Foreword

Five years ago, when Centre for Science and Environment (CSE) published its first State of Renewable Energy report, the sector was just taking wings. We were part of its cheerleaders — an environmental research and advocacy group which believed strongly that the world needs to move out of fossil fuels because of the growing risks of climate change. Renewable energy (RE) is the ticket to get the world out of its addiction to oil and gas. We were its proponents, but we had our fears.

We believed that India needed a RE policy that would be less about industry and more about supply to meet the needs of the poorest in the country. For us, renewable energy was (and is) a means to both decarbonise our economy and provide access to large numbers of people who were (and still are) energy-deprived.

Five years later, when we publish the 2019 State of Renewable Energy report, much has changed, and yet much remains the same. The government of India has an ambitious target for RE — 175 gigawatt (GW) by 2022. There is no question now that RE has arrived. Nobody argues about its imperative or feasibility. The industry has matured. There are RE companies that can bid and out-bid each other for the supply of panels, solar power plants or wind turbines. RE is an industry with sparkling offices, new age companies and flamboyant leaders. It is no longer restricted to the musty world of scientists or activist NGOs. It has certainly grown out of the world of community groups working in villages on small projects. It is real. It is big. RE plants compete with coal-based energy. Renewables are now under the Ministry of Power — RE is no longer a peripheral scientific sector, struggling to compete with the big boys.

The testimony to this growth lies in its numbers. Today, the Ministry of New and Renewable Energy (MNRE) says that the country has hit 73,000 megawatt (MW) of installed RE power, which is some 20 per cent of the country's installed capacity for power generation. On good days, when the sun is shining and the wind is blowing, RE meets some 12.5 per cent of the country's electricity demand. On other days, it is over 7 per cent. This is not small. But it is not big either.

This, therefore, is not the time to be complacent or to pat our backs for work done. Even as RE has grown, the challenges that confront India have also grown — in fact, they have become even more troublesome and crippling. This is what we must discuss.

First, there is the challenge of electricity supply. The government has an aggressive plan to reach every household with electricity. But the fact

is that even as the grid reaches everywhere, the light does not. This is either because people are too poor to pay for electricity, or the distribution company is too poor to supply the electricity, or the market has no way of working in the cashless energy segment. Whatever the reason, millions in the country are still in darkness. Energy poverty is still crippling vast numbers of Indians, who cannot use this crucial enabler to progress — from education to employment. This is our challenge.

Second, there is the challenge of clean cooking energy. This is the world's wicked, wicked problem. Women across the developing world — including in China and India — are exposed to toxic emissions because of the biomass they burn to fuel their cooking stoves. Globally, it is estimated that 2.6 billion people still rely on biomass for cooking food, with 80 per cent of Sub-Saharan Africans and 66 per cent of Indian's using this inefficient and polluting fuel. This adds up to roughly half the developing world and 40 per cent of the entire world. The International Energy Agency estimates that even in 2030, 43 per cent of the developing world (33 per cent of the world's people) will continue to cook on biomass.

In India, the Census of 2011 revealed that 75 per cent of rural households used biomass and dung to cook, as against 21 per cent of urban Indian households. In addition, data from the National Sample Survey Organisation (NSSO) on energy sources of Indian households for cooking and lighting reveals that nothing changed in the two decades of 1990s and 2000. In 1993-94, as many as 78 per cent households in rural India used biomass as a cooking fuel and in 2009-10, 76 per cent used this fuel. Therefore, in this period, when urban India moved to LPG (from 30 per cent to 64 per cent), rural India remained where it was, cooking on highly inefficient and dirty stoves. This shift to cleaner energy in urban areas was not incidental. It happened because government provided subsidised LPG cylinders to the middle classes — people like you and me. The subsidy ran out because the government could not provide it to all. The poor, particularly poor women, remained where they were; first expending vast energy to collect firewood, and then inhaling toxins.

This has changed to some extent in the last five years. The Indian government's aggressive and much-needed push to provide LPG to poor households has made a dent in the cooking energy sector. The national Ujjwala programme, which provides cheaper cooking energy to households below poverty line aims to correct an historical injustice by transferring the subsidy from the rich to the poor. It does not focus on the cooking appliance — cleaner stoves — but on providing vast amounts of LPG, a fossil fuel, but cleaner and one that most urban Indians use, to the rural masses and to the poor. This is all very good.

But it is also a fact that in spite of this, households are still using dirty biomass fuel, ranging from firewood, leaves and cowdung, for cooking food. This is because it is free — the labour of women is always discounted as is their health. There is a definite correlation between income and cooking fuel. So, households do not get the refill of their cylinder as frequently as they must. The data on this is patchy, but what is clear from any visit to

rural India is that smoke still fills the air. So, the 'other' energy crisis still exists, RE or not.

The third challenge is air pollution. Almost every city in the country is reeling under choking air, which is literally making us ill. There are deep connections to energy in the air we breathe. There is the belch from our every growing fleet of petrol- and diesel-powered vehicles. This is a big part of the pollution problem. Then there is the fact that industries use (in this age of RE) the dirtiest of fuels — everything from the bottom-of-the-barrel pet coke to anything (literally anything) that they can get which is cheap and so, sadly, also dirty. Industry is competing to reduce costs; it says electricity (which is where RE is fed through the grid) is either too expensive or too unreliable. So, it continues to use polluting fuels and continues to pollute.

Worse, air pollution knows no boundaries. So the use of emissions from biomass cooking fuel of the poor ends up in the same air-stew as the diesel SUV of the rich. The health impact of the foul air is now so big that even governments cannot deny the problem. Clean combustion, in other words RE, has a big role to play in clearing the air of toxins. But it is just not there.

Fourth, without any doubt, is the climate conundrum — the world and India remain addicted to fossil fuels. This is when we are definitely running out of time to combat climate change by drastically reinventing our energy system. According to the Intergovernmental Panel on Climate Change (IPCC) 2018 report on 1.5°C, the world is in serious jeopardy. IPCC has revised its previous findings; it says now that the impacts of global warming will be greater than previously anticipated at a temperature increase of 1.5°C. To stay below this temperature guardrail, the world has to cut net anthropogenic CO_2 emissions by 45 per cent, over 2010 levels and reach net zero around 2050.

This means serious energy transformation. It means that renewable energy must supply 70-85 per cent of all electricity by 2050. Currently, renewables supply some 20 per cent of global electricity, the bulk coming from hydropower plants. So, the challenge is enormous. It also means that coal use must be close to zero per cent by 2050. This is huge — the world is still addicted to coal for its electricity use, in its rich as well as poor parts. The developing world needs to provide affordable energy to large numbers of its people. How can it replace coal and yet provide this energy security? This is the question. This is where RE must matter.

I would argue, given these challenges, it is time that we began an altogether different discourse about RE. It is not about industry; its market imperatives; its predictable policy environment. This is not to say we don't need industry in RE. But we need to reinvent its imperatives. We need to redefine its objectives (and certainly its language) so that it can meet societal needs. It cannot be enough to meet targets. It must meet the poor's energy, clean air and climate change needs. Frankly, this RE market needs to be embedded in societal principles. It needs it to be emboldened and driven so that it is the change.

This is where the opportunity is enormous. Indeed, it is mind-blogging. This sector can provide the answers to growth and climate change. But the

path ahead is also extremely difficult. No government has gone there before. No energy company has walked this path till now.

How will it happen? The fact is that energy security for vast numbers of the poor requires an energy delivery system that is different. It will require reaching energy, which costs less but is advanced and cleaner, into households that cannot even afford to buy the basic fuel or light. It will require cutting length of supply lines, leakages and losses and everything else that makes energy cost more, so that it is affordable. There is no clear idea what will work. But what is clear is that we have to push the envelope so that RE becomes transformational — not because it is produced, but because it is an agent of transformation of society and environment.

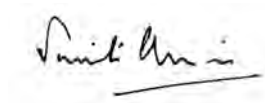
As yet, our track record (as the 2019 State of Renewable Energy report shows) on these fronts is not commendable. RE is like all energy sources — it could be coal or gas — it is produced and pushed into the grid. It is supplied through the conventional (and broken) distribution network. It is limited by its environment and its imagination.

This is also why efforts to do the energy business differently, through mini-micro grids or rooftop solar, are still not taking off. This work is patchy and, frankly, disheartening. It seems like we don't believe in it. We cannot make it work. I am not saying that this is the only pathway to energy access and clean energy. But we need to give it a hard try before we give up.

What is clear is that we need to do ask deliberately what it would take to put clean energy, RE, into the hands of the poor. For this, we will need to do everything to make the transition to clean power — not a few light bulbs, but the whole shindig of this new business. Similarly, we need to ask how RE can work to clean up local air in our cities. It is not just about battery vehicles, but clean power to power the batteries. It is not about shifting the source of pollution, but about really cleaning it up. Every house needs to generate this clean power; every vehicle — ideally a bus or cycle — and every industry needs to be powered from this source. This is where we need to go.

The same is the case with the wicked problem of cooking energy of the poor woman. We need RE to be the basis of the electricity that powers the cookstove — from solar and wind to biogas and all other ways in which it can be supplied into the hearth. It can do this if it is available; if it is convenient, affordable and clean. The basis for this transition has to be the health of the last person, in this case the woman behind the cookstove.

This is the course correction we must seek in 2019 and beyond. This is also important for the future of RE in India. This is the dialogue we must have so that we can seek new policies and methods. RE has to be the moral and economic imperative for a cleaner and more inclusive world. Anything less is selling us short. Anything else must be unacceptable.



Sunita Narain