tata Sons Mumbai. We present a few highlights of the panel discussion

SUNIL MATHUR
MD & CEO, Siemens

NILESH SHAH
Group President & MD, Kotak Mahindra AMC

VS PARTHASARATHY
Coach, Mentor & Entrepreneur, Ex-GCFO & President, Mahindra Group and Member of GEB

RAJIV ANAND
Deputy Managing Director, Axis Bank

SIDDHARTH SHARMA
Group Chief Sustainability Officer, Tata Sons Mumbai

Welcoming the panelists, Anirban Ghosh, Chairperson, Sustainability Committee, Bombay Chamber of Commerce & Industry & Chief Sustainability Officer, Mahindra Group said that climate change is real, and that tackling climate change requires getting to Net Zero. The path to Net Zero however is not easy and a lot of obstacles must be overcome. That is why conversations on making Net Zero real is the need of the hour.

Siddharth Sharma opened the discussion by raising a pertinent question, "At COP26, our prime minister made a very bold and ambitious statement to set a 2070 carbon neutrality target. Given the fact that India historically has been responsible for only four per cent of global emissions with 17 per cent of the population, is it something achievable, something that we'll be able to do or is it something that we have bitten off more than we can shoot?"

Taking up the question, Sunil Mathur said, "I do believe that the target of 2070 is realistic. I think the bigger challenge though is meeting the targets of 2030 and it is really critical for each one of us to play our role in this. As we grow, we will need more energy, our carbon footprint will grow and we need to be very very careful how we can do it in a sustainable manner and really be a part of the global citizenship and play our role because this is an imperative. I think it is important for each one of us to recognise that this is not really an issue of which country or which economy, but it is something where each one of us will have to play our role - be it government, civil society or industry. We will have to break this down into smaller bite-size chunks and not look necessarily only at the long-term strategy but really work backwards from there and say what is the maximum that we should do. Not what we believe we can do, but how much we can really stretch ourselves to in all three spheres – government, civil society and industry - to really start making an impact."

Commenting on how India can cater to her developmental requirements while at the same time grow sustainably, V S Parthasarathy said, "I think what is also required is a kind of passion. We have to surpass ourselves to give coming generations a better future. You have a vision or a dream and then you do some action, then go and say I have a right to have this dream and a bigger dream. What we did in the solar sphere gives us the right to have this dream. For example, I was working with SEWA, a self-employed women's association which is a 50-year old organisation. We were trying to think, how do we make rural green and we thought about biogas, green coal, solar electricity, solar pump, waste to energy, clean water, village processing centers and so on. Everything which will kind of save the ecosystem starts to come in as an urban area and you can bring down the whole carbon footprint dramatically. Recently as I drove down, the Chota Rann of Kutch, I noticed that 70 per cent of the salt pans are now worked on solar water pumps and solar powered tech instead of the 70 per cent diesel pumps used earlier. So the entire ecosystem has completely changed. If we do things like that in every sphere, these targets maybe surpassed."

> "As we grow, we will need more energy, our carbon footprint will grow and we need to be very very careful how we can do it in a sustainable manner and really be a part of the global citizenship"

Sustainability at the core

Rajiv Anand agreed, "There is no need for us to look at sustainability and development as mutually exclusive. What is actually going to happen is that significant direct and economic gains through these climate actions are going to happen - millions of new jobs are going to get created in sunrise industries, resource efficiency, energy consumption efficiencies are going to kick in. So when we think about ROI of sustainability, we should certainly take some of these into consideration as well. The whole narra-

tive that sustainability is at the cost of development, I think is a bit flawed."

Sharma reiterated that sustainability cannot be seen as a binary and when we talk about sustainability, we also have to weigh the cost of taking action vis-a-vis the cost of not taking action. "Between India, China and Japan in 2020, the economic losses on account of natural disasters were 487 billion dollars. Now the cost of not reacting to the impacts of climate change are things that we have to factor in. It's high time that when you are framing strategy for an organisation, sustainability has to be at the core and sustainability or profitability and sustainability and development at the macro level cannot be seen as exclusive in nature," he observed.

Mathur added that in India, cities create a huge amount of waste, mountains of it and there's a whole lot of pollution because it's continuously being burnt and that creates health related issues. "But there are technologies now that convert waste to energy and the question really is, we've got to be examining the entire concept of waste to energy from a completely different angle - the total cost of that is not going to be the same as the cost of a conventional coal-fired power plant. We've got to start evaluating the end-to-end costs because it is possible to eliminate waste in the country and the entire pollution impact of that if we use technology and for that, innovation is critical," he said.

"We've got to start evaluating the end-to-end costs because it is possible to eliminate waste in the country and the entire pollution impact of that if we use technology and for that, innovation is critical"

The 10 trillion dollar question

Speaking about climate finance and the commitment of 100 billion dollars by the developed world, how is India going to fund this transition to Net Zero, Nilesh Shah said, "If we look at India's savings right now on a three trillion dollar economy at about 30 per cent, we will be saving close to a trillion dollars. So to generate 10 trillion dollars of investments from here till 2070 is definitely within our means. However, we should be allowing market to finance this transition rather than going back to the allocation model. If we go back to the Kyoto protocol, companies which were producing refrigerant gases which were depleting ozone layer, they were incentivised to move to CFC cases and in order to do the transition, they were provided certain credits. One Indian company, Gujarat Fluorochemicals probably earned close to a thousand crore by selling its carbon credits and this was a very very positive incentive for making that transition."

Hence there should be mechanism like carbon credit where countries which are contributing more compared to their per capita need should be compensating developing markets. "The second thing which we should position is India in the ESG

space. We know global capital today is searching for eligible companies under ESG. China actually boycotted COP26 and Brazil and South Africa though they participated, they refused to make any commitment towards Net Zero. India has taken the lead and now it is up to Indian companies to attract global capital under the overall aegis of Net Zero by 2070. The final thing which is very very critical, is our own allocation of savings. While Indians are very good savers, they are not necessarily good investors. a lot of our savings goes into real estate, gold, kind of physical assets. How do we ensure that the sustainability financing becomes equally rewarding for investors? What kind of price and incentives can governments give to popularise it? This will all be extremely critical to ensure that domestic retail savings also flow towards financing of sustainability," affirmed Shah.

The panel discussed about the emerging market risk when you are investing in emerging markets including India and additionally, the superimposed risk of technologies which are still not commercially proven, which are still very nascent. So the question is, how do we create the right policy framework and the right incentive structure to attract capital?

"How do we ensure that the sustainability financing becomes equally rewarding for investors? What kind of price and incentives can governments give to popularise it?"

Responding to this Shah continued, "If we allow market forces to operate, they will be able to create innovative structures. Today many concepts which are loss making in nature, which do not seem to have path to profitability, are able to raise capital. If we open up our markets for innovations and improvements, I am sure we will be able to raise necessary risk capital for setting up of technology and for commercialisation of technology and eventually once that technology stabilises, we will be able to fund it with appropriate debt structure. We have seen many large companies being funded through the IPO market where millions of investors come together to share the risk. Now if people can come together to share commercial risk, I am sure, they'll be more than happy to come together to create a sustainable future." ■

For full panel discussion please visit Bombay Chamber YouTube channel

TECHNOLOGY CAN DRIVE SUSTAINABILITY

The last panel discussion at Bombay Chamber's Sustainability Conclave covered aspects like transformation in energy storage and renewable energy adoption, clean hydrogen, India's Electric Vehicle mobilisation and the software needed to stitch it all together. The panel, moderated by Sambitosh Mohapatra, ESG Platform Leader India, PwC, included Suman Mishra, CEO, Mahindra Electric Mobility; Bill Shukla, Executive Vice President & Group Business Head for Environment Business Unit, Thermax; Anindya Chowdhury, Country Manager, Shell India; Rahul Sankhe, President & Co-founder, SenseHawk and Sandeep Bangia, Head - EV, TATA Power. Some excerpts of the panel discussion

SUMAN MISHRA
CEO, Mahindra Electric Mobility

BILL SHUKLA
Executive Vice President & Group Business Head for Environment Business Unit, Thermax

RAHUL SANKHE
President & Co-founder at SenseHawk

SANDEEP BANGIA
Head - EV, TATA Power

ANINDYA CHOWDHURY
Country Manager, Shell India

SAMBITOSH MOHAPATRA
ESG Platform Leader India, PwC

Introducing the panel, Dr Pradeep Panigrahi, Head - Corporate Sustainability, Larsen & Toubro, said that while we have great ambition and the will, the transformation or transition cannot happen overnight. The ambitions can be met not just by having knowledge about technologies but also on the availability and accessibility of these technologies to the relevant stakeholders.

Sambitosh Mohapatra opened the discussion by saying, "I remember five years ago, people used to imagine whether India can reach 100 gigawatt then we went to 175 and now it is 500 gigawatt by 2030 - all because the technology and the cost of that technology was quite affordable. Because significant amount of that cost gets passed on to consumers and being a low income country on its way to becoming a middle income country in the next three to four years, there's a huge pressure on cost and the affordability. Secondly, how do we manage this transition? How do we finance this transition? How do we have people who can manage this transition? We need to look at four broad elements. First is how technology development would support some of our sectors in the Net Zero and whether they are cost competitive now. Secondly, we also believe technology can play a big role in upping corporate governance by enabling better data management and traceability and also in the social agenda by providing skills, financial and health inclusion to communities/employees. The third element is about matured and emerging technology solutions with so much of uncertainty which technology to bet on and how do we finance that.
Fourth is what is the kind of support we require from the eco system, policy makers, regulators and financial markets."

Aiding the transition

Speaking about the technologies that will be needed for this transition in India, Anindya Chowdhury said, "Shell is a traditional company and we take great pride in being a technology led company. We have several industry firsts to our credit and we expect to leverage this technological prowess to navigate the challenges of the energy transition. In October 2021, we set a target to reduce absolute emissions by 50 per cent by 2030 compared to our 2016 levels on a net basis. Now this covers all emissions in scope one which will come directly from our operations and in scope 2 from the energy we buy to run our operations that are under our operational control. This complements our targets to reduce the carbon intensity which we call the net carbon footprint of the energy products we sell as well, which is sort of scope three in step with society."

> If you take a medium-sized battery electric vehicle in India, life cycle emissions are lower by almost 20 to 30 per cent and we expect that as the electricity mix in the future changes away from coal, that will reach almost 60 per cent lower emissions

He informed that Shell was investing around a billion dollars every year in low carbon energy such as charging for electrical vehicles, hydrogen, biofuels and electricity generated by wind and solar power. "We plan on increasing that to around two billion dollars provided we can find the right commercial opportunities. We seek to have access to an additional 25 million tons of carbon capture and storage CCS capacity by 2035 equal to 25 CCS facilities the size of the Quest project that we have in Canada," he said.

About carbon removals, Chowdhury opined that this is something that is going to be a key technology that will be required in the coming years because not all emissions can be avoided. "By 2025, we will end a routine flaring of gas which generates carbon emissions from the upstream assets that we operate. By 2025, we also expect to have kept the methane emissions intensity of Shell operated assets to below 0.2 per cent. For doing many of these things, a lot of technology solutions will have

to be developed or even invented and we believe that this will benefit not only our company and our industry but we can extend this to other industries as well," he said.

Elucidating on the transitioning of businesses and investments from ICE engines to EVs, Suman Mishra said, "Electric vehicles as a technology solution really offers significant emission benefits. Almost all the analysis of the reports that have been developed today show that if you take a medium-sized battery electric vehicle in India, life cycle emissions are lower by almost 20 to 30 per cent and we expect that as the electricity mix in the future changes away from coal, that will reach almost 60 per cent lower emissions."

Mishra felt that the big disruption is the solid state batteries which may come closer to 2030. "We don't know yet but that will be a huge disruption. Fuel cells and green hydrogen that is again another topic that is hugely in discussions because that's the application that can be used for the long distance transportation like trains or bigger commercial vehicles. So here again work is going on, companies are developing the technology but it's going to take a little bit of time. In India what is happening in terms of adoption - there are two categories which have reached the total cost of ownership value prop, which is the two wheelers and the three wheelers. In electric three-wheelers today it's around seven to ten per cent penetration and it should reach

> "While we are talking about CO2 emissions, there is also a very major criteria about becoming Net Water Zero and the way to do that is to recycle water"

about thirty per cent in 2025. Four wheelers maybe a little bit further away. When we are in the particular industry, you can evaluate the technology and make your adjusted bets. Over the next 10 years we are going to see both diesel and EVs co-existing so the investments are being made accordingly," she added.

A green eco system

Elucidating on Tata Power's changing tech profile, Sandeep Bangia shared, "Tata Power is not the same company that it used to be 105 years back when it started. Now there is a lot more than generation, transmission and distribution that we do as a company. For example, we are into renewable big time - micro grids, battery storage solutions, solar pumps, solar rooftops, electric vehicle charging, etc. On the electric mobility front, we are currently at about 1250 odd public charging stations, this does not include your home chargers that were installed for about seven to eight thousand households when they bought the cars. These public chargers are across destinations - at offices, malls, shopping complexes, cinemas and right up to the highways in which our partnerships with the oil companies is really helpful. The plan is to go to over 10 000 stations in 2025 which also is likely to be significantly enhanced. There was an interesting study which suggested that the moment a customer sees a charger, he gets the confidence to buy an EV. He may not necessarily use that charger at all because 90 per cent of the time he will be using his home charger, but it's just a very psychological thing."

Bill Shukla spoke about how Thermax is helping companies make the green transition, "There's a whole lot of technol-

ogies that's very exciting and in the future. At the moment what we are offering to all our customers who have already embarked on the journey to Net Zero, is a direct reduction in their CO2 emissions by offering green energy in the form of biomass-based plants, solar energy, which is direct. But there's a whole lot of other activities in terms of indirect energy savings which also help them become greener and help them reduce their carbon footprint. For example, clinker is produced inside the kiln during the cement manufacturing process and there is a lot of waste heat that is generated. Thermax delivers waste heat recovery boilers that can use this waste heat and generate electricity that suffices 30 per cent of a cement plant's requirements - consumption of electricity is about 40 per cent for a kg of clinker that is produced and it would have been procured from the grid which is largely still fossil based, so this is one way that a cement plant can say that it is going green."

He added, "While we are talking about CO2 emissions, there is also a very major criteria about becoming Net Water Zero and the way to do that is to recycle water. When you recycle water, there is an energy consumption that goes into it and today with a solar power plant or a biomass-based power plant, I can help companies recycle water using green-based energy thereby closing the circular loop."

Sharing his insights on how technology can be integrated, Rahul Sankhe said, "Sensehawk is basically an early stage company. What we do essentially is we built a cloud-based software platform for what we call asset lifecycle management. For example drones or any other sensors - you might have a robotic rover going around your plant maybe doing some measurements or doing some investigation. You should be able to write an application and plug it into a central platform where it's just feeding everything in and capturing that data in a structured way so that it helps build that. So the first step at the technology level is creating these solutions and then you need software essentially to be able to stitch this together and manage this entire ecosystem efficiently, both at an individual unit level or the asset level, optimising the interaction between these assets. Once you have data which is key and that's sitting on the cloud, you can then start mining that data and analysing it using ML algorithms and generating insights that then you can use for your day-to-day decision making." ■

> The first step at the technology level is creating these solutions and then you need software essentially to be able to stitch this together and manage this entire ecosystem efficiently

For full panel discussion please visit Bombay Chamber YouTube channel

YOUTH AND CLIMATE ACTION

In today's world, youth are at the forefront of taking climate action and moving towards a sustainable future. In a Fireside Chat at the Bombay Chamber's Sustainability Conclave, Shalini Singh, Head Corporate Communications & Sustainability, Holcim India conversed with Anant Singhal, Founder, Youth Policy Collective (YPC) and Istaara Amjad, Chair of the Environment and Sustainability Committee, YPC. Some excerpts of the conversation

ISTAARA AMJAD

ANANT SINGHAL

SHALINI SINGH

Opening the conversation, Shalini Singh said that today's youth play a very special role in climate action and forums like these must give them a voice. Youth Policy Collective commonly known as YPC is India's first youth led think tank. YPC serves as a forum for youth participation in policymaking by collaborating with institutions involved in the process.

Speaking about how the idea of YPC came about, Anant Singhal said, "The YPC was founded during the idle hours of lockdown, where together with our friends and future co-founders, we had intense Zoom sessions of brainstorming ideas and discussions until they found common ground. The unfortunate reality for us is that it was impossible to get our voices heard in places where it matters; as youth, our access to decision making is very limited even if we are the primary stakeholders in a particular issue. So we began conceptualising YPC as a platform for youth engagement and policy making through research and advocacy."

Today the YPC has more than 120 members across 40 schools in 8 different countries. YPC has worked with six different policy areas, one such is their environment and sustainability committee that conducts research and advocacy campaigns for a broad range of topics under the umbrella of sustainability. YPC has partnered with NGOs, worked with Tata Power, NITI Aayog and KPMG.

On October 2, 2021, the YPC held India's first ever youth-led climate conference. It brought together over 200 student policymakers, professionals, and students from across the subcontinent to address issues related to the climate change crisis by engaging with authors and industry pioneers who are leading the charge against the issues. The key takeaway from the conference was focusing on the implementation of sustainability programs such as carbon tax systems and carbon credit systems that can assist in reduction of carbon emission.

Anant added, "The other takeaway of the Climate Summit was the importance of engaging a variety of different stakeholders whether it be the youth or companies, NGOs and especially MSMEs. I think we have to create these platforms to allow shared knowledge and collaboration on sustainability projects because that's really the way forward and I think another big key takeaway was the impor-

tance of engaging the youth."

Takeaways from COP26

Responding to Shalini's query on his insights from COP26, Anant said, "I think it's great to see that the international community is willing to work together on the issue and take collective action. From an Indian context, I think the conference really highlighted the importance of driving climate action through sustainable businesses. Especially MSMEs need to adopt more sustainable practices to reduce their carbon emissions and work more closely with their communities on the ground level to minimise their environmental impact and preserve the natural resources around them. Sustainable businesses really will be the key driver towards reaching India's COP26 goals and we need to make it as easy as possible for MSMEs to make that switch by providing them the support in terms of technological resources, government support and even the youth through volunteering and through direct engagement with MSMEs."

More green jobs are desperately needed in today's society. Speaking on this, Istaara said, "There is a lot more room for creation of green jobs because unemployment is a huge issue in general but specifically for the youth."

The youth, being more exposed to climate disasters are more passionate about tackling these issues. Many want to specialise in climate spaces such as environmental science and environmental engineering and corporates can utilise this drive and passion of the youth in their welfare areas. In the upcoming years it is likely that climate action would turn into important professions.

Legal Personhood

Istaara then spoke on the YPC's Legal Personhood conference. This conference educated the viewers on legal personhood which was also the first project YPC did. This concept considers natural elements such as the rivers and forests to be actual individuals, which in legal terms means that they have the same rights as humans and the ability to sue for environmental damages based on harm done to them.

She added, "This concept was passed in New Zealand for the Wanganui river. It was also included in the constitution of countries like Bolivia, Ecuador. I think there's a lot of room for actually implementing this right now."

> "As youth, our access to decision making is very limited even if we are the primary stakeholders in a particular issue. So we began conceptualising YPC as a platform for youth engagement"

They also stated how they admire the work of the Jatropa project, a youth led organisation that works with the support of volunteers from school and universities in rural and semi-urban areas in the implementation of sustainable agricultural practices and renewable energy systems. Anant explained, "It's a completely youth driven organisation and what I really admire is how they're going beyond activism to action and improving their communities around them through constructive engagement with existing institutions and individuals. I think we need a lot more of that and we need to create more opportunities for the youth to be engaged in these kind of direct action programs and directly work with NGOs, companies and the government to use their interest and passion for environment and sustainability in a more meaningful way than activism and go beyond that into advocacy and action."

Lastly they talked about how sustainability is "still a blip on the radar" for the vast majority of Indians, either because they're not aware of its importance or they are unsure about how to combat the issues that are arising out of it. Even though more people are getting involved in it, there is still a vast majority who are yet to have a strong learning about its importance. ■

For full panel discussion please visit Bombay Chamber YouTube channel

THE EVOLVING ESG LANDSCAPE IN INDIA

In another Fireside Chat during Bombay Chamber's Sustainability Conclave, Arun Kumar, Chairman & CEO, KPMG India and Narayanan Ramaswamy, KPMG Impact Champion for India discussed the evolving ESG landscape in India. Excerpts

NARAYANAN RAMASWAMY

ARUN M. KUMAR

Opening the conversation, Narayanan Ramaswamy said that the ESG agenda is in fact a much wider canvas - it goes beyond even Net Zero. Today ESG is a boardroom agenda. "I am thrilled at the kind of initiatives that a global firm like KPMG has taken - for example, the decarbonisation hubs that are being planned across regions is a solution to help the local firms. Also, the massive collaborations with University of Cambridge and New York University (NYU) Stern School to sensitise people on ESG are major initiatives. COP26 has provided the much needed fillip to the ESG agenda. India has made some really far-reaching commitments as a part of this but independently we've been pursuing our own initiatives as well from the compliance perspective."

Speaking on India Inc's ESG readiness, Arun Kumar said, "KPMG Impact is a global initiative to focus the entire firm, both inwards for ourselves as well as for our clients on the importance of ESG. This has been launched globally - we are a firm of 20,000 people so just imagine the power if we can all carry the message of ESG to our clients. ESG is going to be as transformative as digitisation. Especially in the last two years, digitisation has had a great fillip. In many senses you can think about the pandemic itself as an environmental issue - it's something that affects all of humankind. We're in this thing together so in that context, all of us acting on the ESG agenda is going to be really important."

He opined that we're in the early stages of ESG in India and it will go through many phases. The first one is like an awareness phase, an awakening phase, where people have to learn to understand that this is an issue. "COP26 was again very helpful in reminding the world that this is an important issue and everybody needs to do something about it. This will be followed by an adoption phase which regulation will drive. SEBI has come up with the business responsibility and sustainability reporting approach. The ministry of corporate affairs has come up with a way to focus on looking at many themes like sanitised value chains, naval welfare, gender equity, fairness, so these have to do with the s of ESG and some have to do with the e of ESG. I think supply chain is going to be key if we are focused on Net Zero. It's not just about our entity being Net Zero; it's about the entire supply chain being Net Zero. What we procure should be procured from Net Zero enterprises. So supply chain is an area which we think will go through a lot of transformation. There's also the imperative of not being overly

dependent on a single source of supply. So both ESG and supply chain redundancy are driving a transformation of supply chains around the world," he said.

Narayanan agreed that we're not talking about new business practices; maybe it's about new businesses emerging out of ESG. "India as one of those young economies in a rapid growth phase, is going to be one of the big beneficiaries of ESG. In a world that has changed into the new order where ESG underpinnings is going to be the most important factor for doing global business, we emerge as leaders," he said.

Elucidating his thoughts on apprehensions that the journey towards Net Zero may slow down the growth agenda, Kumar said, "It is the natural reaction of any business or any individual to a new regulation – that it is going to cost us more and to some extent initially there is an increased cost of tracking it and complying with it etc but there's another way of looking at it. For example, what is the one thing that all of us in businesses can do to help impact the environment in a positive way? We can reduce the amount of travel. The amount of emissions created especially by airline travel is huge. Just imagine if all of us travel less, it would be a very tangible contribution to the environment and also to the bottomline because you will spend less money - getting on a plane, staying in a hotel - and those resources can be plowed into growth. So I don't buy the theory that ESG means greater cost and lower growth.

> "ESG is essentially about sustainability and consuming less resources; if you can meet the same end goals with less resources, it's a good thing as it means economic efficiency."

On the contrary, because ESG is essentially about sustainability and consuming less resources; if you can meet the same end goals with less resources, it's a good thing as it means economic efficiency."

Narayanan opined that ESG is going to be a force multiplier and for emerging economies like India "maybe this is a golden opportunity to become a lot more valuable particularly for businesses. And in time to come we will be leaders in the ESG space."

Commenting on how organisations such as KPMG, and those who are in the advisory audit and such kind of roles, can help/benefit the corporate world at large, Kumar said, "There are multiple ways. One, as this becomes an issue for every company both driven by regulation but also by the awareness of the fact that the changing demography of millionaires are all very focused on working in corporations or places that are sensitive to these kinds of issues. For example in the trade arena - the importance of environmental standards is going to be part of high quality trade agreements even important labour standards. The EU is negotiating multiple trade agreements - all of these will eventually have standards that are essential and will advance the ESG agenda. Corporations really have no choice but to embrace this and to be ahead of the curve. So firms like ours can advise our clients on what they need to do to comply with regulations like the SEBI regulations to start with and other regulations that will come along the way. Secondly, we need to set the example - we ourselves are committed to become a Net Zero organisation. So we have to walk the talk and I think we can show how to do that."

Kumar also added that It's an area that needs expertise. "That's where we come in - to take expertise to our clients because every client cannot afford to build expertise in every area and this is an area where we can put together our expertise from multiple disciplines -whether it's accounting and auditing measuring or operational issues like supply chain management or people management or digitisation, all these things we can bring together to help companies advance along the ESG agenda," he stated. ■

For full panel discussion please visit Bombay Chamber YouTube channel

BUILDING CLIMATE RESILIENCE

In a Fireside Chat at the Bombay Chamber's Sustainability Conclave, Aabha Bakaya, Senior News Anchor spoke to Mridula Ramesh, Founder of Sundaram Climate Institute on, "What is Climate Resilience and what is its importance in Sustainability". Mridula Ramesh is a prolific writer with immense knowledge about the field of sustainability

MRIDULA RAMESH

AABHA BAKAYA

The session was introduced by Neti Subrahmanyam, Associate Vice President - EHS, Corporate Function, Deepak Fertilisers and Petrochemicals Corp. Aabha Bakaya started the conversation by talking about Climate Resilience and its importance when it comes to sustainability, and how she felt that these terms were loosely used without understanding their true meaning.

Mridula Ramesh went on to explain about Climate Inertia, which means that once you put emissions into the air, they tend to stay up there for a long time, warming the Planet. Even if all the carbon-emitting actions are to be stopped, the warming will still continue. This bit of information is important for India, as it is arguably the most vulnerable nation to this warming climate. It can be seen in the floods and droughts hitting the country in recent times. "The ability of a system to bounce back after getting hit is necessary. How can we make a sustainable business after getting hit multiple times without the ability to bounce back, all because the climate has changed?" she questioned.

Mridula added, "Let's look at what being hit means in commercial terms: when people, the general population gets hit, in most professions, they have less surplus to spend. So demand comes down. When factories or shops get flooded, stock is lost and profit comes down. Especially with insurance companies starting to say that they can no longer cover some of these [losses]. It is beginning to happen in some parts of the world. In dry regions, when crops start failing, rural demand falls and so also entire sectors that rely on the rural demand. If you are on the path to Net Zero and you are not resilient, you are missing a part of the plot."

She called this situation a "once in a lifetime mould." For many reasons, the global climate action is being resculpted, which is seen in all sectors across the economy. However, she questioned, "Which multinational company would want to locate a factory in a place which is always in the news for getting flooded? Nobody wants that." Even if the whole ecosystem is in place with the best labour, capital or market, it cannot attract a global major to locate a supply chain there if the place is filled with water at random times.

Water is key to resilience

Mridula makes another point, "Net Zero and the need to hold our carbon emissions is being

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firmly anchored world over. It is in the conversation, and there is an action plan. Good or bad, adequate or inadequate, we are on the path. Resilience needs its fair share of the conversation too and water is a key part of resilience. That is why my second book [Watershed: How We Destroyed India's Water and How we can Restore it] was written." The 2021 book was written to highlight the urgency to discuss the water crisis.

The author talks about floods and droughts in the cities. Exemplifying Chennai, a city constantly experiencing floods, she explains "One of the reasons, but not the only one, is because we don't do a very good job of managing our solid waste. When it happens, solid waste goes and blocks the drains and water base. There is no way for the water to flow out and the cities get flooded. We need to understand that many of the resilience building measures help you on the path of Net Zero in ways that people do not often think about. Waste contributes about 4% of India's green house emissions. If you manage your waste, you are becoming Net Zero and you are also helping your cities become resilient. In the industry that I am in, that is textile, we weigh every gram within the factory, we segregate it and then sell it, or we do not make money. All the factories across the textile industry do this. Since so many of us do it, entirely new business models begin to develop." The circular industries like these create new income and employment generation sources by reimagining waste as resources.

On the other side of the coin, what happens to the dry regions like peninsular India, including the states like Gujarat and Tamil Nadu? "One thing that businesses need to understand is whenever a town or a region runs out of water, for the policymakers it is a no brainer to shut down the industries first. They will never cut off domestic supply or irrigation supply to the farmers. Industries will be the first to fall. Studies by the World Resources Institute, found that Tamil powerplants in the dry regions had a 21% lower plant utilisation factor. At this rate you are not making money, right? If you want to become resilient, reuse your water." She advises that the best way to be climate resilient in a dry state is to use alternative ways of generating electricity, like solar or wind power, not water. The business turns circular and does completely different work in building resilience. How can SMEs be a part of building resilience? Mridula explained, "Now, what do SMEs do? Big companies have the ability to employ talent to get climate action underway, but a shout out to all the industry associations or organisations like the Bombay Chamber that offer fantastic programs which play a critical role in hand-holding people in building resilience. We need equal share of actions from the SMEs as well as corporations, as they both need to become sustainable. A good way to get the SMEs along the path is to work through industry organisations."

> "One thing that businesses need to understand is whenever a town or a region runs out of water, for the policymakers it is a no brainer to shut down the industries first"

Addressing a concern of rural India, she talked about the huge amount of crops that is lost due to lack of storage facilities in India. Warehouse availability is obviously not enough, and their management seems inadequate as well. She cited an example of a startup working for farmers with surplus produce, by hiring warehouses that are then managed by the startup team. Mridula said, "They give the farmers a printed receipt saying this is now collateral, and if tied up with financial institutes, they can borrow money against it. It is a win win concept along multiple dimensions as firstly, farmers now have actual collateral. It is easier for them to access financial support and the grain is also saved. Moreover, a managed warehouse creates 8 jobs with it. So if you manage all the unmanaged warehouses and add new small ones, it will create 350,000 jobs!" ■

For full panel discussion please visit Bombay Chamber YouTube channel

PEOPLE, PLANET AND PROFIT

The Triple Bottomline coined by John Elkington, the famous British management consultant and sustainability guru, in 1994 advocated that instead of one bottomline, an organisation should have three: Profit, People and Planet.

Today, the business mindset is slowly but surely shifting. Governments, societies and stakeholders expect companies to engage in business practices that are good for people and the Planet, not just the bottomline. Sustainable economic growth is no longer just an imperative - it's critical to our future.

In the following pages, leading corporate minds share their insights on achieving Carbon neutrality in the industries they work in and what it will take for India to reach the 2070 Net Zero target committed by Prime Minister Narendra Modi at the COP26 in Glasgow.

INDIA'S RENEWABLE ENERGY ROADMAP

Decarbonising India's energy sector will require a multi-faceted approach with renewables replacing fossil fuels, reducing CO2 emissions from existing capacity through enhanced efficiencies & technologies and focusing on carbon sequestration for unavoidable carbon emissions

DR PRAVEER SINHA
CEO & MD, Tata Power

India is the world's third-largest energy consuming country driven by rising incomes and varying patterns of consumption. Energy use has doubled since 2000, with 80% of demand still being met by fossil-fuel sources. This energy demand is bound to grow further as India will soon be the most populous country in the world. Since, the energy sector contributes to 40% of India's Green House Gas (GHG) emissions, it is imperative to adopt a systematic approach to meet the energy requirements of over 1.4 billion people while being cognizant of the associated climate impact.

The world is in a climate emergency state as clearly visible in terms of erratic monsoons, frequent cyclones, extreme heat waves, wildfires etc. This thus mandates for an immediate climate action plan as nobody can afford it to be postponed to the 2040-2050 timeframe. Being one of the world's fastest growing economies, India's choices, from a global perspective, will determine the world's success or failure on climate change.

A multi-faceted approach

> India's five commitments will play a critical role in the world's transition towards clean energy and to limit the overall rise in temperature to below 1.5°C as set under the Paris agreement

Decarbonising India's energy sector will require a multi-faceted approach with renewables replacing fossil fuels, reducing CO_2 emissions from existing capacity through enhanced efficiencies & technologies and focusing on carbon sequestration for unavoidable carbon emissions.

To lead the world's energy transition agenda, Hon'ble Prime Minister Narendra Modi, at the COP26 summit at Glasgow, has committed India to an ambitious five part "Panchamrit" pledge - four of these are specific goals for 2030:
a) to reach 500GW of non-fossil electricity capacity;
b) to generate 50% of all energy requirements from renewables;
c) to reduce emissions by 1 billion tons from now to 2030; and
d) to reduce emissions intensity of GDP by 45%.

The fifth pledge in Panchamrit commits India to Net Zero emissions by 2070. India's five commitments will play a critical role in the world's transition towards clean energy and to limit the overall rise in temperature to below 1.5˚C as set under the Paris agreement. But this would require a humungous investment in terms of capital and technological know-how. It demands a paradigm shift in assessing the changes required as also a robust framework to implement the sustainability roadmap and a transition to net-zero economy.

Net Zero India can save lives, catalyse new industries, create millions of jobs, drive trillions of dollars of economic value and can provide a significant heft to India's role in the global combat against climate change. According to a recently released IEA report, the country's transition to a Net Zero economy could create over 50 million jobs and contribute more than US$ 1 trillion in economic impact by 2030 and around US$ 15 trillion by 2070.

India's green transformation is an integral and promising part of the overall economic transformation of the country and there is a newfound optimism reflected at both state and central levels. The Union Budget 2022, announced by Finance Minister Nirmala Sitharaman on February 1, 2022, outlined reforms and initiatives towards boosting the domestic manufacturing of solar power equipments, battery swapping, decentralised renewable energy among others. The budget provided an additional 19,500 crore towards production-linked incentive (PLI) scheme for domestic manufacturing of solar cells and modules, raising the existing PLI scheme to 24,000 crore-thus translating into creating an additional manufacturing capacity of upto 45 GW in the country.

> “The rise of utility-scale renewable projects is supported by evolving regulatory approaches that encourage pairing solar with other generation technologies or storage systems”

To encourage domestic production, the budget also proposed to raise import duty on

solar cells from 20% to 25% from April 1, 2022. Impetus on Green bonds for meeting the financing needs of clean energy projects and inclusion of battery storage systems under infrastructure category are some other initiatives that will augment Government's push towards reducing India's carbon footprint.

The green transition

The green transition will be boosted by technological development, evolving regulations, consumer preferences and investor sentiment. More sophisticated renewable solutions (hybrid+ thermal, storage, bundled solutions) are emerging to address the challenges of infirm renewable power. The rise of utility-scale renewable projects is supported by evolving regulatory approaches that encourage pairing solar with other generation technologies or storage systems, to offer "round the clock" supply solutions. There is a significant work underway to promote battery storage, hydrogen and mechanical storages in the country. The government has recently announced green hydrogen policy-waiving off the inter transmission charges for the projects commissioned before 2025.

Despite these policy interventions and initiatives, there are few challenges that need to be addressed to unlock the full growth in the power sector. The biggest challenge is the distribution sector that continues to be the weakest link and demands a long due reform. The Electricity (Amendment) Bill 2021 once passed in the Parliament, is targeted to strengthen the financial health of the power sector. Other challenges that need attention are related to land acquisition, regulatory approvals, contract sanctity and strengthening of transmission infrastructure in the country.

> "Investors are recognising a progressive policy ecosystem that reduces risk perceptions and brings greater attention to renewable energy growth"

Fueling Climate action

India is home to one of the youngest populations in the world and the rising consciousness on climate action is driving a significant shift in consumer preferences towards clean energy sources. India needs to mobilise large and sustained flow of domestic and global capital to meet its climate ambitions and Sustainable Developments Goals 2030. Investors are recognising a progressive policy ecosystem that reduces risk perceptions and brings greater attention to renewable energy growth.

Tata Power is firmly committed to India's renewable growth story and is one of the first organisations to declare its Carbon Neutrality aspiration before 2045. This entails no fresh investment in greenfield or brownfield coal plants and a significant growth in its existing non-carbon generation portfolio from 30% to 80% by 2030 to usher in an era of clean energy in the country. In addition, the company has been contributing significantly towards e-mobility with 1300+ EV charging stations already installed across country.

To fuel the energy-enabled economic growth in remote villages of India, Tata Power has made significant investment in setting up microgrids across such areas. Tata Power is also setting up 4GW solar cell and module manufacturing capacity with a capital commitment of Rs 3400 cr and plans to complete it by next year end. With renewable focused growth trajectory, Tata Power is best positioned to enable energy transition in the country, including all the stakeholders in this momentous journey.

Climate change is a priority and India has set ambitious plans and targets to march towards energy transition. However, all stakeholders- the government, businesses and regulators need to come together and put forward the desired policy framework and sectoral reforms in the absence of which the complete value unlock and the energy transition will be difficult to achieve. ■

(Views expressed in this article are personal)

CHARGING AHEAD TO SUSTAINABLE MOBILITY

For the electric revolution in India to be sustainable, it has to be accessible to as many Indians as possible. Similarly, disposal and recycling of the enormous amount of battery that will be generated from powering the millions of electric vehicles on the roads will also need to be addressed

RAJESH JEJURIKAR
Executive Director, Auto & Farm Sectors,
Mahindra & Mahindra Ltd.

Transition to 'Sustainable Mobility' is inevitable and already underway globally and in India - across both passenger and commercial segments. While there can be multiple transportation modes that can be considered sustainable, electrification is the big theme for the decade.

Electrification is already at an inflexion point in India across different sub-segments. However, for the electric revolution in India to be sustainable, it has to be accessible to as many Indians as possible. The focus has to be on the mass mobility segment to begin with. And we are already seeing early positive signs. The 3W penetration in India increased from 2-3% in F21, to 9% YTD in F22. 3W penetration will hit 35% by 2025, and as high as 65-70% by 2030, while 4W penetration is expected to be 15% by 2030. Electrification of heavy commercial vehicles including buses may however take some more time, primarily driven by procurement by Government bodies.

> "Given the lifecycle emissions of vehicles, it becomes imperative that we start by designing vehicles that allow higher recycling of material and in parallel also encourage scientific methods for battery recycling and disposal in the organised sector"

EV emissions

With electrification, it is expected that the vehicular emissions will come down significantly. As per a white paper on 'global comparison of the life-cycle greenhouse gas emissions of combustion engine and electric passenger cars' by the International Council on Clean Transportation, the average lifecycle emissions for an average electric vehicle (EV) are expected to be at 25T CO_2 eq., much lower to a gasoline car in India at 35T CO_2 eq.

However, as India's power grid becomes greener, in line with commitments made at the COP26 (50% renewable energy), we expect the emissions

per vehicle for an electric car to go further down to 19-20T CO2 eq. Emissions per EV will be much lower at 7T CO2 eq. on a 100% renewable electricity powered grid. At Mahindra, our EVs have so far cumulatively covered more than 400 million kms, saving more than 40,000 metric tonnes of CO2 emissions.

Given the lifecycle emissions of vehicles, it becomes imperative that we start by designing vehicles that allow higher recycling of material and in parallel also encourage scientific methods for battery recycling and disposal in the organised sector. Only then can we truly claim that we are entering into an era of sustainable transportation. The introduction of vehicle scrappage policy in India by the Government of India is a great initiative and a step in the right direction. Similarly, disposal and recycling of the enormous amount of battery that will be generated from powering the millions of electric vehicles on the roads will also need to be addressed. A comprehensive battery disposal and recycling policy will further aid the recycling industry. Broadly, scientific methods for battery recycling allow as high as 90% material recovery.

> "As India's power grid becomes greener, in line with commitments made at the COP26 (50% renewable energy), we expect the emissions per vehicle for an electric car to go further down to 19-20T CO2 eq"

The benefits

A holistic battery reuse and recycling policy will have numerous benefits across multiple spheres - economic, environmental, and even social. Economic benefits include setting up battery recycling units, which would generate income and profits. It further reduces supply security risks for metals such as Lithium (Li) especially given 97% of Li supplies is currently controlled by one country - China.

Lastly, these efforts are also expected to bring down cost of EVs. Environmental benefits due to material circularity with the re-use of useful

materials and metals can be quite significant. For instance, by 'greener' re-extraction of metals via recycling, we reduce use of traditional Li mining, which is a water-guzzling process that requires as high as 2000 litres of water for 1 kg of Li mining. Social benefits include job creation and employment shift from unorganised to the organised sector.

Total cost of ownership (TCO) will also be an important factor driving EV penetration in India. At present, Government incentives for EVs such as no GST, tax exemptions on EV financing and state specific incentives to reduce acquisition cost and zero road tax are boosting the EV TCO. Existing FAME II and upcoming Production Linked Incentive (PLI) program will further bolster the TCO benefits. Global battery prices, which were greater than US$ 1,000/ KWh in 2010 have declined to US$ 135/KWh and are further expected to reduce in future. Lower maintenance of EVs will further benefit customers and make EVs an attractive proposition.

“Total cost of ownership (TCO) will also be an important factor driving EV penetration in India. At present, Government incentives for EVs such as no GST, tax exemptions on EV financing and state specific incentives to reduce acquisition cost and zero road tax are boosting the EV TCO”

While TCO will be imperative for customer adoption, evolution of the charging infrastructure will be equally important to allay range anxiety in customers. Easy access to charging stations whether at home or at office, at malls or highways will be critical. Installation of DC fast chargers will be crucial in providing a good customer experience.

The future of mobility has to be sustainable and besides the obvious benefits for the Planet, also offers excellent business and growth opportunities. It is up to all of us including the Government, corporates, and consumers to come together to create the right ecosystem to adopt, nurture and accelerate this revolution. ■

WORKING TOWARDS NET ZERO FOR THE MARITIME ECOSYSTEM

While decarbonisation can be challenging, we can take several steps to work with partners like freight owners, suppliers and their customers to engage in decarbonisation activities and R&D to drive sustainability across the value chain

RIZWAN SOOMAR
CEO and Managing Director, DP World Subcontinent

With globalisation and evolving consumer preferences, supply chains have become more complex with increased connectivity and multiple freight networks. The demand for speedier delivery and instant gratification has resulted in shorter but carbon-intensive modes of transportation. Larger vessels, frequent routes, energy inefficient logistics and cargo handling systems have all added to the environmental concerns.

The Fourth IMO GHG Study 2020 has indicated that there has been almost a 10% increase in the greenhouse gas (GHG) emissions of total shipping between 2012 to 2018 and international shipping accounts for more than 2.2% of all global greenhouse gas emissions. There is no better time than now to make the total logistics and transportation industry more sustainable. We need to pay attention to every part of the complex supply chains to combat the effects of carbonisation and execute our action plan towards Net Zero. Protecting our Planet for future generations and eliminating the undesirable consequences of climate change on both, economic prosperity and on natural systems is paramount.

> “The new measures will require all ships to calculate their Energy Efficiency Existing Ship Index and to establish annual operational carbon intensity indicators and their rating”

While decarbonisation can be challenging, we can take several steps to work with partners like freight owners, suppliers and their customers to engage in decarbonisation activities and R&D to drive sustainability across the value chain. As a global provider of smart logistics solutions, at DP World we want to be the driving force on the path limiting the global warming to well-below 2°C and aspire to achieve Net Zero carbon emissions by 2040.

Some of the major ways in which we can strive towards a carbon-neutral future are outlined below:

Making the way for sustainable fuel

Moving cargo is heavily dependent on fuel, particularly in the maritime sections of the industry. Thus, decarbonising fuel supply is crucial for zero-carbon future, yet it is filled with operational and technological complexities. It is not an easy switch to low-carbon fuel or alternate cleaner fuel like biodiesel, ammonia, carbon-neutral methanol or hydrogen. However, the International Maritime Organization has set the target to reduce CO_2 emissions by 50% from the mari-

time industry by 2050. The new measures will require all ships to calculate their Energy Efficiency Existing Ship Index and to establish annual operational carbon intensity indicators and their ratings. This has set the stage for organisations to explore the gamut of potential low-carbon fuel options.

On the landside, at the terminals, clean renewable energy can power port operations. DP World is building the largest rooftop solar project in the Middle East region, installing more than 157,000 solar panels across Dubai port operations. The Solar Power Programme will generate enough energy to power 4,600 homes for a year and achieve the equivalent environmental benefits as the carbon removed by 1 million trees over 10 years. In India, we have installed solar plants across our facilities in Nhava Sheva, Chennai, Kochi, Hyderabad and others.

Onward to renewable energy

We aim to use greener energy, procuring electricity from renewable energy or carbon-neutral sources, pursuing self-generation of renewable energy, Power Purchase Agreements (PPA) and green energy tari¬ffs. We use biodiesel in our operations in India and a substantial portion of our electricity is sourced from solar energy.

> “Revolutionary new automated transport systems like Virgin’s Hyperloop technology will deploy magnetically propelled high-speed cargo pods powered by renewable energy”

Not just shipping but landside operators play an important role too once the containers reach for onward distribution of cargo. Rail services connecting ports with inland terminals can substitute road transportation and further reduce emissions. Where road movement cannot be avoided, choosing trucks that use cleaner fuels like hydrogen or are powered by electricity can help reduce emissions.

Revolutionary new automated transport systems like Virgin’s Hyperloop technology will deploy magnetically propelled high-speed cargo pods powered by renewable energy.

Invest in Equipment Efficiency

One important way to reduce diesel and marine fuel consumption is applying measures to increase efficiency of equipment at terminals and of fleets by evaluating upgrades, retrofitting and replacement. Some emerging technology aims to capture CO_2 from exhaust of marine equipment and ships. Technological advances like AI-enabled, automated systems for maintenance and operation continue to streamline the way ports, shipping and logistics function.

Enable Digitisation

Digitisation of systems and processes like creating online platforms to provide end-to-end solution simplifies the cargo booking process, cargo tracking and optimises resources while enabling seamless, safe and secure movement of ocean freights. These platforms reduce inefficiencies, drive faster trade minimising unnecessary movements thereby reducing carbon footprint.

Algorithms, such as guiding intelligent container stacking systems, demand forecasting to avoid overproduction, and optimising vehicle routing systems can also help reduce emissions. Achieving Net Zero in a globalised environment of international trade is a formidable challenge but one that is possible by working together with every member of the supply chain - freight owners, logistics partners, freight forwarders and transporters. Active partnerships in creating new approaches to decarbonise will help build a more sustainable world.

> “Digitisation of systems and processes like creating online platforms to provide end-to-end solution simplifies the cargo booking process, cargo tracking and optimises resources”

At DP World, we continue to collaborate with partners in research and development (R&D), and technology. For perspective, DP World has entered into a strategic partnership with Maersk McKinney Moller Center for Zero Carbon Shipping to facilitate development and implementation of new technologies, build confidence in new concepts and mature viable strategic ways to drive the required systemic and regulatory change. ■

CLIMATE FINANCE AND THE TRANSITION TO NET ZERO

The Glasgow Climate Pact, made at the United Nations COP26 summit last year, marked the start of a two year process. The aim is to agree a post 2025 goal to replace the existing target to mobilise at least US$ 100 billion of climate finance a year to developing countries

DR. AMAL-LEE AMIN
Managing Director and Head of Climate Change, CDC Group

As the global community agrees this new target, it's worth bearing in mind the current state of play in the private sector. The Glasgow Financial Alliance for Net Zero saw over 450 firms across 45 countries, representing US$ 130 trillion of private capital, committing to Net Zero portfolios by 2050.

While the commitments of individual asset managers towards this shift across their portfolios is important, an estimated US$ 100 trillion is needed for a global transition to Net Zero over the next three decades. The bulk of this is needed for sustainable infrastructure in emerging and developing economies – where significant capital expenditure is needed over the coming decade to get the assets in place.

The climate crisis

The climate crisis is one of the greatest threats we face and time is running out. The Intergovernmental Panel on Climate Change's latest report, released in February, warns that the world has a "brief and rapidly closing" window to address and adapt to climate change. What's more, it says the risks if we fail to address the crisis are greater than originally thought.

We know that businesses in the markets where we invest are already impacted by the climate crisis. Nearly half of respondents to our Emerging Economies Climate Report 2021 said they have experienced an extreme weather event that has affected their businesses and, I think pointedly, 94 per cent of respondents said that the international community has a duty to support emerging economies respond to climate change.

> An estimated US$ 100 trillion is needed for a global transition to Net Zero over the next three decades. The bulk of this is needed for sustainable infrastructure in emerging and developing economies

Yet according to the Climate Policy Initiative, only a fraction of the capital needed to meet the challenge has been committed. And while total climate finance has steadily increased over the past ten years, capital commitments have now stalled. The increase in annual climate finance flows between 2017/2018 and 2019/2020 was only 10 per cent compared to previous periods, when it grew more than 24 per cent.

The scale of the necessary investment is undoubtedly daunting and emerging market investment often falls outside of investor strategies. However,

most projects required for Net Zero have a positive risk-return profile. This means that for investors with a low risk appetite and those who are new to climate finance there are attractive routes for investment. The overall picture is one of huge opportunity for private investors. At the same time, there is increasing recognition of the impact potential when private and public finance is brought together to tackle the climate crisis.

The role of DFIs

COP26 was the first time we have seen a focus on the role of development finance institutions (DFIs) as partners for mobilising this scale of investment. Likewise, Glasgow Pact recognises the importance for increasing private finance for adaptation.

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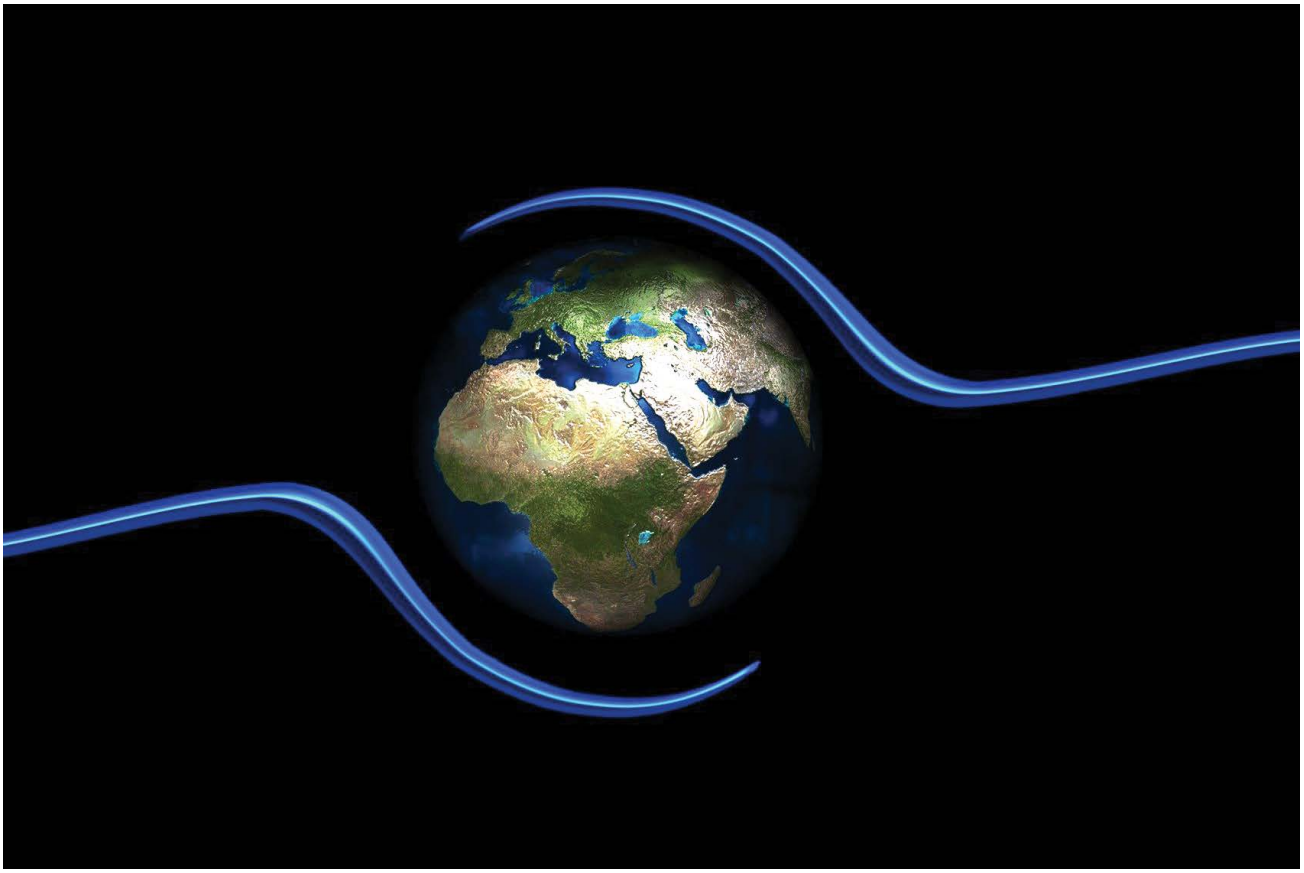
As the UK Government's DFI and impact investor, CDC (soon to be British International Investment) is a long-term investor in climate finance. Tackling the climate crisis is at the heart of our new five-year strategy, with a commitment that 30 per cent of our annual investments will be into climate finance.

And at COP26 we announced our plan to invest over £3 billion to support emerging economies in Africa and Asia to tackle the climate crisis. This includes our ambition to invest £1 billion in climate finance in India. These commitments make us one of the largest climate finance investors in Africa and the countries where we invest in Asia, representing an important part of the UK's climate finance contribution.



But we know that DFIs alone cannot meet the scale of the crisis. It is urgent to ensure a significant portion of the US$ 130 trillion committed to Net Zero, is directed into the assets that will decarbonise key sectors. So we are joining partnerships such as the flagship South Africa Just Energy Transition Partnership that was launched in Glasgow, committing US$ 8.5 billion to support South Africa's transition away from coal over the next 20 years. It will see development and private finance actors bring together complementary financing resources to accelerate the phasing out of coal phase out and a just transition to cleaner energy.

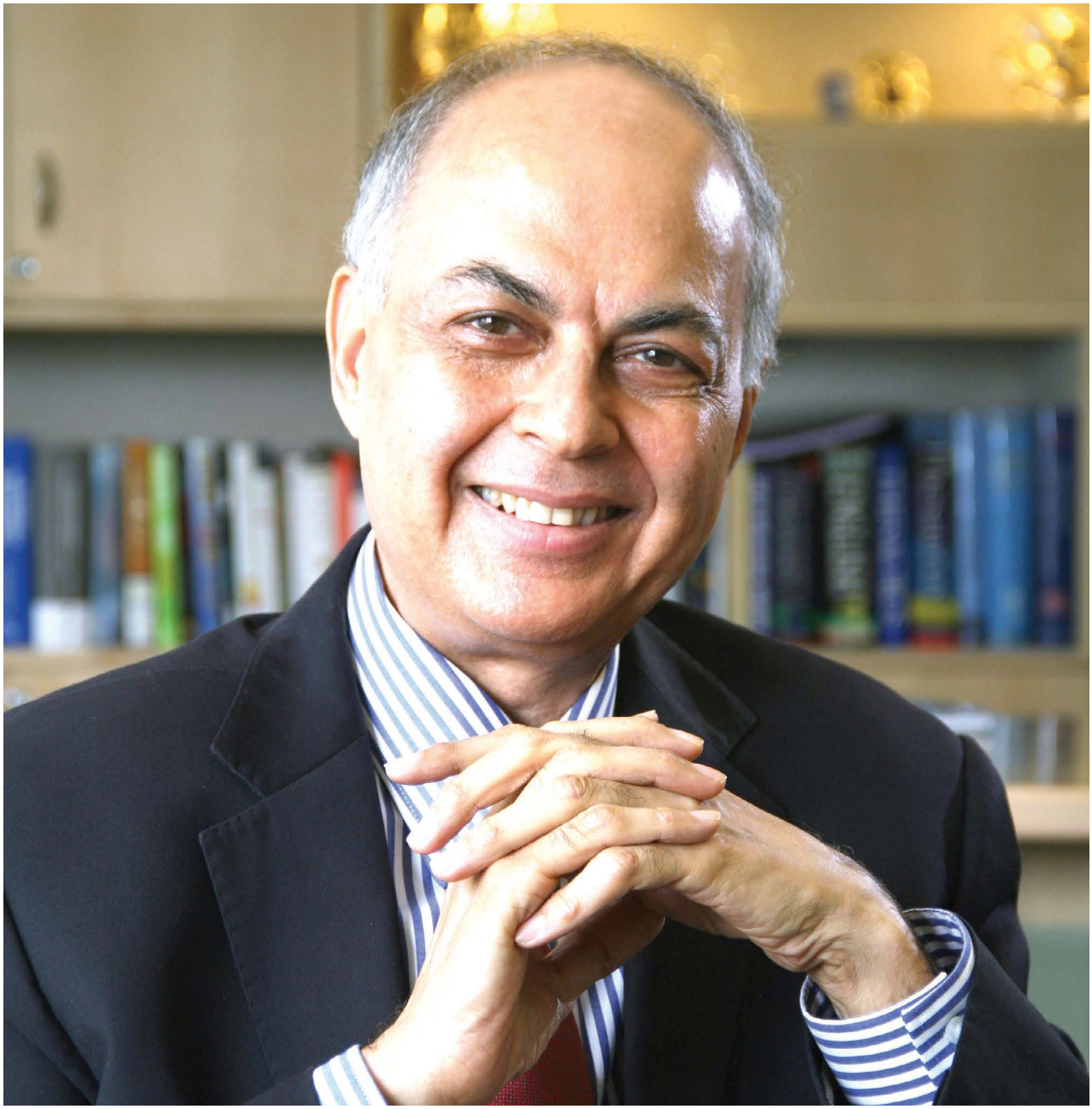
Partnerships can also propel innovative thinking, such as accessing new sources of concessional resource for blended finance solutions, tapping into the carbon market and bringing much needed technical assistance. All this will help bridge the financing gap to accelerate the transition out of fossil fuels and carbon intensive sectors, into utility and distributed renewable energy, battery storage, green hydrogen and electromobility solutions. This is why we partnered with the Global Energy Alliance for People and Planet, which aims to mobilise US$ 100 billion of climate finance over the next 10 years.

“Partnerships can also propel innovative thinking, such as accessing new sources of concessional resource for blended finance solutions, tapping into the carbon market and bringing much needed technical assistance”

I am proud of the work we have done to date to build partnerships and commit substantial capital to meeting the climate crisis, but there is much more to do. The next few months and years are critical if we are to address the causes and mitigate or adapt to the impacts of climate change. ■

SUSTAINABILITY IN HEALTH CARE

The world's health care systems account for 4% of global carbon dioxide emissions, more than aviation or shipping. If the health sector was a country, it would be the fifth-largest emitter of greenhouse gas (GHG) emissions on the Planet



RANJIT SHAHANI
Chairman, JB Chemicals and Pharmaceuticals; President Emeritus, OPPI and Former Vice Chairman & Managing Director, Novartis India

"Responsible investment is an approach to investing that aims to incorporate Environmental, Social and Governance (ESG) factors into investment decisions, to better manage risk and generate sustainable, long-term returns."

Environment: Relates to a company's interaction with the physical environment (e.g. climate change, gas emissions, air and water pollution, water scarcity, deforestation)

Social: Focuses on company's practices that have a social impact on a community or society (e.g. working conditions including slavery and child labour, health and safety, human rights, impact on indigenous communities)

Governance: Factors that relate to how a company is governed (e.g. executive compensation, Board independence and composition, shareholder rights, transparency)

ESG is the next digital - it has already changed the rules of business; yet more disruption is coming, bringing new upsides and equal downsides.
The value of a corporation is driven only by a progressive and resilient ESG transformation path:
1. ESG must be embedded in the mission: Business cannot be done without ESG
2. Performance, not compliance: Need to show clear track record on high-materiality issues vs. credible targets (rating is not the objective)
3. No-green washing or tactical actions
4. ESG drives value in the middle-term: Avoids risks and creates platform for both market development and operational efficiency.

> "Mitigating and adapting to climate change presents a global opportunity to remake the foundations of health care and introduce new operational models for resilience and sustainability"

Health care and the climate crisis

It's ironic that the health care sector, which guides medical practitioners' actions with the ethic "first, do no harm" ("primum non nocere"), is not leaving this world unharmed. Due to health systems' round-the-clock operations, extensive use of air conditioning and refrigerated storage, and specialist medical equipment - and because many hospitals and care facilities are aging and poorly designed for energy efficiency - health care can be seen as a major contributor to the climate crisis.

The world's health care systems account for 4% of global carbon dioxide emissions, more than aviation or shipping. If the health sector was a country, it would be the fifth-largest emitter of greenhouse gas (GHG) emissions on the planet. According to conclusions from the study Health Care's Global Climate Footprint:

• Health care emissions make up a varying percentage of each country's climate footprint. They range from highs in the

United States (7.6%), Switzerland (6.7%) and Japan (6.4%), to lows in India (1.5%) and Indonesia (1.9%). While China is the number one absolute greenhouse gas emitter in the world today, this study finds that the United States far surpasses it in terms of absolute health care emissions.

• Emissions emanating directly from health care facilities make up 17% of the sector's worldwide footprint. Indirect emissions from purchased electricity, steam, cooling, and heating comprise another 12%. And the greatest share of emissions - 71% - are primarily derived from the health care supply chain; the production, transport, use, and disposal of goods and services that the sector consumes.

> Health care leaders typically focus on access, quality, and cost when identifying and assessing enterprise-level improvement opportunities. It's time to add a fourth dimension to deliberations: environmental sustainability

A recent study determined that the US health care industry is responsible for roughly 10 per cent of the country's greenhouse gas emissions.

It is time for health care leaders and their organisations to extend the "do no harm" ethic to the environment - to measure, manage, and set targets to reduce the sector's carbon footprint to fight climate change.
The sheer magnitude and complexity of environmental, social, and governance challenges can be overwhelming. Where should health care organisations start, and what might the journey look like?

Mitigating and adapting to climate change presents a global opportunity to remake the foundations of health care

and introduce new operational models for resilience and sustainability. An organisation's response to climate change should not be an "add-on" initiative; it should be integrated into a transparent, comprehensive planning and decision-making process.

To begin the journey, sector leaders should set aside existing frameworks and preconceptions about what the health care sector - and their organisation's place in it - should look like and assess, instead, their role in a sector that is likely to be reconfigured as it moves toward a low-carbon footing.

Actions to consider

Develop a business case to show the economic benefits of reducing health care's waste and carbon footprint.

Health care leaders typically focus on access, quality, and cost when identifying and assessing enterprise-level improvement opportunities. It's time to add a fourth dimension to deliberations: environmental sustainability. While this doesn't mean an organisation will always choose the (sometimes pricier) sustainable option, there are ways to address the needs of multiple priority areas to achieve clinical, financial, and environmental objectives. For example:

- The health care ecosystem encourages healthy behaviours, such as reducing meat consumption and biking over driving, which have a positive downstream climate impact.

> Every public and commercial health care entity has both an individual and a collective role to play in accelerating the transition to a low-carbon economy

- Micro-interventions build over time to prevent disease from developing in the first place, which reduces demand for carbon-intensive health care infrastructure.
- Health recommendations that are personalised and extend beyond traditional care delivery improve health systems' ability to target "hot spots" and effect greater change.
- Right-sized care is less service- and carbon-intense due to improved baseline health across a population.

Understand where value is likely to be created in a low-carbon future. Value drivers in a low-carbon health care economy include using less; emitting less; regenerating, restoring, and repairing; and measuring, verifying, disclosing, valuing, and tracking. Specific action items could include implementing energy efficiency and renewable energy to get to net-zero energy usage; reducing water consumption and reuse; investigating sustainability ratings for hospitals and other facilities; designing energy efficiency into new buildings; procuring sustainable and ethical materials and equipment; and employing models of care delivery that avoid unnecessary or duplicative testing and treatment. Creative thinking can uncover virtually limitless opportunities for value-creation in a low-carbon future.

Adopt systems thinking to address climate change. Every public and commercial health care entity has both an individual and a collective role to play in accelerating the transition to a low-carbon economy. Start with the basics of understanding your carbon footprint and identifying the major levers you can pull to introduce change.

Adopting a systems-thinking approach can help leaders look beyond their organisation's carbon-reducing initiatives and answer questions that can unlock critical, interconnected opportunities. How might emerging technologies such as virtual health and increased computing power from cloud, artificial intelligence and machine learning be combined with new business models to create more resilience in health care systems? Organisations that put sustainability at the heart of their business strategy will be better prepared to respond to the volatility triggered by unpredictable future challenges. That's because they will be best positioned to demonstrate and measure value in ways that matter not just to shareholders but to ALL stakeholders. ■

INDIA AND THE ESG CHALLENGE

ESG reporting has been derived by the compulsions of Climate Change diktats and mandates of the 17 Sustainable Development Goals (SDG) of the United Nations, ratified by all countries including India. It is important to note that proper implementation and success of ESG, can only be achieved if SDG 16 and 16.5 are also implemented both in letter and spirit

PRASAD CHANDRAN
Chairman SEEGOS
and Former Chairman & Managing Director BASF India Limited

Corporate India's goal should be to help the nation achieve the target of a US$ 5 trillion economy in the next four years. The goal is eminently plausible in the wake of the world economic order being completely overhauled post the Covid-19 pandemic.

The most enabling factors for India are : (i) US-China Trade stand-off; (ii) The realignment of the Global Supply Chain; (iii) Challenge to the Chinese "stranglehold" as the manufacturing headquarters of the developed world; (iv) UK exiting the EU; and (v) India's preeminent position as the global leader in digitisation and software development. Added to this, the availability of trained IT personnel, as well as qualified professionals at every skill and price points, both in manufacturing and service sectors.

> The Securities and Exchange Board of India (SEBI) has directed the top 500 listed companies to publish an annual Business Responsibility Report (BRR) which follows the broad guidelines and framework as developed by the International Integrated Reporting Council (IIRC)

India is the only country in the world that produces over 1 million engineers, 2 million post-graduates and over 7 million graduates every year.

Climate change and the India commitment

At the COP26, India has committed to almost impossible targets of Net Zero carbon emissions by 2070. This goal imposes on the corporate and business sectors in India some very stiff environmental targets by 2030 :

- Non fossil fuel energy capacity of 500 GW;
- 50% of energy required only by renewable energy;
- CO2 emissions to be restricted to 1 million tonnes;
- Carbon intensity below 45%.

The SEBI mandate

In the wake of climate change challenges and the United Nations mandated Sustainable Development Goals, the Securities and Exchange Board of India (SEBI) has now directed the top 500 listed companies to publish an annual Business Responsibility Report (BRR) which follows the broad guidelines and framework as developed by the International Integrated Reporting Council (IIRC), covering the areas of Environment, Governance and Stakeholder Relationships. The noble and unquestionably acceptable objective of ESG reporting is to monitor an organisation's commitment to maximise shareholder value and is concurrent with ensuring fairness to all stakeholders, customers, vendors, investors, employees, government and society at large.

> Of the total 5,000 listed companies in India, the top 100 companies account for more than 90% of the market capitalisation. This clearly means that the 400 companies from rank 101 to 500 account for only 10% of the market capitalisation

India corporate challenge

Of the total 5,000 listed companies in India, the top 100 companies account for more than 90% of the market capitalisation. This clearly means that the 400 companies from rank 101 to 500 account for only 10% of the market capitalisation. One can safely assume that investors have virtually no value for the last 200 of the SEBI mandated 500 listed companies.

This is the challenge to be tackled. If India must become a US$ 5 Trillion economy, the major problems faced by the smaller listed companies are the uncertainties in doing business in India, largely due to corruption,

nepotism and the scare of more than 26,134 imprisonment clauses of various laws in India. Some for even minor offences like forms not being submitted on time.

Challenges for companies: Impact of corruption on ESG reporting

ESG reporting has been derived by the compulsions of Climate Change diktats and mandates of the 17 Sustainable Development Goals (SDG) of the United Nations, ratified by all countries including India. Hence it is important to note that proper implementation and success of ESG, can only be achieved if SDG 16 and 16.5 are also implemented both in letter and spirit.

SDG 16 & 16.5

These goals pertain to provisions of justice for all by building effective, accountable institutions at all levels. It aims at substantially reducing corruption and bribery in all its forms across all countries by 2030. Government of India ratified the UNCAC (United Nations Coalition against Corruption) and was compelled to amend the primitive Prevention of Corruption Act 1968 by the newer legislations "Prevention of Corruption (Amendment) Act 2018".

One of the major rationales propounded during the passing of the new Anti-corruption Act was that it was designed for business and economy to flourish and grow at a rapid pace and substantially reduce corruption. Born of the treaty obligations, the new Act also conforms to some of the international benchmarks laid down in the United Nations Convention against Bribery (UNCA), including "Bribery of National Public Officials", "Trading in Influence" and "Asset Recovery". However, the introduction of the two new sections 8 & 9(i), wherein criminalisation of bribery and corruption by the private sector, as laid down by the new Act has resulted in serious apprehensions, fear of extortion and malicious prosecutions in the minds of genuine and honest businesses.

> The noble and unquestionably acceptable objective of ESG reporting is to monitor an organisation's commitment to maximise shareholder value and is concurrent with ensuring fairness to all stakeholders

Conclusion

The top 100 listed companies in India have the resources, organisation, and bandwidth to fully comply with ESG reporting. For India to truly prosper and reach the target of US$ 5 trillion economy, we need the smaller and less resourceful listed companies and the MSMEs to be supported, nurtured and enabled. They must be protected from harassment by multifarious agencies who are out to control and enforce compliance. They need "Ease of Doing Business" and "less of Government and more of Governance" to be truly "Aatmanirbhar" and "successful." ■

TECHNOLOGY AS AN ENABLER

For companies and cities willing to invest in advancing their sustainability initiatives, technology will act as a major accelerant. The importance would be on how it is used as experience has taught us that the interplay of new technology and its environmental effects has indeed been complex

ASHOK AGARWAL
MD & CEO, GreenCell Mobility

Companies and city administrators today understand that achieving ambitious sustainability goals, which have become core to the business as well as city development, requires a systemic approach to transformation. And in this process, technology will have a huge role to play. As more sectors across industries think about their technology and sustainability agendas, the important question to ask is whether we are bringing game-changing technology and digital thinking to the task of meeting our sustainability goals. To build sustainability as a competitive advantage the need is to integrate technology and data into their products and processes. Thus, the role of tech has gone well beyond just greening IT.

One of the sectors in which this will be crucial is the mobility sector. Since its inception, mobility has been a flashpoint for progress on the technological, economic, and social fronts, changing the very way we live. Now, we are amid another disruption in this sector. While much uncertainty remains on how this inflection point of mobility sector will unfold, many of the critical building blocks, and their potential, are becoming clear.

The transport sector is the fastest-growing greenhouse gas (GHG) emitting sector, with its share in India being about 10 per cent of total national GHG emissions and road transportation contributing about 87 per cent of the total emissions in the sector according to a CEEW report. It is also a leading emitter of short-lived climate pollutants which have a high global warming potential and contribute greatly to air pollution.

EVs, the future of mobility

The global vehicle fleet is set to double by 2050 (ITF Transport Outlook), with more than 90 per cent of future vehicle growth projected to take place in low and middle-income countries. To achieve a cleaner transport sector, a combination of measures will need to be implemented world-wide; with the future of mobility being autonomous, connected, shared and electric.

> “In the last 20 years, electric vehicles (EVs) have experienced significant technological developments that have not only lowered their costs but also reduced their environmental footprint and increased their utility”

In the last 20 years, electric vehicles (EVs) have experienced significant technological developments that have not only lowered their costs but also reduced their environmental footprint and increased their utility. At the same time, public transport and shared mobility are key ingredients for efficient transportation within and between cities. A handful of trends led by Technology will determine the benefits - and costs - for business and society. Electric vehicles across categories have already hit the Indian roads, and in April 2019, NITI Aayog, the federal think tank, published a report titled “India’s Electric Mobility Transformation”, which pegs EV sales penetration in India at 70 per cent for commercial cars, 30 per cent for private cars, 40 per cent for buses, and 80 per

cent for two- and three- wheelers by 2030.

Although the demand for EVs is expected to grow exponentially during the next two decades, driven by favourable government policies like FAME and increasing environmental awareness amongst users especially the youth, it is the new technological interventions in the form of detachable batteries that are helping EVs achieve optimum growth and a massive uptake in the country.

Traditionally, EVs were powered with lead-acid batteries that had bulky exteriors making the movement of vehicles a tedious task. Not only was it an extremely inefficient and time-consuming process to charge these batteries, but their life cycle was also quite low. Detachable Lithium-ion batteries have come as a solution to these problems. The new batteries embrace advanced technology, which is more progressive than the traditional charging infrastructure available for EVs. As a result, they are being touted as the next big thing in the industry.

Very soon though solutions like micro-capacitors, miniaturised solid oxide fuel cells, graphene polymer, aluminum-graphite, and gold nanowire technology and even sodium-based alternatives could very well replace Lithium Sulphur, Aluminium–air and Zinc-air batteries.

> “Detachable lithium-ion batteries have come as a solution to these problems. The new batteries embrace advanced technology, which is more progressive than the traditional charging infrastructure available for EVs”

The charge factor

Another interesting trend to watch in the EV market are the improvements in charging technology. This is an important aspect to be addressed in the industry especially for EVs to receive widescale approval by most consumers. It simply is not convenient to have to recharge the battery every 2-3 hours and wait around 30 minutes to get back on the road for most people. To overcome this persistent issue, EV manufacturers will need to step up the availability of fast-charging stations around the world.

Estimates by Grant Thornton Bharat and the Federation of Indian Chambers of Commerce & Industry say that India will need more than 400,000 charging stations, as of Dec 2021 there were only 1,028 public electric vehicle (EV) chargers installed throughout the country (energy minister RK Singh wrote in response to a Lok Sabha question).

The government is making space to scale up and technolo-

gy will play a role in this. Also of interest are the developments in the space of high-powered wireless EV charging system. Wherein, vehicles can automatically charge while parked in selected pick-up/drop-off locations – an ideal solution to keep vehicles perpetually charged while delivering more convenience and less clutter in the public space.

New-age EVs are also incorporating several passenger safety-oriented features to augment overall security for both drivers and the vehicle. Specifically, in a country like India where the safety of women is an issue of grave concern, EVs in the shared mobility space are looking at introducing host of smart features like geo-fencing and GPS technologies to locate vehicles quickly and immaculately. This will make the ride convenient, environment-friendly, cost-effective, and highly secure.

Technology will also have to provide a solution for the end-of-life batteries. The proliferation of EVs will result in the availability of 100–200 gigawatt-hours of batteries that will soon need to be retired. Batteries are commonly labeled as hazardous waste because of their toxic contents or reactive and flammable properties. Hence concerns are growing about the significant environmental liability brought by such a large quantity of retired batteries. The key lies in establishing a technological and economic chain for refurbishing, reusing, and recycling these batteries.

Game changers

Imp rovement and innovation in software will be another trend to watch. Just like the ICE industry, things like connectivity, safety, information, and in-car entertainment should see some interesting developments in near future. These new technologies will be game changers from the EV industry generating new business opportunities

“In a country like India where the safety of women is an issue of grave concern, EVs in the shared mobility space are looking at introducing host of smart features like geo-fencing and GPS technologies to locate vehicles quickly and immaculately”

for e-Mobility industry players while promoting a sustainable transport option for our cities.

Post pandemic across industries without any doubt technology will continue to play a fundamental role in helping individuals, businesses and cities adapt, survive, and thrive. The importance would be on how it is used as experience has taught us that the interplay of new technology and its environmental effects has indeed been complex. As with plastic, hailed as a wonder material that revolutionised modern life to now being recognised as a polluter. Technology will always be a double-edged sword, but new approaches to environmental factors should help blunt its destructive edge if any and hone its capacity for greater good. ■

POWERING SUSTAINABLE INVESTMENTS

The path for mobilising trillions in green finance will require the State and the Market to align priorities through a public, private, philanthropy, policy, and partnership (PPPPP) framework. Together they would become "factors of the green transition"

SUJOY BOSE
MD & CEO, NIIF

The historic Paris Agreement has been adopted by 196 countries to reduce global warming and limit the effects of climate change, and more than 130 countries have set or are considering a target of reducing emissions to Net Zero sometime in this century.

According to a 2018 estimate by the Intergovernmental Panel on Climate Change (IPCC), the world will require US$ 3.5 trillion annually in investment to limit temperature rise to 1.5 degrees Celsius relative to pre-industrial levels by 2050. This requires massive global facilitation and transfer of technical and financial know-how between countries. The path for mobilising trillions in green finance will require the State and the Market to align priorities through a public, private, philanthropy, policy, and partnership (PPPPP) framework.

Public

Public capital, both domestic and international, will play a vital role in offering confidence to the private market on where to 'crowd-in'. As part of the Cancun pledge in 2009, developed countries promised to provide US$ 100 billion a year of climate finance to the developing world.

According to the Organisation for Economic Cooperation and Development (OECD), climate finance provided and mobilised by developed countries for developing countries totalled US$ 79.6 billion in 2019, up by 2 per cent from US$ 78.3 billion in 2018. More directed support will be required in technology transfer and direct economic transfer of value to the developing world.

> A transition to green requires investors, banks, insurers, and companies to adjust their business models and create sustainable transition plans in managing their portfolio

The Global Climate Fund and Global Environment Facility, two of the largest sources of international public finance, deploy relatively small amounts of capital – these pools of capital need to vastly increase. India's Union Budget 2022 underscores the intent of the Indian government to mobilise resources for financing India's green infrastructure by leveraging tools such as sovereign green bonds, production-linked incentive schemes for solar PV, battery swapping policies, etc. Public investments will be required in transitioning and reskilling towards green jobs.

Private

In the race to Net Zero, private enterprises are expected to take the lead in experimenting with new technologies, with the expectation of a much larger prize if the technology achieves commercial validation. Climate Policy Initiative, a global climate-focused think-tank, estimates that private climate investments increased by 13% in 2019/2020 to US$ 310 billion from 2017/2018 with corporations accounting for the largest share (40%).

A transition to green requires investors, banks, insurers, and companies to adjust their business models and create sustain-

able transition plans in managing their portfolio. Green finance from private sources can leverage multi-fold commitments from public sources. In 2020 alone, investors poured nearly US$ 500 billion into climate transition. Renewable energy and electrified transport dominated these investments.

Philanthropy

Philanthropic capital, with their long-term nature and an ability to accept lower returns or higher risks, can support the investment needs for early-stage technologies in climate related sectors. Given that the current investments in 'green' are essentially around renewable energy and electric transport, there may be lesser commercial capital availability for new technology deployment, especially in hard-to-abate sectors. Philanthropic pools of capital can be tapped to fund important next generation technologies which can deliver the green transition. These technologies are at various stages of development and end-user acceptance, including offshore wind, green hydrogen and battery storage, and need nurturing to prove their commercial viability. Impact capital from philanthropic sources could absorb initial investment risk for new climate technologies.

> "Philanthropic pools of capital can be tapped to fund important next generation technologies which can deliver the green transition"

Policy

Government policies play an important role in setting national targets and priorities for the economy. The government's National Solar Mission launched in 2010 has played an important role in reducing solar energy costs leading to large-scale deployment and making India a market leader in solar energy.

The success of India's solar sector can be replicated across a range of new green technologies to support commercial viability. Governments have a wide range of policy levers to jumpstart new green industries ranging from carbon taxes, regulatory standards, tax rebates, research subsidies, offtake arrangements etc.

Spurring policy and business changes to drastically cut carbon emissions can pose significant costs across different segments of the society. To ensure an equitable transition to a sustainable future, policymakers are confronted with the challenge of addressing climate change aggressively enough to meet climate goals without harming communities historically reliant on or employed in fossil fuel value chains.

Fair and smart policy-making, clear communication, along with open-minded and solution-oriented consultation will be critical to deliver the promise of a just, green transition and achieve economic objectives of job creation and income generation for vulnerable parts of the populations. Even with the technology and private sector commitment, policy is instrumental in incentivising behaviour and factoring in social costs for the economy. Policymakers will be required to make informed decisions on the implications of each climate policy with respect to distributional impacts across income and geography.

> "Policymakers will be required to make informed decisions on the implications of each climate policy with respect to distributional impacts across income and geography"

Partnership

Countries and corporates have come together at an unprecedented scale during COP26 in November 2021. One Planet Sovereign Wealth Funds (OPSWF), a coalition of leading sovereign wealth funds, asset managers, and private equity investors, has been actively committed to growing a body of investment practice that accelerates the integration of climate change issues into management of large, long-term asset pools. Many other private sector coalitions are leading change in their sectors or countries. Indeed, regulators across the world are also coming together to help harmonise standards and taxonomies. The role played by global partnerships and pledges today is more crucial than ever.

To create a global sustainable investment boom, we need all these five aspects of public, private, philanthropy, policy, and partnership (PPPPP) to converge. Together they would become "factors of the green transition" and deep convergence among stakeholders along these five factors will be crucial to address this global challenge of unprecedented magnitude. ■

CREATING SUSTAINABLE CHEMISTRY

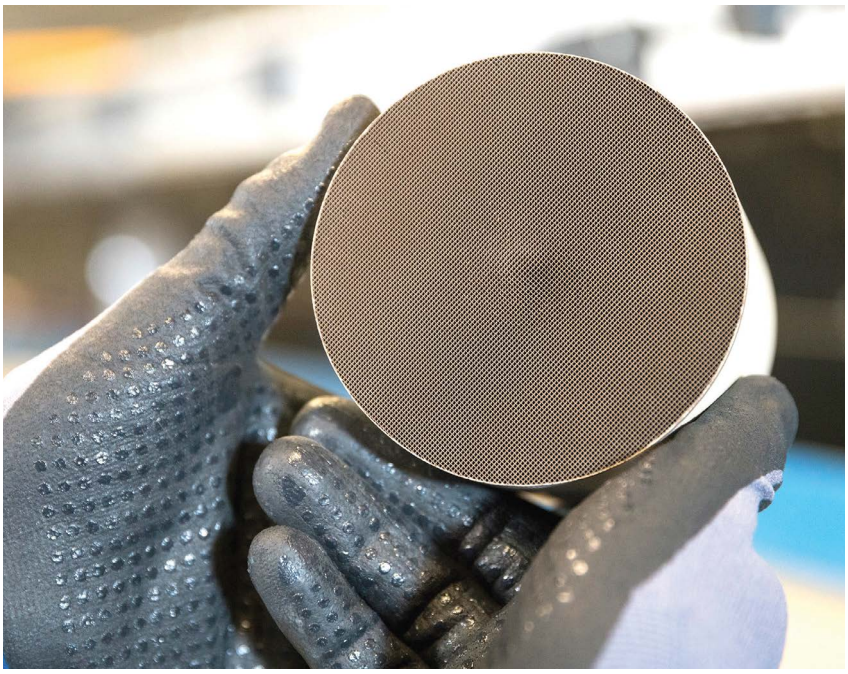
Climate change is real and is the biggest challenge of our time. Addressing it calls for fast, decisive and impactful action. Collaboration as well as dialogues with customers, society, policy makers is imperative to build solid partnerships for climate protection

NARAYAN KRISHNAMOHAN
Managing Director, BASF India Limited
& Head, BASF Group Companies in India

The 2021 United Nations Climate Change Conference, COP26, is a significant milestone as the Glasgow Climate Pact aims to turn the 2020s into a decade of climate action and support. The package of actions strengthened efforts to build resilience to climate change, curb greenhouse gas emissions and to provide necessary finance for both. A welcome change to the past was the unanimous acceptance of the fact that climate change is real and the biggest challenge of our time. COP26 is the first climate deal to explicitly commit to reducing the usage of coal. Nations collectively agreed to work to reduce the gap between existing emission reduction plans and what is required to reduce emissions so that the rise in global average temperature can be limited to 1.5 degrees.

Climate protection is a key task

BASF's vision statement of creating chemistry for a sustainable future aligns actively supporting the Paris Agreement. On one hand, chemical products are essential to many low-carbon technologies – including renewable energy, housing and mobility. Moreover, chemistry is critical to develop resistant materials adapted to more severe weather conditions. On the other hand, chemical production is energy and CO2-intensive and thus the sector is classified as "hard to abate." That is why, we set ourselves even more ambitious climate protection targets in 2021 while combating/ addressing climate change through our skills of applying innovative chemistry and solutions. To achieve them, we have set up a comprehensive carbon management program and created effective structures for its implementation.



With ambitious sustainability goals, the company is accelerating and innovating the development of CO2-free processes and a model based on circular economy with the expansion of digitalisation and innovative solutions. In total, BASF globally invested around €2 billion in research and development in 2020. We are committed to reduce our absolute CO2 emissions by 25 per cent by 2030 compared with the baseline 2018. Accordingly, in 2021, our global CO2 emissions amounted to 20.2 million metric tons - a decrease from the 20.8 million metric tons emitted in 2020, despite a strong growth in volumes.

> "Chemical products are essential to many low-carbon technologies - including renewable energy, housing and mobility"

Moreover, BASF supports its customers in the transformation toward greater sustainability with Accelerator products that make a substantial sustainability contribution in the value chain. We thus, had set a global target of 22 billion euros in sales with Accelerator products by 2025. These are products that make a substantial sustainability contribution in the value chain. In 2021, BASF SE generated sales of 24.1 billion euros with Accelerator products that contribute significantly to sustainability, compared with

16.7 billion euros in 2020.

The transformation towards Sustainability starts with Research

Our goal is to ensure stronger integration of sustainability in our R&D pipeline, business strategies and investment as well as M&A projects. BASF globally invests approximately 50% of its R&D budget on making our product solutions/ portfolio even more sustainable. For BASF, Asia Pacific is not only the fastest growing region but also the most dynamic when it comes to the development of sustainability.

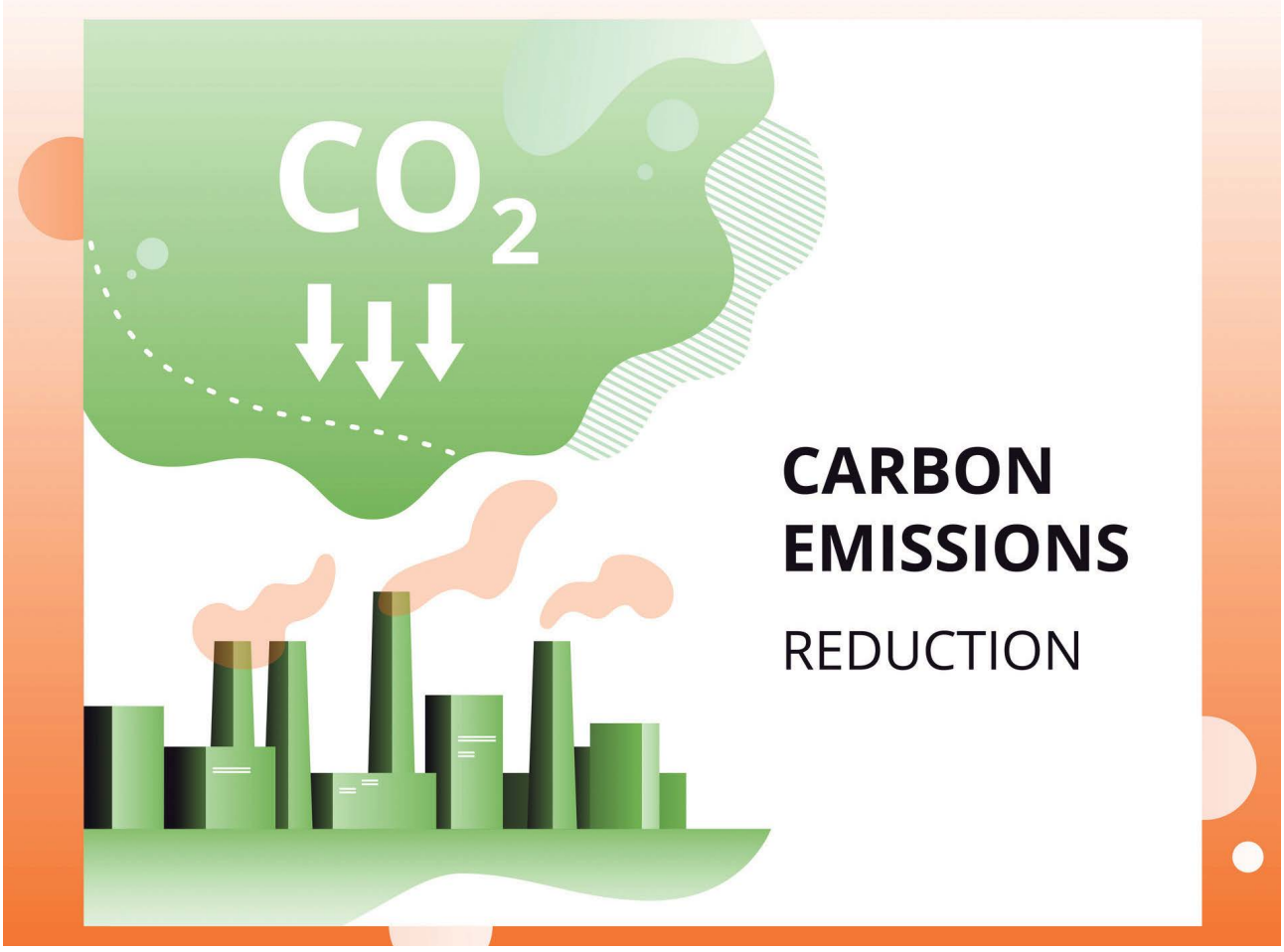
We understood early on that

> For BASF, Asia Pacific is not only the fastest growing region but also the most dynamic when it comes to the development of sustainability

sustainability driven challenges and demands from national stakeholders and customers vary from country to country with specific local needs and regulations driving our local strategies and action plans. Therefore, we have competent and enthusiastic teams in each country contributing to sustainable solutions, working closely with customers and addressing local pain points. Some of the most recent innovation examples from BASF's research pipeline include our innovative coolants for electric cars, insulation foams for buildings, battery materials for electromobility and bio-based products like our certified fully compostable polymer.

Empowering customers

More customers than ever are factoring in the cost to the environment when making purchase decisions. Already today we offer them added value through the use of alterna-



tive raw materials. BASF has also invested in a pioneering digital solution - Product Carbon Footprint (PCF) to obtain full transparency on the carbon footprint at a product level for its 45,000 sales products. We intend to share the cradle-to-gate solution exploring partners in Asia and India with the aim to create a joint understanding and standardisation on PCF calculation in the industry. The solution would empower customers with valuable information on levers for avoiding greenhouse gas emissions, helping them reduce the carbon footprint of their products.

As part of producing responsibly, in India we are moving from conventional energy to renewable, especially by using solar energy at our sites in Mangalore & Dahej. The constant focus on using newer technologies which improve our processes helps us decrease our greenhouse gas emissions by using bio-fuel based boilers. In India, over 40% of all new cars and personal vehicles and 70% of heavy commercial vehicles use BASF Mobile Emission Catalysts enabling the transition from BS IV to BS VI in alignment to the Indian government regulations for automotive OEMs.

> More customers than ever are factoring in the cost to the environment when making purchase decisions

Conclusion

A viable future for the Planet needs a low carbon and circular economy. Climate change is real and is the biggest challenge of our time. Addressing it calls for fast, decisive and impactful action. There is global consensus that no single company or nation can address climate change alone. Collaboration as well as dialogues with customers, society, policy makers is imperative to build solid partnerships for climate protection.

This once in a lifetime opportunity for transformation towards climate change is imperative to leave behind a better future. BASF remains committed to socially responsible, economically efficient and ecologically effective global climate protection, supporting the UN Sustainable Development Goal "Climate Action". ■

SUSTAINABLE BUSINESSES: KEY TO OUR FUTURE

The recent report by the Intergovernmental Panel on Climate Change (IPCC) has laid out alarming consequences if we do not arrest greenhouse gas (GHG) emissions and control global warming. Without suitable countermeasures, global temperatures will rise by well over 2 degrees Celsius. This will threaten our Planet's ecosystems, jeopardise the health of people, animals, and plants, and place the food supply for a growing world population at risk.

D NARAIN
President, South Asia & Global Head of Smallholder Farming, Bayer

At the 26th Conference of Parties (COP26), Prime Minister Shri Narendra Modi committed India to a Net Zero emissions target by the year 2070. This target is achievable but challenging when we factor in India's growing population and the need to grow and sustain the economy over the next several decades. Considering that India currently stands at 120 out of 165 countries on climate change initiatives, we have a collective task as corporate India to work towards addressing these issues and making India a strong contributor to a zero-carbon emission world.

Few companies are as well placed as Bayer to contribute to both improving human health and feeding the growing global population while respecting the planetary boundaries. The need of the hour is for corporates to integrate sustainability into their business models for the long-term and innovate in the areas of products, services, and processes for greater sustainability.

Bayer's climate and sustainability commitments

Sustainability is at the core of Bayer's business strategy, and we are taking broad climate action to reduce greenhouse gas emissions within our company and along our entire value chain. The global population is expected to touch 10 billion people by 2050 and the arable landmass is going to shrink significantly. This situation will be further compounded due to the impact of climate change on

> "We aim to enable 100 million smallholder farmers in low to middle-income countries (LMICs) to produce enough quality food for themselves and others by 2030"

agriculture and livelihoods. In such a scenario, we at Bayer are guided by our vision, 'Health for all, Hunger for none'. This underlies all our efforts, intending to promote inclusive growth and responsible resource usage.

We have set ourselves a science-based target to decarbonise and a Net Zero target, including our supply chain, for 2050. We are looking to achieve this with an absolute reduction of 42 per cent in our emissions by 2030. This will begin with making our sites climate-neutral as per our Group targets to be met by 2030. To achieve this, we are in the process of implementing several measures focusing on energy efficiency, using alternate energy sources, offsetting, and the carbon reduction in the value chain. Between 2020 and 2030, we will be investing EUR 500 million to improve energy efficiency in our plants.

At the same time, we are working on drastically reducing the environmental impact of agriculture. Currently, the ecological footprint of agriculture accounts for about 25 per cent of greenhouse gas emissions worldwide. We want to help reduce greenhouse gas emissions in major agricultural markets - per kilogram of crop

yield - by 30 per cent by the year 2030. We aim to enable 100 million smallholder farmers in low to middle-income countries (LMICs) to produce enough quality food for themselves and others by 2030, provide access to healthcare products to 100 million people in underserved communities by 2030 and also provide 100 million women in LMICs with access to family planning by funding multi-stakeholder aid programs and by ensuring the supply of affordable modern contraceptives, within the same time frame.

Key initiatives in India

Rice is an important crop for smallholders in India with around 44 million hectares under rice cultivation. The crop is not only one of the biggest emitters of carbon but also one of the highest resource consumers; the water consumption is one of the highest - to produce 1 kg of rice, around 3 to 4,000 liters of water is consumed. Bayer not only continues to embed sustainability into its operations, but it also underpins our approach to strengthening the resilience of farmers and the food value chain at a systems level. To this end, under the Sustainable Rice Project, last year we established a pilot project to help rice farmers in India across 10 states adopt sustainable practices and get paid for the greenhouse gas emissions they avoided through carbon credits. It is early days, but we are seeing encouraging signs that farmers were able to reduce water usage, lower methane emissions, protect their

> “Under the Sustainable Rice Project, last year we established a pilot project to help rice farmers in India across 10 states adopt sustainable practices and get paid for the greenhouse gas emissions they avoided through carbon credits”

yields and soils, and improve their margins.

Similarly, Bayer's Better Life Farming initiative provides holistic and innovative solutions for smallholder farmers in developing economies. Jointly, with the farming communities in Indonesia, India and Bangladesh and more than 20 local partnerships driven by its global partners - Bayer, Netafim, and the World Bank's International Finance Corporation (IFC) - the BLF model provides entrepreneurial opportunities for men and women alike, to own and operate Better Life Farming Centers. The centers, which currently reach more than 300,000 smallholders in the mentioned countries, allow farmers to purchase seeds, crop protection inputs, irrigation solutions, as well as have improved access to markets and financial solutions.

> Today the number of BLF centres in India stands at 1100 reaching around 3,70,000 smallholder farmers across the country

India has already crossed the milestone of 1000 Better Life farming (BLF) centres in 2021. Today the number of BLF centres in India stands at 1100 reaching around 3,70,000 smallholder farmers across the country. Most of these centres are serving farmers in the underserved areas of central and eastern India. Bangladesh also has 275 BLF centres now, bringing the total number of centres to 1375 in South Asia.

At a time when our Planet faces an existential crisis, there is no doubt that we need innovative, scientific, and immediate steps to secure our future. I am hopeful and confident that we will join hands to find solutions that are equitable and sustainable for the greater good. ■

THANK YOU

The Sustainability Committee of Bombay Chamber of Commerce & Industry successfully organised the Sustainability Conclave: Target Net Zero in December 2021. To take the dialogue further, we decided to publish this coffee table book titled The Road to Net Zero.

We express our gratitude to the members of the Sustainability Committee and all the Speakers at the Sustainability Conclave whose valuable insights at our Panel Discussions are published in this book. We also thank all the industry leaders who gave their valuable time and effort to author articles on various aspects of India's Net Zero transition which are featured in this book.

We appreciate and thank Ambuja Cement Ltd, DBS Bank India Limited, Larsen & Toubro Ltd and DNV Business Assurance India Pvt Ltd for their support in bringing out The Road to Net Zero.

We also thank the Bombay Chamber of Commerce and Industry Trust for Economic and Management Studies for their support.

We look forward to more such projects that will add value to our stewardship role as India's oldest Chamber of Commerce & Industry.

Sandeep Khosla,
Director General,
Bombay Chamber of Commerce & Industry

About Bombay Chamber

The Bombay Chamber of Commerce & Industry is India's premier Chamber of Commerce and Industry situated in Mumbai, the industrial, financial and commercial capital of India. Established in 1836, it is one of the oldest Chambers in the country and has a long and illustrious history of 185 years of continuous service to trade and industry.

The board of the Chamber includes top professionals from most industry sectors. The Chamber is playing a larger role of Corporate as a Citizen while promoting good governance and ethical conduct in business and public life towards the greater good of society encompassing promotion of skill training, arts and culture in addition to ensuring equitable and balanced industrial growth of the country in a sustainable manner.

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