

# FOR INDIA, THE EASIEST WAY TO DECARBONISE IS TO SCALE UP RENEWABLE CAPACITY

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

A number of reports on climate change were published in 2023 and the latest one is the Global Carbon Project report, released during COP28. This report provided data for all countries on emissions and, in the case of India, it projected that carbon dioxide (CO<sub>2</sub>) emissions for India will cross 3 gigatons (gt) by the end of 2023 — about 8 per cent higher than the figure of 2022. Incidentally, this growth is double that of China, though in absolute terms, China's emissions is about four times that of India (12 gt). Of course, the oft repeated statistics relating to India that it's per capita emissions is only about 1.9 tonnes (against a world average of almost 5 tons) and that it's cumulative emissions is only 3 per cent (as against 25 per cent for US) of the global emissions still holds.

India's per capita and cumulative emissions notwithstanding, we need to strategise our decarbonisation process. According to the government of India's Third National Communication (2023), India's total greenhouse gas emissions (GHGs) was 3.1 gt of CO<sub>2</sub>eq (2019). GHGs comprise several gases like CO<sub>2</sub>, methane, nitrous oxide etc. though CO<sub>2</sub> is the most dominant gas (on the basis of warming potential), estimated at about 80 per cent. Almost 76 per cent of the greenhouse gases (GHGs) were emitted by the energy sector while the agriculture and industrial process sectors emitted about 13 per cent and 8 per cent, respectively. When it comes to only CO<sub>2</sub>, the energy sector is responsible for about 92 per cent of the emissions. The energy sector includes power generation which contributes about 39 per cent of the total CO<sub>2</sub> emissions followed by others such as transport and iron and steel.

Reduction in the use of fossil fuels can be easily done in the case of power generation where one needs to substitute coal and gas with solar, wind, hydro and also nuclear. It can also be done in the case of the transport sector (though with less ease compared to power generation) by adopting electric vehicles (EVs). The problem is that if we are to depend on grid power for charging of batteries, it's one step backward, as the grid is basically dependent on fossil fuels. Adoption of EVs is the easiest in the case of two and three-wheelers, but is more challenging in case of four-wheelers because batteries can't be changed over the counter and for which one needs a well spread out charging infrastructure. Replacing fossil fuels in the heavy transport sector is a difficult proposition as batteries are not a feasible solution. As far as aviation is concerned, developing sustainable aviation fuel is a long way off. Replacement of fossil fuels in the industrial sector is also a problem especially for those industries which require a constant supply of intense heat, for example, iron and steel, aluminium etc. Renewable sources of power are not in a position to provide that kind of a power supply.

The best solution for sectors like heavy transport or industries is getting access to green hydrogen. Though there is a lot of brouhaha about green hydrogen, the fact is that it is only a thought right now. Production of green hydrogen globally is less than 1 per cent today. Production of green hydrogen needs ample quantity of green power and also water which can be very daunting. To give an idea, India has laid down a target of producing 5MMT of green hydrogen by 2030, which alone would need 125 gigawatts (GW) of renewable power. The total solar and wind based capacity today is only about 116 GW. To go further, transportation of hydrogen is also a problem as it makes the pipelines brittle over time. Storage is also an issue since hydrogen (though having high energy content per unit mass) has low density per unit volume and would need huge containers to store unless pressurised. Hydrogen can, of course, be pressurised into liquid form but this is highly energy intensive and if one relies on grid-based

power (which is fossil fuel based) to do this, it defeats the entire purpose of decarbonisation.

What is thus evident is that the easiest way to decarbonise is to scale up renewable capacity to the extent possible as this is the low-hanging fruit. This should have been very easy for a country like India which is rich in renewable resources, especially solar. Though our renewable capacity has grown manifold, it is nowhere near what we actually need if we want to move away from fossil fuels. Let us also bear in mind that the power sector emits only about 39 per cent of the CO<sub>2</sub> and that we need to simultaneously pursue other avenues as well, such as, adoption of EVs and green hydrogen if we are serious about being net-zero by 2070.

On the renewable front, imposition of basic custom duties and insistence on the list of approved manufacturers need to be looked into afresh. We need to prioritise whether we want to handhold a few domestic manufacturers of solar cells and modules or ensure low-cost, rapid growth of renewable capacity. States need to make land acquisition processes simpler and also ensure regular payments to the renewable generators. Access to the grid has to be ensured. Rooftop solar needs special attention in the form of easier finance. The next power ministers' conference should have only one agenda for discussion — how to promote renewable capacity. Lastly, there should be no flip-flop in policy announcements. One can't announce today that 80 GW of additional coal based capacity is required to meet our demand of 2030 after having announced just six months ago that no new coal-based capacity will be commissioned in the next five years apart from what is already under construction.

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