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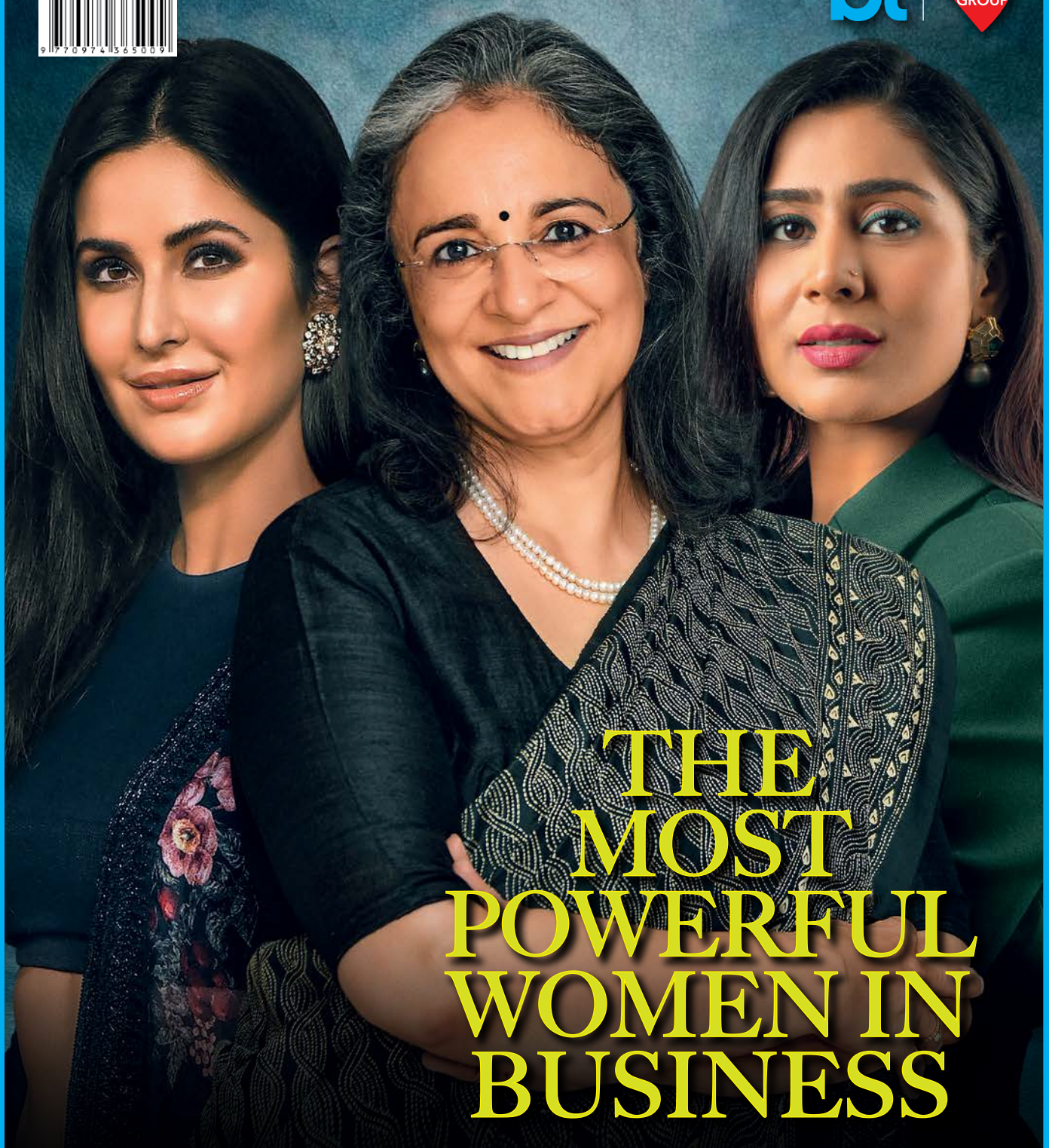

THE MOST POWERFUL WOMEN IN BUSINESS

KATRINA KAIF, ACTOR & ENTREPRENEUR; MADHABI PURI BUCH, CHAIRPERSON, SEBI; AND GHAZAL ALAGH, CO-FOUNDER & CHIEF INNOVATION OFFICER, MAMAEARTH

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RENEW AND REFRESH

AT THE STERLING AND WILSON RENEWABLE ENERGY AND *BUSINESS TODAY* PRESENT 'SCRIPTING A RENEWABLE FUTURE' EVENT, POLICYMAKERS, BUSINESSES AND OTHER STAKEHOLDERS FROM THE ENERGY ECOSYSTEM DEBATED ON THE PATH TO ACCELERATE INDIA'S CLEAN ENERGY TRANSITION

BY TEAM *BT*

PHOTOS BY **RAJWANT RAWAT**

STERLING & WILSON

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PRESENT

SCRIPTING A RENEWABLE FUTURE

WITH THE GOVERNMENT of India's push for renewable energy (RE), there is unprecedented momentum in the country for transitioning from traditional to clean energy sources. To discuss how the contribution from RE can be maximised, Sterling and Wilson Renewable Energy Group and *Business Today* organised an exclusive bespoke initiative titled 'Scripting a Renewable Future', which was held on

Rahul Kanwal *(left)*, News Director, India Today and Aaj Tak, and Executive Director, *Business Today*, with R.K. Singh, Minister of Power and New & Renewable Energy

February 10, 2023, at ITC Maurya hotel in New Delhi, and attended by government officials, independent power producers (IPPs), original equipment manufacturers (OEMs), financial institutions, investors and other key industry players.

A fireside chat between R.K. Singh, Minister of Power and New & Renewable Energy, and Rahul Kanwal, News Director of India Today and Aaj Tak, and Executive Director of *BT*, was one of the key highlights of the event.

The event addressed important current issues, opportunities and emerging trends in the energy ecosystem, and explored how different stakeholders can redirect their efforts to make India self-sufficient in clean energy.

Q: Could you share your vision for the achievement of the government's target of achieving 500 GW capacity of energy generation from renewable energy (RE) sources by 2030? And also enlighten us on the progress made so far, the roadblocks being encountered and the way forward from here...

A: Climate change is a real issue. There is global consensus that something needs to be done about it. Almost 85 per cent of the legacy CO2 load is because of the developed nations, and there is no dispute about that. Our contribution to the legacy of CO2 load is just 3.4 per cent even though our population is 17.5 per cent, which is another fact. On a per capita basis, our emissions are one-third of the global average, which includes developed and developing countries. As one of the lowest CO2 emitters in the world, India's responsibility for the legacy of C02 emissions is very small. But we believe in the importance of leaving behind a healthier planet for our coming generations. So in COP21 in Paris, in 2015, we pledged that by 2030, we will have 40 per cent of our power generation capacity coming from non-fossil sources. This was a substantial pledge, both in absolute terms as well as compared to the pledges made by other countries. But we made it and we achieved it nine years in advance, that is, in November 2021. Today, 42 per cent of our energy is from non-fossil.

Today, my non-fossil capacity is 177 GW, which means 17,700 MW; out of that 6,800 MW comes from nuclear, the remaining is from solar, wind, hydro and bio mass. Now that we have achieved it so far in advance, we upped our ambition in Glasgow and pledged that by 2030, 50 per cent of capacity will come from non-fossils. By 2030, I will need our capacity to be 820 GW.

Today, my power generation capacity is 410,000 MW, so my capacity has to double between now and 2030. Our

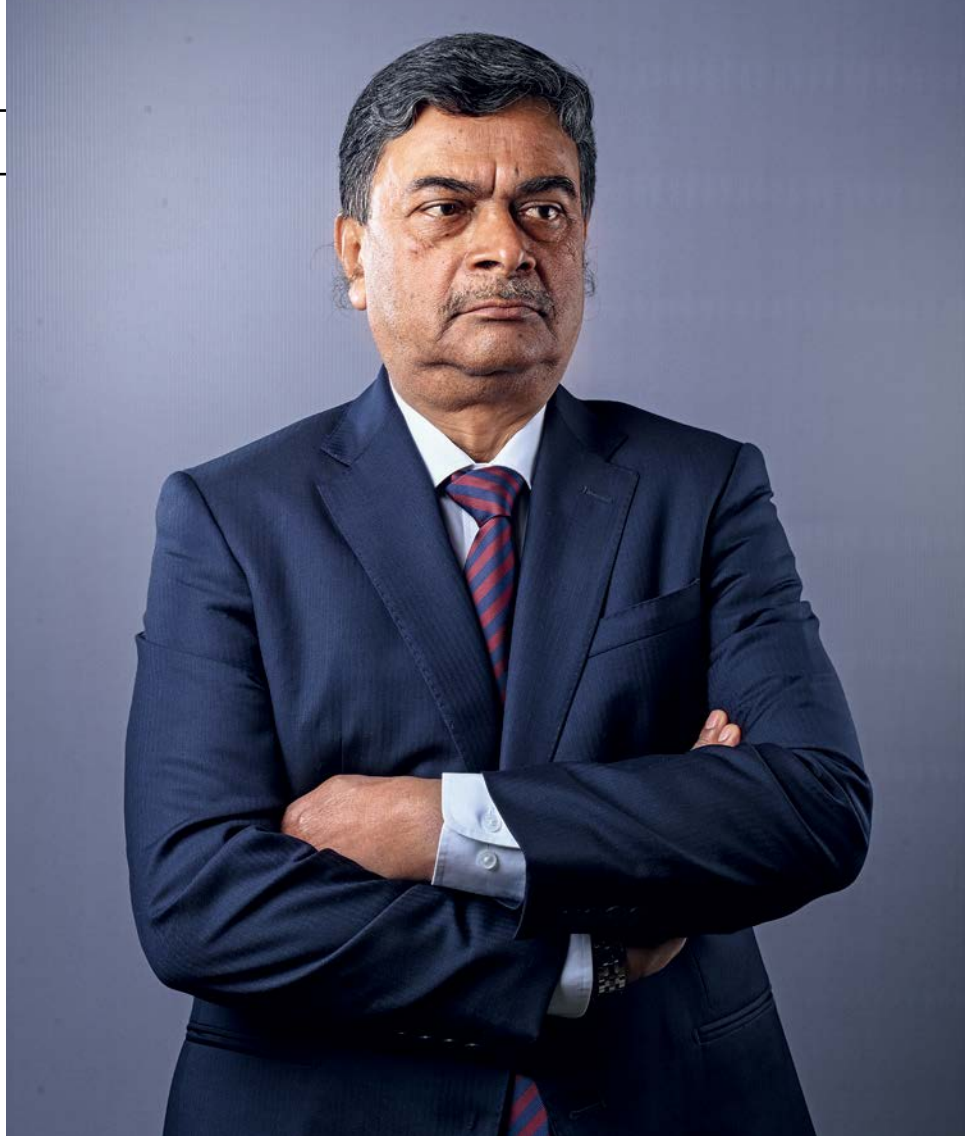


PHOTO BY **HARDIK CHHABRA**

PM said that RE, as far as its capacity is concerned, will be 500 GW, which actually makes it more than 50 per cent, it's almost 64 per cent. This is a very ambitious target, but we shall achieve it, because I have already installed 177 GW, I have about 75 GW under implementation, so that makes it about 250 GW. We have to do 250 GW more and I am confident to do that as I am going to do at least 7-8 million tonnes of green hydrogen by 2030, which would require 25 GW per million tonne, so 8 million tonnes will give you 200 GW.

Our rate of capacity addition is one of the fastest in the world, and we have emerged as the most attractive destination for investments in RE. All this capacity generation that has happened, we had not put in any money. Every major fund in the world is invested here and more are coming. We have built up a huge ecosystem for RE. I have at least 15-16 world-class companies competing for my bids. Now I have added one more ambition: to make most of it in India, a new challenge that we have taken up.

The other NDC (nationally determined contribution) was about emission reduction. There are industry sectors in which you need to reduce emissions, for which we have a programme called 'Perform, Achieved, Great', in which specific efficiency and emission standards are set for industries. If they achieve, it's fine; if they overachieve, they get energy-saving certificates that they can sell; but if they underachieve, they will have to buy those certificates or pay a penalty. Now, that has resulted in a reduction of CO_2 emissions by 106 million tonnes per annum.

We also have the largest LED programme in the world, resulting in CO_2 reduction by almost about 100 million tonnes. We have a star-rating programme for electrical appliances ranging from five star to one star, which has resulted in a reduction of CO_2 emission by 53 million tonnes per year. We have put in place Energy Conversion Building Code for commercial and industrial buildings, adopted in the by-laws of most states; this will account for about 24 per cent of our energy consumption.

We have come out with Eco-Niwas Samhita for residential buildings above 100 sq. metres, which will be made mandatory soon. In 2019, when we carried out an assessment, we reduced emissions intensity by 29 per cent against a target of 33 per cent by 2030. We are in 2023, so we must have reduced it further by 32-33 per cent by now, that's why we again upped our target of emissions reduction in Glasgow, saying that by 2030 we would reduce our emission intensity by 45 per cent. In short, we are world leaders in energy transition and we intend to continue to remain a world leader.

Q: What are the challenges and ways to overcome them?

A: The challenge is not just for energy transition, but also for meeting my energy requirements. If we had not added this capacity, we would have had problems because demand is growing rapidly. Even in November-December, they grew by 25 per cent. Overall, during the year, it has grown by 10.5 per cent over the past year—the fastest rate of growth of demand in any country in

the world—that's because we added 29 million consumers, achieving universal access in 19 months. The International agency called it the fastest expansion of access in the history of electricity in the world! I could not have achieved it had I relied only on thermal. Our demand will continue to grow because our economy is growing at around 7 per cent, and for that we need energy.

Another challenge is that renewable is not round the clock, so you need storage and it is expensive. Unfortunately, the developed nations talked about energy transition and how necessary it is and how climate change is a problem, but they did nothing about it. So, we have had to start from scratch. We are adding storage capacity and we are adding volumes to demand. I came out with a bid for 1,000 MW hours of storage and the cost came to ₹10 per unit. It was one of the largest bids in the world.

The supply chain of storage is another pain point where 89 per cent of lithium reserves are with China. The other problem was the transmission, where today we have the largest integrated grid in the world. It is one grid running on one frequency for the whole country. We have added 173,000 circuit km from 2014 till date, and we are still adding. Now, for taking the capacity to 500 GW, I have to invest a further ₹2.4 lakh crore for transmission. The good news is that actually I don't have to spend the money, as the investment is coming. So I just hold bids and the lowest bidder gets the order to construct it and gives us an uptime of 99.95 per cent. The great thing again is that we have made life simpler; you will get connectivity in max two months flat. We have simplified it and we have come out with something called General Network Access, where you have to pay just for the connectivity to the network and you are connected to the whole country—you can sell and buy with any state—One Nation One Market. That is something that has enabled us to have one of the lowest costs per MW of solar.

INDIA'S RATE OF CAPACITY ADDITION IS ONE OF THE FASTEST IN THE WORLD, MAKING IT ONE OF THE MOST ATTRACTIVE DESTINATIONS FOR INVESTMENTS IN RENEWABLE ENERGY

Q: On import of lithium ion, bulk of which is controlled by China, what are you trying to do, to reduce not just energy dependency but security dependency as well?

A: Energy dependency is actually strategic dependency. We are trying two-three things. One, of course, is that I have carried out a survey of all the possible locations for pump-hydro (energy storage in the form of pumped water from a lower elevation reservoir to a higher elevation), and listed those out. I have told the states that I want all the pump storage to be exploited. If you don't have storage, hydrogen is what will balance solar and wind. We have identified all the possible hydro projects where work would start soon. I shall soon come out with a bid for round-the-clock RE using green hydrogen or green ammonia as storage. That will be a pilot project. If that works, then I won't be dependent on lithium ion. The world is also trying to look for alternate solutions and they are looking at sodium ion and other chemistries. If that happens, we will be away from dependency on lithium. I have also asked for our Ministry of Mines to go out and also tie up reserves, so they are in the process of doing that and have also visited Australia, which is willing to give some of the lithium ion shares to us, and that will beat the supply chain issue.

Q: On the issue of storage, what's the kind of cost reduction that is possible?

A: Right now, battery storage is ₹10 per unit, per KW hour. My renewable energy cost is ₹2.40, resulting in storage cost being four times the energy cost. I would be happy even if it is equal to the energy cost. That means my per-unit electricity cost after one hour storage would be around ₹5. We came out with another bid for 3,000 MW storage using pump hydro, NTPC came out with that, which again was the largest bid in the world. Our size is phenomenally huge and so is our requirement, so whatever we do is on a huge scale. In pumped hydro, we got a rate of about ₹3.50, but actually it is ₹5 odd, but if you run it in two cycles, it will come to around ₹3. BT

Amit Jain, Global CEO, Sterling and Wilson Renewable Energy Group, delivering the keynote address

WHILE DELIVERING THE keynote address, Amit Jain, Global CEO of Sterling & Wilson Renewable Energy Group, spoke about how India is pioneering a new model of economic development that could avoid the carbon-intensive approach. The use of renewable energy not only helps in the primary objectives of advancing economic development, and mitigating climate change, but also improves energy security, energy access, and reduces carbon emissions. Acknowledging the Government of India's firm intent to rapidly move towards carbon reduction and net-zero, he highlighted the vision laid down by the Prime Minister in his *Panchamrit* statement at COP26—of India's commitment towards climate action as a five-point action agenda—along with including green energy growth as one of the seven main priorities for development in the recently announced Budget 2023-24. He also spoke about India's achievements in the energy transition space and the need to come together for the larger good of society and make this shift happen rapidly.

INDIA'S STORY FOR HARNESSING SUSTAINABLE SOLAR POWER

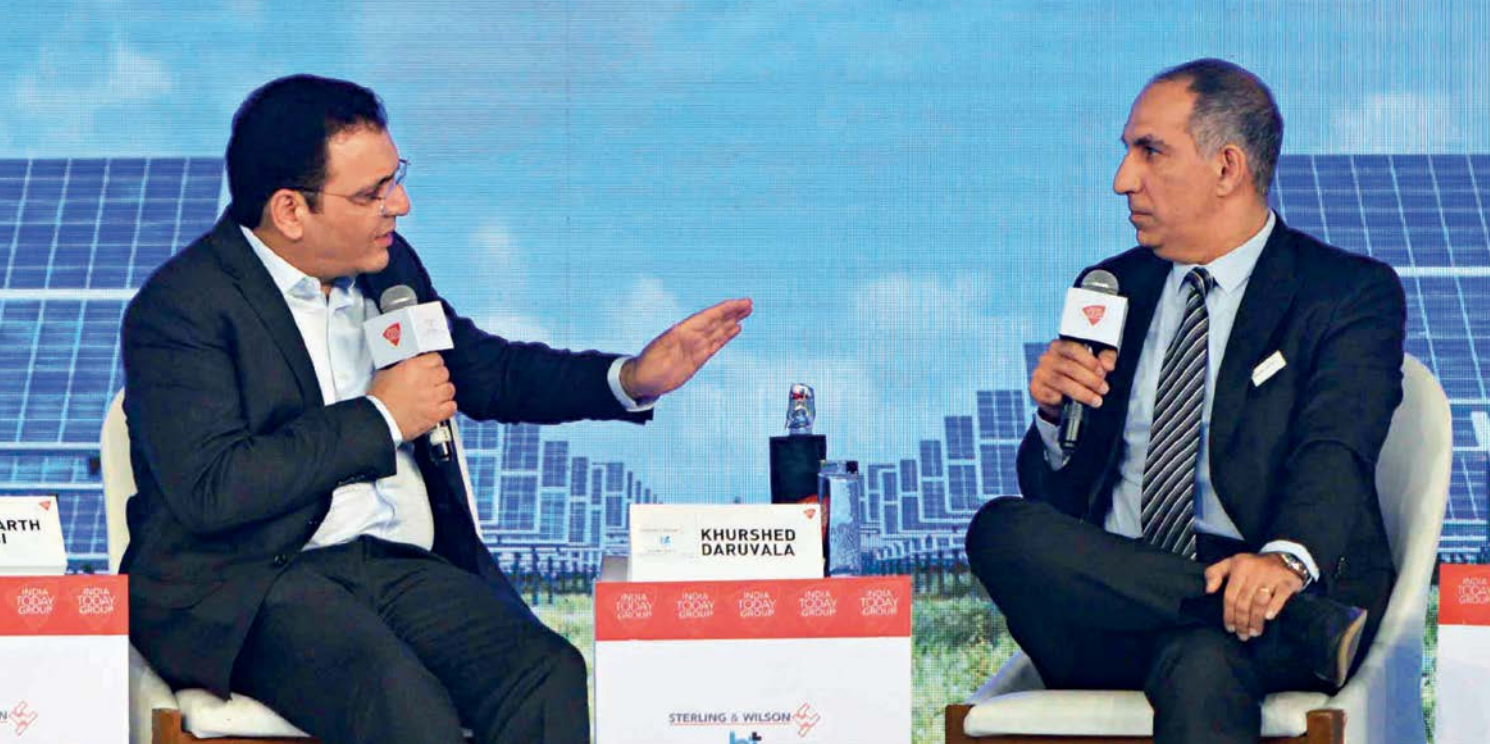
Khurshed Daruvala, Chairman of Sterling and Wilson Group, is credited with powering the company's emergence as India's leading mechanical, electrical and public health engineering and renewable energy provider. As India drives down the road towards a greener and cleaner future, Daruvala shares his views on 'Ushering solar and clean tech growth for *AtmaNirbharBharat*'.

Q: On why he picked this business and not any other

A: When we started in 2011, we never forecasted to be where we are today. We are talking about ₹15 crore a MW and about ₹15-18 tariff almost a decade back. Scenarios were different then, but this being a futuristic business, we have the first mover's advantage. It is always better to start early. As we witnessed the pace at which solar industry was growing, costs started to come down from $2.5 to over $0.20 per watt, which happens to be a phenomenal transition. I am confident that this is just the start, and the future is brighter. It is an upward journey from where we are today.

Q: On stakeholder risks

A: Fundamentally, if you see, the risk



Siddharth Zarabi (*left*), Managing Editor, *Business Today* TV, with Khurshed Daruvala, Chairman, Sterling & Wilson Group

remains in the business, at least at a global level and partly in India. Also if you notice most of the projects worldwide, approximately 82-85 per cent are funded by lending institutions and is non-recourse when you start the project. Since they do not want to take any risk, it invariably is passed down to the EPC. We have seen a time when the cost of production fell 80-90 per cent over 10-12 years and most people tend not to look at that risk. With that established, over the past two years, the module price jumped up to 50-60 per cent, that is, when there was a pause as to who is going to take this risk. Imagine bankers, IPP or EPC, who do not want to take the risk. This is what makes risk allocation inevitable. At the end of the day, the tariff is just so low that if it goes up a bit, then the risk can be fairly allocated. That's where adjustments are happening in the global market right now.

Q: On issues facing the renewable energy industry

A: One of the points that come first to my mind is on financing and I will add perspective to it. The tariffs in Saudi Arabia today, are in the range of about ₹0.80 to ₹1. In India, it's about ₹2.30 to about ₹2.60. The capex in India is lower than in Saudi, so even if we were to consider a little incremental generation, which Saudi has as compared to India, the capex per unit generated is still lower in India. So basically, the entire difference between this ₹1 to ₹2.50 is coming from the cost of financing. Now let's understand international projects are able to get 25-year dollar loans at much lower interest rates, and India is 15 per cent higher, so at what stage will we be able to be competitive on the financing side is going to determine the cost of solar power going up.

Q: On India achieving its renewable energy targets

A: I believe it will happen. Irrespective of all the challenges that India has had till now, we continue to be the third largest country in solar installations globally, and a lot of these challenges are being worked upon and we should be able to overcome in the near future. I believe if that were to happen, the potential would be huge. We all know of huge plans for local manufacturing, which both the government and the private sector are supporting, and if it honestly happens two years down the line, then it should be fine for all of us because then we should be able to capture the entire value chain within the country at a competitive rate.

Q: On encouraging local solar manufacturing

A: As a solar EPC, I would love to see the market grow in India at a much faster pace. To give you an example, our company was building a 1.17-GW Solar EPC plant in Abu Dhabi. The largest capacity that a single Indian manufacturer had at that time was 500 MW. Even if they were 10 per cent lower than the international competitor, we couldn't buy from him, as they did not have the capacity to deliver. As an industry which is going to grow for the next 20-30 years, and where India is going to play a large role in the global scenario, I think the Indian market needs some protectionism for some time. If we spend 4-5 years just creating an environment for the manufacturing sector to become globally competitive, I don't think it's a big sacrifice, and I don't mind the slow growth over the past 2-3-4 years. If in the next two years, we can capture most of the value chain within the country, I think there is a huge opportunity for all of us. Creating the right infrastructure will help us pick up pace and is crucial. BT