



# WORLD SUSTAINABLE DEVELOPMENT SUMMIT 2022

**TOWARDS A RESILIENT PLANET:**  
ENSURING A SUSTAINABLE AND EQUITABLE FUTURE

February 16-18, 2022 (Virtual)



## Reorienting Market Economies and Accelerating Development of Green Technologies for Sustainable Development Goals

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## Reorienting Market Economies and Accelerating Development of Green Technologies for Sustainable Development Goals

### About the Session

The world is facing an unprecedented challenge in the form of socio-economic inequities, unemployment, climate change, environmental degradation, as well as health crisis. Business sector can play an important role in providing the much-needed support in terms of technology development, propelling innovation and finance. It is essential that the business sector and policymakers come together to unlock means such as finance and regulatory framework needed that is conducive for development, demonstration and deployment of these technologies and innovations. Through this session, executive heads of various business houses will come together to deliberate on how best can the society move from a market-based approach to an innovation-based approach to develop green and clean technologies, taking a step closer to achieving the sustainable development goals.

### Speakers

#### **Moderator**

- Mr Manish Chourasia, Managing Director, Tata CleanTech Capital Ltd.

#### **Leadership Addresses**

- Dr María Mendiluce, Chief Executive Officer, We Mean Business Coalition, Geneva, Switzerland
- Mr Hussain Al Mahmoudi, Chief Executive Officer, Sharjah Research Technology and Innovation Park
- Mr. Sunil Duggal, Group Chief Executive Officer, Vedanta Limited
- Mr. Rohit Chandra, Chief Executive Officer, OMC Power Pvt Ltd
- Mr Sumant Sinha, Founder, Chairman & CEO, ReNew Power Private Limited
- Mr Mahendra Singhi, Chief Executive Officer, Dalmia Cement (Bharat) Limited
- Mr Alexander Slater, Deputy Managing Director, U.S.-India Business Council

### Disclaimer

The text of the addresses is based on auto-generated transcript from YouTube. Minor edits were made on grammar and spelling. The exact wording of the discussion can be accessed from YouTube video:

<https://youtu.be/LUboGndSPbE>.

## Actionable Messages

**Message 1:** Global warming is a planetary challenge and has to be addressed through global collaboration. In this regard, partnerships between the government and the private sector, as well as, within the private sector are crucial.

**Message 2:** Innovations are extremely important and we have to keep thinking about how to innovate further and to create grounds for innovation. In this regard, we have to ensure that there is a transfer of capital from the developed world to the developing countries, and at the same time we need to have our policies in place to start working at scale.

**Message 3:** One key takeaway from this conference should be that how climate fund or the green capital would flow to the developing world.

**Message 4:** There is a need to innovate, with collaboration between the government and private sector, which will enable making the economy circular. For this, the government has to come out with proper policies to really make green technologies successful.

## Making Words Count @WSDS 2022

“ If people do not realize that they have to pay for carbon usage they will just carry-on emitting carbon into the atmosphere and it is not going to cost them anything, so we need to have a price on carbon.

**Mr Sumant Sinha**

**Founder, Chairman & CEO, ReNew Power Private Limited**

“ USIBC helps promote a stronger US-India partnership through broader and deeper trade investment ties between our two countries we are at the forefront of shaping the bilateral economic relationship.

**Mr Alexander Slater**

**Deputy Managing Director, U.S.-India Business Council**

“ Climate crisis that the world is facing today is intrinsically linked to our broader sustainability challenges covering the 17 SDGs and for these reasons climate neutrality can only become a reality if it touches all parts of society and our economy.

**Dr María Mendiluce,**

**Chief Executive Officer, We Mean Business Coalition, Geneva, Switzerland**

“ The private sector I believe, it plays a big role and it is also an evolving role because I think it depends there is no one size fits all. I think the requirement of the private sector India might be vary from the requirement here in the UAE, visa via other places. In the UAE the private sector works hand in hand with the government to move the agenda of sustainability and let us say green economy forward in terms of reorienting the strategies or the sustainable development goals.

**Mr Hussain Al Mahmoudi**

**Chief Executive Officer, Sharjah Research Technology and Innovation Park**

“ We have taken a mandate internally that in the next 36 months, we will completely eliminate any use of fossil fuel for generation within our company.

**Mr Rohit Chandra**

**Chief Executive Officer, OMC Power Pvt Ltd**

“ The world is becoming more mineral intensive. We also need lot of minerals like cobalt, copper, lithium, and other minerals which are very important from the point of view of supporting the renewable energy or the decarbonization of this world.

**Mr Sunil Duggal**

**Group Chief Executive Officer, Vedanta Limited**

“ The message is that if we are able to prove in our own organization that clean and green is profitable and sustainable, then the pace of in implementing green technologies will go in a faster mode and these green technologies will be the great source for green world.

**Mr Mahendra Singhi**

**Chief Executive Officer, Dalmia Cement (Bharat) Limited**

## Narrative

### Moderator

**Mr Manish Chourasia, MD, Tata Cleantech Capital Limited**

A very warm welcome to the esteemed audience.

Today we are really lucky to have a very eminent panel with us to discuss a very important and pertinent topic which is reorienting market economies and accelerating development of green technologies for sustainable development goals. As we all know global warming is perhaps the worst problem and the issue which humankind has ever faced in our existence of over a million years. Now this is completely a man-made problem and has been created over the last 150 years because of our obsession with growth now growth is very good and it has led to a lot of advancements it has led to a much better quality of life but this growth has come by a lot of carbon emissions and it has led to a situation where we have already used more than 90 of our carbon budget now going forward it will be impossible to grow the way we have grown in the past that is by emission carbon dioxide so what is the new model clearly we have to find a model where our growth is decoupled from carbon emissions. Now this is something which is very important and we have to reorient market economies we have to find out new technologies for this to happen a lot of progress has happened technology has improved if I go back 10 years the cost of solar power in India was about 20 rupees to a unit of power now it has come down to 2 rupees as we speak the cost of battery storage is coming down by almost 10 to 15 per annum. Progress has happened, but unfortunately if you add up all the progress plus if you take all the commitments which have been made in COP26. Even with the mind you these are not just a statement of good intentions these are not legally binding and even if you add all these commitments, we are nowhere within our target of temperature rise within 2 degrees centigrade so clearly lot more needs to be done and without much ado now let me just request our panellist to discuss more about this topic.

The way we are organizing this panel discussion is that we have got four very pertinent questions which I will put on the screen and I will request each of the panellists to give their views on one or more such questions. After that we will have a second round of questions so the questions which we would like to discuss are right here so what I would request panellists to talk about is first in what way the private sector contributes in all the stages in terms of initiation experimentation demonstration commercialization and diffusion of green technologies for public goods. What are the various strategies and approaches that can be adopted to reorient market economies to focus on innovative green technologies to attain sustainable development goals what policy signals are needed how can clean technologies be made affordable and accessible to all how can all the stages of green technology development be de-risked. so, these are some very important and pertinent questions I will now request each of the panellists to give their views on this. We will start with, Mr Alexander Slater.

### Panelists

**Mr Alexander Slater, Deputy Managing Director, U.S.-India Business Council**

Thanks so much for inviting me here.

I want to say thank you to The Energy and Resources Institute (TERI) for inviting me to take part in this year's World Sustainable Development Summit. As a former World Bank official, I take seriously our obligation to deliver sustainable and inclusive growth in job creation; it is a moral obligation as much as an economic imperative. This is how we preserve the planet for future generations and allow everyone to take part in the prosperity that is generated from economic growth. It is an honor to be involved TERI's robust efforts to advance this agenda and take part in the critical conversations that take place at the Summit. I am also grateful to be part of such a distinguished group of co-panellists, the second year in a row that I am here at the Summit doing this. For example, it is nice to see my friend Mr Singhi the CEO of Dalmia Cement; he and I took part in a closed-door roundtable last April, with special presidential envoy Kerry, on ways the US and India could cooperate on promoting the development of green technologies so very much in line with the conversation that we are having here today. Mr Singhi is a leader in aiming to decarbonize one of the most carbon intensive sectors of the economy, cement and building materials, so it is great to see you Mr Singhi.

I am also grateful to be here with two leaders of the green technology ecosystem in India; Tata and Adani, both of them are world leaders in the production of renewable energy which is the foundation of any and all efforts to reduce

the carbon intensity of economic growth and job creation. As well as achieving the goal of keeping global temperatures from rising above the 1.5 degrees Celsius threshold. Both Tata and Adani are valued members of the organization that I help lead, the US-Indian Business Council (USIBC), they sit on our global board. The head of Tata Power also joined that roundtable with Secretary Kerry last April and both companies use their membership in USIBC to advance their significant contributions to India's achievement of its robust renewable energy targets under the Paris agreement. I know that both will be important to partners for meeting India's Glasgow targets on renewable energy and reducing the carbon intensity of its economic activity by almost half by 2030. As secretary Kerry reminds us it is what we do by 2030 that is most critical to tackling climate change. Now the organization that I represent USIBC helps promote a stronger US-India partnership through broader and deeper trade investment ties between our two countries we are at the forefront of shaping the bilateral economic relationship and as I said in the Summit last year are all in when it comes to attacking climate change and reducing the carbon intensity of economic growth. Our sustainability working group brings together corporate members from across multiple sectors to promote policies and initiatives to achieve these goals so we really are committed to helping promote innovation in this sector and deliver the technologies that innovation creates at affordable prices.

USIBC is an international fleet of the US Chamber of Commerce, a highly influential advocacy group in the US on economic issues including trade and investment like my organization USIBC, the chambers members represent some of the world's most innovative companies that based on experience work through the chamber to promote policies that build ecosystems that generate innovation. Which is what we are here to focus on today, ultimately innovation is about experimentation creativity risk and failure. These are things that for a variety of reasons many of them valid are difficult for large government bureaucracies to undertake especially these days with significant scrutiny applied to government's work scrutiny that is critical to protect the public interest and keep our constitutional commitments as a result innovation these days comes largely from the educational and private sectors with critical incentives and commitments from government supporting their work I might add that it also comes from global collaborations that promote the exchange of ideas and knowledge sharing. I think there is a lot we can learn in promoting innovation in the green technology sector by looking at how we have had success in building this ecosystem in other sectors specifically digital and biotechnology. So, the U.S approach to doing this is that government has a role to play in the early stages of innovation, but industrial policy is not the way to go as the market is a better harbour of competitive companies and technologies than government so the us government for example in the defence space has an organization called the Defense Advanced Research Project Agency in the pentagon, and the biomedical area has the Biomedical Advanced Research and Development Authority, these agencies oversee basic and applied research grants to academia that are made on a global basis not merely to American companies. This helps promote crowding ideas from the best companies in the world, whatever their sources and allows the applications that are generated from them to have applicability beyond the U.S context.

There is also a need to create ecosystems of innovation. So, take a look at Silicon Valley right there you have a wonderful research institution in terms of Stanford, you have NASA and all kinds of companies and human capacity in the area that creates lots of innovation clusters that help deliver the products that we that are basically shaping our lives every day in the technology is. You have similar sectors in the biotechnology arena in terms of Boston and the research triangle in North Carolina which has three major universities. We also need to make sure that there is adequate funding for start-ups and this too can come from the government, but we also see it coming from private equity firms and venture capital firms these days. So, the idea is to sort of create demonstration cases where these entities can generate returns that they are looking for from investments in green technology. Ultimately the private sector provides post-start-up funding as well as collaborations with academic institutions to supercharge ecosystems; you have Indian companies doing this in some ways already. For example, Tata has made available 25 billion dollars to promote digital technology collaborations at universities like Harvard, Yale, and IIT Madras and breakthrough technologies. The government then needs to make sure that whatever is produced from this ecosystem has a market, right, so it basically sets out the types of procurement that it is going to undertake and not condition this on it coming from American companies, but really just be the best technologies.

Notably when it comes to green technologies, we actually have a marketplace for this being created already by the private sector with many companies already continued to be carbon neutral by 2030. These are major consumers of renewable energy like Microsoft, Amazon and Google or logistics companies like UPS, or those that are manufacturers of electronic goods like Apple. So, this type of ecosystem is already well along its way when it comes to green technologies, which also brings me to my final point. The kind of innovation solutions that we need that are applicable globally are ones that take place in a world of open communication and open information exchange and integrated economies. This is where I will sound a note of caution during COVID times a lot of the economic approaches that have gained currency cut against this kind of open innovative ecosystem in both the US and India. For example, there is talk of onshore localization self-sufficiency and stronger border controls this approach is not one that enhances innovation on a global scale no matter the sector. So as we think about how we want to do this for green technologies, I think there is a typology that we can follow in other sectors and we should try and build that for green technology and again there is we are already ahead of the game in some ways because the private sector is already making commitments to provide the demand for the new technologies once they come to fruition, but again we have to guard against closing our borders whether it is the people or goods or the exchange of ideas, otherwise we are not going to get the innovation that we need. Thanks.

***Dr María Mendiluce, Chief Executive Officer, We Mean Business Coalition, Geneva, Switzerland***

Thank you all, it is a pleasure to be today with you. I am not going to repeat what we have said about the honor of being with such as team leaders on the panel today I am going to just dive into the questions you have asked, Manish.

Climate crisis that the world is facing today is intrinsically linked to our broader sustainability challenges covering the 17 SDGs and for these reasons climate neutrality can only become a reality if it touches all parts of society and our economy. This requires as a president speaker has said collaboration between all stakeholder's government, business, research, and civil society both nationally and internationally. This is it is just not like a nice world we need unprecedented collaboration to be able to have emissions by 2030. This is not something that one industry can do by them or that a very smart think tank can figure out, this is something that requires all of us to work together. The We Mean Business coalition works on the connections between business and governments so related to your first questions, business can demonstrate climate leadership by doing four things. First thing is setting a very clear ambitions to the net zero as early as possible and to have emissions by 2030 this is not an easy task but the situation requires some. You need to take action these are our four As, take concrete action to reduce emissions including through green technologies. Need to be accountable, report on progress against targets in a complete and transparent way the scrutiny is out their businesses are facing every day some suggestions that they are rewarding the only way to respond to those is for being transparent and reporting progress. Finally, advocacy businesses need to be proactive in advocating for ambitious climate policies aligned with 1.5, we gain business towards kind of leadership and leverage leadership by more than 2800 big companies around the world are more than 3500 SMEs.

There are three ways in which we worked that help accelerate the five phases of technology; goal development initiation, experimentation, demonstration, commercialization, and finally diffusion. First, we drive demand for new technologies through, the climate group and in collaboration with others; we work for companies to commit to 100 renewable power to the RE-100. 100% of electric vehicles through EV 100 and to commit to energy of efficiency in factories, buildings, and other operations through EP 100. We are now setting a still deceiving concrete zero these are two demand campaigns for companies to demand zero emission still zero missiles concrete including activities in India. These programs send demand signers for green technologies which make it easier for technology suppliers financials governments and others to invest too so the demand is very important in any other business we hear it because the consumer is the one that drives market change. Second, we advocate for ambitious policy a fuel leading business can be enough to encourage governments to set more ambitious policy this in turn gets more business to take climate action which gives government more confidence to strengthen climate policies; and so on we call this the policy business ambition loop. This loop, it works and this addresses your fourth question- how we can de-risk investment well. We can the risk and they are really good examples let me talk to you about EVs so it is in an S curve, which means that after a long and slow start all the sudden we see an exponential uptake of electric vehicles. In actual fact worldwide electric vehicle sales have increased by 41% since 2015. For electric vehicles to scale we need good

infrastructure and for that we need government to take the lead. In India our partner of the world business council for sustainable development led the India EV campaign last year and they issued some policy guidelines and a EVs ambition statement with 30 companies that were advocating to accelerate EV deployment. In January 2022 this year the Ministry of Power issued an EV charging infrastructure guidelines which included some of the recommendations that these companies have put forward covering timelines for public charging systems access to electricity charging locations, and revenue sharing. So clear timelines and policies can the risk investments in clean technologies. There are plenty of examples in other sectors, but I thought I will mention that I mean I am not going to get into the detail around the value of carbon pricing as the best mechanism to rearrange the markets there is some interesting examples in that respect in for example in the cement industry and maybe Mr Singhi will talk. So, as the cement industry was not included as part of the emission trading system in Europe, but when it was included suddenly there was a lot of innovation that happened which led to this sector. Let me be honest, the only company and leader that has always been 100% fighting climate since 2013-2014 has been Mr Mahendra Singhi, but now the other companies are coming, because they had this price signal. I am sure I will not talk more about this, but the reality is that carbon pricing has helped this industry think that actually it makes business sense to reduce emissions and actually they are advocating for carbon pricing to be included in other geographies.

So let me come back to my third and last point at We Mean Business also help mainstream action across value chains which is possible if we have both living business and leading governments working to bring tier one tier two tier three suppliers to reduce emissions in we did set up the SME climate hub that provides SME with a one-stop shop to set I.5 align climate targets and they can join the race to zero from the UN and access free best-in-class tool set up for them to implement their action plans. In India 86 companies have already joined the SME climate and tech Mahindra is one of the 12 multinationals that as I.5 supply chain leaders work proactively with SMEs in its value chain, we are planning to launch the SME climate hub in India later this year. Together with India leading industry associations corporate and civil societies amongst others because we believe that it is important that Indian SME joined the journey and we do not leave behind. To your third question about affordability, I believe that capacity building helps companies understand where can they find solutions that reduce cost and reduce emissions and the SME climate approach gives educational tools for them and well there might be some specificities by geographies, I believe there are some basic solutions and we have a great panellist that will talk about them that can apply to all business across geographies such as energy efficiency or renewable energy.

Let me conclude just with a few thoughts around the G20. India will host the G20 in 2023 and this is a unique opportunity to put green technologies affordability and the questions that we are talking today on the international political and business agenda. So last year the We Mean Business coalition sent a letter to the G20 with 800 global business including 15 Indian companies such as reliance, Wipro, Godrej, and of course Mahendra Singhi as well and this letter earth G20 leaders to strengthen and disease accelerate the energy transition and align finance with the I.5 future we would welcome and would be very keen to collaborate with Indian government and business to prepare for an ambitious G20 agenda and we hope we can continue the discussions of course next year this event will be really pertinent there is a lot of work to be done that starts today when you leave G20 and we will be happy to partner with you in doing so. Thank you, Manish.

***Mr Hussain Al Mahmoudi, Chief Executive Officer, Sharjah Research Technology and Innovation Park***

Good afternoon, everyone. Thank you, Manish, for this amazing opportunity. Esteemed guest it is my first time to participate in this webinar and in this program and I am very delighted to really be part of this partnership that we just recently signed with TERI a global reputed organization that hopefully together we will be able to cement the relationship between the United Arab Emirates and India. Especially focused on technology innovation education an area that we have not done much in our partnership, so for me this is really an honour to be part of this panel and meet all of you virtually, but hopefully one day physically.

I like to say maybe a couple of words about my organization which is a government organization Sharjah Research and Technology Park is a UAE government initiative designed to accelerate the innovation ecosystem in the UAE. The country just celebrated 50 years; we are going into the next 50 years with innovation sets at the heart of our strategy. The government launched different initiatives, including a leading initiative that focuses on sustainability and green



technology of course faster, which is a global investor in the area of green technology and solar, and other. But also, other organizations in Dubai like the Dubai Future Foundation the Sharjah Research and Technology Park is another initiative that focuses on mainly four things. The first one the development of the innovation ecosystem both hard infrastructure and their buildings and labs and also soft infrastructure in terms of funds policies legislation etc. The second objective is to develop human capital which are entrepreneurs', scientists, innovators. Third objective is to develop technology so that is identifying and niche and commercializing intellectual property for our local universities, but also global universities and institutions. Last, but not least venture building and venture designing. The bottom line we want to create companies and enterprises that will create economic impact and create jobs and opportunities for the nation. The park focuses on six main areas it focuses on environmental technologies, it focuses on transport and logistics, digitization, production design and architecture, energy technology, and water technology.

Now I would like to go back to the questions my colleagues earlier I think they did a fantastic job in explaining the concept of the role of the private sector to the government and maybe academia. I will probably share with you maybe, since this is my first time and I am sure just to bring a different perspective just a case in what we are doing here in the UAE. Of course, we are very proud of our relationship with India on many fronts and it says this is a historic relationship that we are very proud of and we take very dearly, close to our heart and this is going in the future to grow bigger and better, in the future inshallah. So, the role of the private sector of course is key and, in the UAE, we look at the government as a sector that lay out the overall umbrella and how they would like to see the countries developed, they created 2030 /2050 innovation strategy. Under this innovation strategy different players play different role, the private sector of course in the UAE plays a strong role in bringing innovation into the table and they do these things in different ways of course some of the areas that of course in term of, supporting education institutions and developing skills and students and different research activities that support the local needs another is in a format of demonstrating at as we speak. For example, we have here in the Park, research and development centre that is developed by the private sectors focused on agriculture technology, and renewable energy, and we also work with the private sector in terms of commercialization of technologies. We have different type of technology related to hydrogen, so also concrete technology that maybe Mr Mahendra would be interested to talk to us about it but we are developing a different technology related to also the concrete technology. The private sector I believe, it plays a big role and it is also an evolving role because I think it depends there is no one size fits all. I think the requirement of the private sector India might be vary from the requirement here in the UAE, visa via other places. In the UAE the private sector works hand in hand with the government to move the agenda of sustainability and let us say green economy forward in terms of reorienting the strategies or the sustainable development goals.

I think the government plays a big role; the UAE government always take a leading role. I think we will be hosting COP28, next year, UAE pledged to have a net zero country also so that is a big agenda that the government set and we mobilize both the private sector, government, and academia, and non-for-profit organization to really support the overall government. I think in term of, reorienting markets I think it is something that happens in partnership with private sector, but I believe the role of government is key on creating direction for the private sector, and the academia to come in. How do we make a technology accessible, of course for whatever reason in different part of the world one of the challenges? I think with introducing new technology is the cost of deploying these technologies and again there is no one-size-fits-all, but I think it is our duty for example here at the park to facilitate and convince the government and the very stakeholders to come up with a model that allow new technology to flourish and to grow. Of course, different technologies require different approach there is no one model, but in charge at least we do this cases by cases so the frameworks that we develop for example for additive manufacturing would be different than the framework we do for concrete technology, or hydrogen, or water. So, we look at each industry and we look at the supply chain of this industry and we design things specifically for that industry with the hope that we will have the most efficient effective model that will allow these technologies to flourish and how we de-risk again. I think that is another area for any nation and government to really play a big role here because technologies and development of terms is it has a lot of risks a lot of them are our research activities that need to be commercialized and I think government and institutions like us are designed to de-risk as much as we can, the let us say the new opportunities that come out so that is really my intro.

I would maybe highlight one element which was mentioned by my two colleagues I think the role of education the role of education, I know we talk about it, but it is very critical because it all come up back to education. The best, we do with creating future generation future champions future scientists and future society the better we will be able to address all of these challenges collectively. With this note I again like to thank everyone and I look forward to listening to the rest of the speaker. Thank you!

**Mr. Sunil Duggal, Group Chief Executive Officer, Vedanta Limited**

Thank you, Manish, thanks for giving me the chance to speak very happy to be here and very happy to listen to the views of the global leaders, who are present on the call today.

From this call I think, we will evolve better human beings of course, but the direction we will set for our own organization and the country we live in could be better after this. I am also very happy to inform you that today on this TERI platform that we have signed a MoU with TERI to collaborate on ESG initiative and efforts for the next 10 years. We have set up a separate fund at Vedanta, on some of the issues of our organization and our intention and their capability could marry together wherein, we will bring in lot of initiatives on the table for TERI to add value to us, and I believe that Vedanta will emerge stronger and find many solutions for our pillars which we have defined at Vedanta that we want to keep society planet and people at the core of our business decisions so I am very happy to hear that some of the questions which you have asked I would like to present my views on the table.

I am a bit mindful of the time because there are other speakers who have to speak after me and there is a time limitation. I would not repeat on some of the things which I have said, but everybody knows and some of you also have said that the climate or the existence of this planet in this universe is a shared responsibility. Whether the mankind would become an extinct animal at some point of time going forward and the time is not far off. We have realized that the problem is knocking at the door, and that is why there is a heightened focus which is being given and every citizen of this world has become mindful of his or her responsibility. So, in that direction corporate, government, individuals, NGOs, and research institutes have their own responsibility and everybody will have to contribute; until we collaborate, probably, we will not be where we want to be. On the end result and the end objective, we have a vision we want to make this world carbon neutral. Somebody said that we have already eaten away 90% of our quota of CO<sub>2</sub>, which we could afford to generate only 10% left. We may not have the answer for everything as on today of course, some progress on some of the initiatives have happened, but enough is not there and enough solutions are not there on the table for all that we want to know. In that direction, I think the collaboration beyond our organization boundary, country boundary, or the continent boundary has to be realized so we have also been talking that the developed countries probably also have two earmarks of certain funds for the country which are developing. The flows of fund across the boundaries have to take place and this is also an opportunity for us to reduce the discrimination and difference between the haves and have-nots. In that direction everybody knows that huge funding is required huge resources are required and we have to be mindful about this. In that direction I think a lot is being done by various countries people have made the declaration voluntary somebody said that I want to be carbon neutral by 2040, somebody said by 50, and somebody said 70. Of course, we may not have the answer for everything as of now but the intention is there. Similarly, the organization have also volunteered to make the announcement that this is the direction we want to go and I am very happy to listen from all of you that the kind of effort in term of technology development long-term view is being taken.

The capacity building of everyone, so we at Vedanta have also realized that we should build the capability and the knowledge and the consciousness of every employee and the society around and we have decided to set up a ESG academy, in that direction. We want to partner with TERI or some of the other institutes where we would get help from them to produce the training of trainers' concept, where we would produce. So, this is also one way because every individual who lives in this society or this world will have to contribute in some or the other manner so in that direction, I think the education and the consciousness and the responsibility of any human being of this world is extremely important. How can we lay down the ecosystem around that and how do we realize the responsibility as the countries, as the provinces, as the organization has the society, as the NGO that how to bring the consciousness of every human being. As far as the organizations are concerned from my viewpoint, while the intention has been laid and we have also declared to the outside world that how do we want to commit and what do we want to commit.

How you can monitor us, so what will be our scorecard, what we will deliver in the next 1 year, 5 year, 10 years, and 15 years if we will be able to make that commitment, a long-term commitment is one that the countries are saying that 2050 or 2070, we will become carbon neutral, but what is that exactly we will be doing. It will also throw a pressure on the organization and the stakeholder that what exactly they are supposed to do and they will become more conscious of designing themselves better. Like in some of the organization I have seen that they make a rolling business plan of three to five years, they take a long-term viewpoint of what they will do this year to ensure that the delivery three year down the line on our vision, or on our growth, on our sustainability. How this will be delivered so it will also require a little longer term of detailed strategy planning viewpoint in the organization that what do we want to do and exactly how this will come.

Somebody said that the renewable power cost over the years have reduced to one tenth of what it was 10 years back and similarly, it is being talked that in the hydrogen fuel we will have to reduce the cost to say one third or one fourth of what it is today to make it more sustainable and the affordable fuel. I think the when the responsibility in this world has been realized by the organization and the society the answers have always come. It is basically the intention which is more important if we look at the cost of talking on the phone or the cost of phone or the cost of the data, so how much and how we have travelled over the years these are some of the examples, but if the intentions are there, if the planning is there, if the collaboration is there, if a world the world is treated more like a village where the where the support to each other would come all these technologies will definitely bring the result. I am very happy that this year government has declared a lot of policies as part of the budget where they said that how do they want to support the industry and the efforts of the individuals and the organization. How they can support the effort by way of which their effort of reducing the carbon footprint could come, be it in the form of supporting the EV vehicle, building the infrastructure, or the PLI scheme they had declared the Production Linked Incentive (PLI) scheme for someone sector very happy that they have come up with a certain scheme. So, all those declarations are welcome step, and I am sure that all the countries in the world are going in the same direction where they are becoming conscious that how they have to support the ecosystem, to where the efforts of the individual could be realized, supported, and people take more effort, but I think more to think in that direction. I mean one of the examples I would say that, the transmission of black power and the green power cannot be compared, though government will have to come out with the policies which are more supportive, create the infrastructure like somebody said that the charging infrastructure, but the transmission infrastructure from one part of the world to another part of one part of the country, to another part of the country. How the transmission or transmission transportation of the hydrogen or the green hydrogen will take place from one part of the geography to another part of the geography. So, a broader thinking has to be required where some more supportive behaviour or the supportive policies of the government can come up. Apart from that if I talk of my own sector and if I would look at how the current world is look looking like, the world is becoming more mineral intensive compared to the energy intensive oil like EV vehicle requires seven to eight times more minerals than the usual vehicle.

The one-megawatt power plant a power capacity setup which is renewable required eight to ten times more mineral compared to a usual thermal based power plant, so the world is becoming more mineral intensive. We also need lot of minerals like cobalt, copper, lithium, and other minerals which are very important from the point of view of supporting the renewable energy or the decarbonisation of this world. As we are speaking the commodity prices are crossing the roof, and it is becoming increasingly difficult for people to build their renewable energy capacities going forward and we have to be literally mindful. So, in that direction one is that the government has to build a conducive environment and the policies where the cyclic economy could be encouraged, the mineral exploration could be encouraged, the policies around the cyclic economy could be developed, and the government would encourage the efforts of research of the organization. I was also looking at the data around the globe were the percentage of GDP spent on the R&D activity and especially now on the decarbonization effort, there is a lot of benchmarking which could be done by India or some of the other countries. They can learn what are the efforts other countries or other organizations, big organization in the world are doing and how we could support those R&D activities where the technologies going forward could become more efficient, more affordable, and what role we have to play, but we have to be literally mindful that if the world will become more million intensive what natural resource sectors like ours have to play a role. How we have to collaborate the government and we I mean it is not only what we do inside our

organization on various efforts what I said, but beyond that how we have to also collaborate with the government and teach them that what is important for the world going forward. We may also do the benchmarking educate the policy makers that this is what the benchmarking around the globe is there, this is how the policies could be tweaked, this is how the supportive policies in the direction of decarbonization could be made. So I will have to stop here otherwise my colleagues will not get more time I wanted to express some more views, but I would stop here. Thanks for giving me the chance look forward to partnering with you and speak to you more often going forward. Thank you very much.

**Mr Manish Chourasia:** Thank you so much Mr Sunil Duggal, and many congratulations on the MoU signed with TERI on ESG collaboration and all the very best for the ESG academy I think it is a very good initiative. You make some very important points, the green technologies are mineral intensive so how do we ensure that we innovate with collaboration with the government and private sector so that we actually start making our economy circular a very important point and of course the government has to come out with proper policies and there has to be collaboration with the private sector to really make green technologies go ahead so that we all can innovate very important points.

**Mr. Rohit Chandra, Chief Executive Officer, OMC Power Pvt Ltd**

Hi Manish, thank you very much and thank you to TERI and all the organizers for giving us an opportunity to speak.

Let me start with a very brief introduction I am the co-founder and CEO for OMC Power and we are a 10-year-old company working in the rural landscape. I would like to describe ourselves as an innovative business model, driving a sustainable way of developing rural landscapes. If you look at our company and the experiences that we have had over the over the last decade of working in the kind of rural frontiers, I would say that we have tried to figure out a model using renewable technologies which could be self-sustaining and which could provide the required growth to rural India, rural Africa, or other parts of rural Asia. In terms of our project and company we are Indo-Japanese partnership, we are very proud of our association with Mitsui and we are fuelled by private capital, so this is a company which has been fuelled by private capital and has and the business model has been built with the mindset of delivering returns to investors, which is quite different compared to the traditional outlook and that is where use of renewable technologies and sustainability is extremely important for us. What output do we deliver in terms of the output that we deliver, I would broadly say it is in three dimensions.

First is the economic dimension, in the economic dimension we developed, productive use of energy in the rural context which allows for a great deal of entrepreneurship, jobs and employment opportunities in rural India. We have helped a lot on the social dimension whereby we have helped harden the health infrastructure especially very relevant in the last two years with COVID and requirements for health support all across the country. We have helped in education and in areas like women's safety and women empowerment. Thirdly, I think I would like to say that our company of course is net positive so unlike what we hear that of course the country is committed to be 50% by 2030 and net zero by 2070 the world is committed to get to net zero by 2050, unlike that we are net positive from day one. We ensure that the use of fossil fuel at the rural level both domestically by small and medium enterprises and by anchor loads is either diminished or completely eliminated. We also ensure that generation is re-based and also trigger and facilitate EV deployment in the rural landscape, we have currently a model of development which we call the ABC model and another unique thing that we have done with the model is to make it all inclusive. When we operate in a certain village, we make sure that we have something for every segment in the village so the poorest person in the village can avail of our services for as low as say one and a half dollars a month. The richest man in the village, which in our case is the anchor customer which is, the telecommunication tower can also avail the service.

We have developed an all-inclusive model which is sustainable and is based on economic viability and private capital. In terms of the footprint that we already have experimented with, we are present in Uttar Pradesh, we are present in almost 15 districts of Uttar Pradesh with 270 power plants running a distribution network of almost 500 kilometres and we generate and store and supply 26 megawatt hours of energy every day, to all the segments of the market. Now a few words on technology and our expect experimentation with technology and how technologies could be especially renewable technologies could be deployed for public good, in models which are scalable and sustainable. Our view on technology has been that look we have enough risk in our business we are not going to take a technology risk we are

going to bet on technologies which are mature and technologies which help us produce a kilowatt hour of power at the lowest possible cost at a given point of time. That is a view on technology, on top of that we would like technologies to be ruggedized in nature so that they can be deployed in tough rural environments and can work well in tough rural environments. Thirdly, we believe that the technology verticals that we trigger, if you look at generation, we use a mix of solar, micro wind, and we are going to start deploying CNG. We have taken a mandate internally that in the next 36 months, we will completely eliminate any use of fossil fuel for generation within our company. In terms of storage, we like to bet on technologies which are going to provide a fast charge and which are going to be maintenance free. So, we are kind of technology agnostic, as long as it is fast charge, it is a maintenance free, and it can be supported in tough environments operating environments, we are good with such storage technologies. In terms of distribution, we use smart innovative grid structures which can be compared to a prepaid mobile telephony service, so a lot of the learnings from the success in another industry which we believe did it really well. The telecommunication industry and a lot of those learnings we brought into the energy sector in this kind of bottoms up model that we run. We believe that technologies can really help solve this large-scale problem that we have. Finally, I would like to say that the last bit on technology that we have experimented with very successfully that our learnings over the last decade have now been codified into what we call business process automation, so whatever what the business process is running across the company, be it related to operation maintenance, be it related to roll out of new plants, be it related to sales and marketing, or remote monitoring of our systems and our plans and machinery. We have codified all the learnings we have made sure that they are converted into smart applications which can run on iOS devices, android phones, windows-based computers, and can be used across the board by our employees. This ensures uniform service delivery across our geographical spread, it makes the company kind of free of any risk of employee iterations, etc, and ensures that uniform business process is delivered across the board.

Now moving a little bit towards the future, I am conscious of time and would like to say that what the enablers for growth are. The enablers for growth in our view are not policies and regulations now because the government has done a great job in terms of providing a fantastic operating environment to companies like ours. We have had great experience and we believe that there is enough policies and regulations out there to help us do our job, what is required from our point of view is a large deployment of developmental capital. I still feel that developmental capital is still in the more conventional mindset and what is required is for the developing countries to I think really accelerate the deployment of large-scale developmental capital in business models that have proven that they are sustainable and ready to scale.

My last point today is on what the future holds and here I would like to say that, I think Manish and many of the speakers before me spoke about the climate emergency spoke about COP26 and the fact that the world today recognizes that we face a climate emergency. I think recognition of the problem is half of the problem solved right and now, what and then this has happened because of how we have developed our infrastructure, how we have perceived growth in the cities in the last hundred years. The unique opportunity that we have and I think all stakeholders have is how do you want to develop rural India, rural Asia, rural Africa are we going are we going to follow the same trajectory of development that we followed for our cities or are we going to do something different, so that while developing rural India we actually make sure that the models that are put up for development of rural India or rural Africa are such models, which are at least carbon neutral from day one or carbon positive. So that 50 years from now we are not sitting here in a forum like this and trying to solve the problem. Please remember 70 percent of India is rural right, if not more so with this I would like to end my presentation. Manish and very happy to take any questions that come my way later.

**Mr Manish Chourasia:** Thank you Mr Chandra wonderful points fabulous. Many congratulations on the great work you are doing on the rural landscape and you have made some very good points regarding development capital maybe policies and regulations are in place but we need development capital.

**Mr Sumant Sinha, Founder, Chairman & CEO, ReNew Power Private Limited**

Look I think the points that you all have made already cover a lot of ground. We all know the climate emergency is real, it is imminent, it is something that we have to deal with right now. We have to do what we can do right now. It is not just a question of therefore doing things it is a question of doing them as quickly, as possible as rapidly as possible,

and doing them at massive scale, because the problem is intense the problem is immense and if we do not deal with the problem at scale immediately then we will not again be successful. So therefore, what are the obligations on our now companies like us for example, which are renewable energy companies we are already doing our bit in terms of trying to decarbonize the electricity sector as rapidly as possible. We are working very closely with governments in our respective countries, which are also similarly minded to try to decarbonize the electricity sector as rapidly as possible, and their cost solutions are now available, technology solutions are available such that the decarbonization of the electricity sector certainly looks quite visible now. It looks like it is doable and it can happen by 2030, we will be well on that in that direction.

The issue however, is the other areas, the other areas being the hard-to-abate sector. I am sure Mr Singhi if he has not already spoken, will talk about it, Mr Sunil Duggal spoke about his sector. Those are critical sectors, if sectors like steel, cement, mining, and minerals, aviation, transportation, if those do not also similarly look at decarbonizing themselves very rapidly then we will have missed the boat. Now is enough being done? to my mind not yet, and to my mind what I see happening still is a lot of lip service and less action. There are only very few companies like Mr Singhi's company which are actually doing what needs to be done, most companies are talking about it, but they are still not moving fast enough. Similarly, if you look at the whole area of capital providing if you look at the financial world, the financial world again is talking about investing in ESG, but when it comes to actually putting their money where their mouth is unfortunately, they tend to back away. I think if you see what is happening globally in the markets right now all cleantech stocks are selling off, and they have all sold up by 50-60%; and this is a globally well recognized stock. So, it tells me that ultimately there is not enough seriousness behind this area, it is still a very commercially driven area and if people do not see commercial value, unfortunately they will not come into the sector. Now therefore, we need to make this whole area a lot more commercially viable and that is where government policy needs to come in, it needs to come in the area of coming up with the pricing for carbon. If people do not realize that they have to pay for carbon usage they will just carry-on emitting carbon into the atmosphere and it is not going to cost them anything, so we need to have a price on carbon.

We need to have much more robust intervention on the technology front and then using those technologies at scale, but again for which we need mandates. We need mandates for things like green hydrogen and so on, as well to come in so that we can decarbonize the transportation sector, and so that we can decarbonize the hard-to-abate sector. I think we really need to collectively get a move on in a lot of these areas, we of course as a company we have now close to eight gigawatts of commission capacity. We generate 1% of 1.5% of India's total electricity production we help mitigate almost 0.5% of India's total carbon emissions, we are doing a bit as much as we can, but we need to really make this a much broader civil society movement, and we need to make it a much more central activity for the government as a whole. So let me stop here because you have already been told through that time is shot so let me just stop here and then give it back to you Manish thank you thanks.

**Mr Manish Chourasia:** Thanks so much very pertinent points a lot has been done as far as decarbonization of power is concerned, but lot more needs to be done. And clearly government will have to come out with supportive policies and clearly, we will have to push new technologies thank you so much and wonderful job being done by renew congratulations for that.

**Mr Mahendra Singhi, Chief Executive Officer, Dalmia Cement (Bharat) Limited**

Thanks Manish, my compliments to TERI for organizing such a great discussion on the planet for which we all are working, so that we can deliver a better world better future to our grandchildren. I am so happy that I have been I have been able to get the wisdom of all my previous speakers, so that I may speak less, but learn more, so thanks to the friends who spoke so well. They have highlighted what needs to be done by private sector, by others also.

First, I would like to say that the role which a private sector can play is, how to reorient mindset reorient strategies for green world through green technologies. I think that will be very important and once you are able to reset your strategies then definitely all green actions would start coming. This is what we could do in Dalmia Cement and as early as in 2018 we could visualize the future that what the future needs from us. From the hard-to-abate sector like cement and we could identify certain levers on account of which, we can be first carbon neutral, and then carbon negative,

and we have also laid down that by every five year what would be the carbon footprints. First job which should be done by private sector is to assess your carbon footprints and then to plan out that how you would be bringing down your carbon footprints, and for that you may have to create some business philosophy. The way Dalmia Cement could create a business philosophy which occurs well with the commercial nature of private sector is clean and green is profitable and sustainable. These business philosophies these strategies would make Dalmia Cement the one of the lowest carbon footprint cement companies in global cement world. Now important is that whatever levers are there for by which you can bring down your carbon footprint green technology is required. Mr Manish you have highlighted very important four questions on which if people start thinking about, I think they will be able to make greener goal. So, for that in my view green technology how has to be created so that there can be a seamless transfer of green technology to whichever company want to implement that. Normally that does not happen and even today there is a hindrance of utilizing green technology even by various companies even in developing world is so, what industry can do is they can come out with their actions, they can come out with their projects, but until and unless like my other friends have said green climate fund is made available capital green capital is made available various such projects various such green technologies cannot be implemented. So, the whole world has to now think how they can create certain demonstration projects in developing world, so that the green technologies which are right for bringing down Co2 emissions, which are right for moving towards the net zero carbon roadmap. That is there.

So, one take out from this conference should be that how climate fund or the green capital would flow to developing world, and this is one request. Otherwise like various efforts which have been done by Mr Alexander, Madam Maria, and Mr Hussain, which have suggested that how you can create collaborations and how it can create initiatives also. The way Dalmia Cement has been working on the hard-to-abate sector is to explore now and to create a demonstration project of carbon capture and utilization. So once such project is demonstrated then definitely it will be easier for others to follow the suit and for that you have to show leadership also, but at the same time you have to have a clean fund also. Secondly, the new technologies which are further emerging like green hydrogen or like electrification of the equipment etcetera for that Dalmia Cement is already committed, but the important is how we can have collaboration with the developed world like Bill Gates breakthrough, energy or the breakthrough technologies which have been discussed in COP26. So how we can take it forward so for us it will be very important that if we have to implement the philosophy of green world and green technology is that because skill has to go up scale of green technology has to go up. Like my friends have said that more the volume the lower the cost of the technology like this solar energy, or like LED bulb or many other things also. So, we are looking towards, one, executing the project as well also sharing with the world that what we are going so we have already started sharing since last three four years in our integrated report that what is my carbon footprint and what is my target for future years. I will compliment Mr Sunil Duggal for now having MoU with TERI so that the roadmap for ESG or roadmap for various sustainable future can be created and this is how I think we will be able to achieve SDGs by 2030.

Finally, because of shortage of time I would like to conclude one by complementing all the friends who have spoken here, but at the same time the message is that if we are able to prove in our own organization that clean and green is profitable and sustainable, then the pace of in implementing green technologies will go in a faster mode and these green technologies will be the great source for green world. So, thanks Manish and thanks all friends and my all compliments.

**Mr Manish Chourasia:** Fabulous point and that my cement has led by example that what can be sustainable can also be profitable and this is the message which you have clearly given to the world and you have made an excellent point that it is about innovation it is about technologies but it is also about transfer of capital from the developed world where all the savings are there to the developing countries which need those capital excellent thank you so much Mr Singhi.

So, with this we come to the end of the panel discussion it would have been great had we had time for the second round of questions, but we really do not have time. So just to summarize we have had a great discussion, clearly, what came out was that global warming is a global challenge and it has to be addressed only through global collaboration. Innovations are extremely important and we have to keep thinking about how to innovate further and to create grounds for innovation, at the same time we have to ensure that there is a transfer of capital from the developed world to the developing countries, and at the same time we have to ensure that we have our policies in place and we

start doing things at scale. While till now we have done a lot when it comes to decarbonization of power, but lot more needs to be done when it comes to hard-to-abate industries, this is a challenge to all of us all segments of the society are involved and clearly this is the emergency time and all of us will have to play a very important role in fighting this war against global warming. thank you so much thank you thanks everyone thank you.