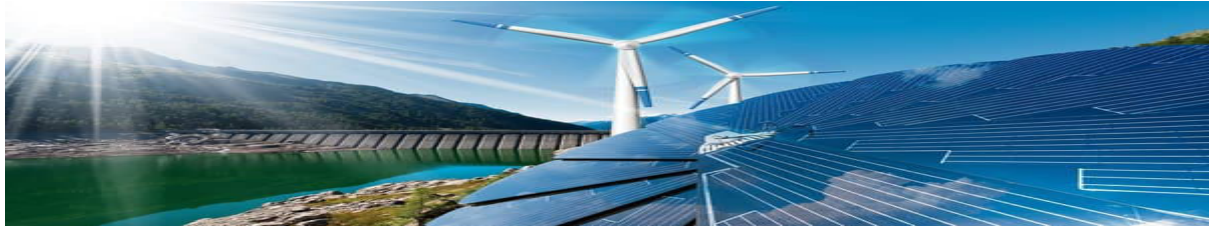


# Opinion | A strategic approach that could curb global warming



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## Sudipto Mundle

An energy policy agenda that includes a radical shift from fossil fuels to renewables is crucial for India to meet its goals

The effects of global warming are already visible. Average temperatures are only 0.8 degree Celsius higher today than in 1880. Yet there is already an increasing frequency of extreme weather events, rising ocean temperatures and disappearing corals, melting glaciers and shrinking polar ice caps, and rising sea levels. Public action has nevertheless been too feeble to cope with this looming disaster. The Paris accord has been signed and containing global warming is now on the policy agenda. Still, it is mostly business as usual both in private industry and in public policy. *The Economist* magazine, though a leading champion of free market liberalism, recently argued that our failure to address global warming is a great market failure and called for muscular government action. It cited an estimate by the Intergovernmental Panel on Climate Change that containing the earth's temperature increase over the 1880 benchmark to under 1.5 degrees Celsius will require a 20% reduction in oil and gas production by 2030. But ExxonMobil alone plans to produce 25% more oil and gas by 2025, and other oil majors are headed in the same direction.

The oil majors support the Paris accord. They are also among the largest investors in solar power and other renewables. Nevertheless, the roughly \$300 billion of annual investment in renewables is just a fraction of the investment being made in extracting more fossil fuels. Why this disconnect between the required investment priorities for containing global warming and the actual investment priorities of energy companies?

The answer is that these companies are accountable to their shareholders. Their investments are driven by profitability, which in turn is driven by current and future projections of demand and supply. Fossil fuels like coal, oil and gas are more profitable than renewables and account for 85% of the total energy supply. That is what drives the current shareholder value of oil companies.

Looking to the future, the latest BP Energy Outlook (BPEO) projects that even under the most aggressive transition scenario, renewables will account for just about 16% of total energy supply in 2040, up from around 3% today and hydro and nuclear power will account for another 11%. Fossil fuels will still account for over 70% of total energy supply. In fact, the main transition, the BPEO envisages, is a shift from coal to oil and further to gas, not

from fossil fuels to renewables. No wonder that oil and gas continue to account for the bulk of investment in the energy sector.

Clearly, market incentives fall well short of what it will take to contain global warming within the limits necessary for global survival. It is this market failure that requires muscular policy intervention by governments as *The Economist* argued. The intervention required is not rigid state control but fiscal policies to radically shift market incentives and profitability in favour of renewables. Central to such an approach are the policies pursued in the developing world, especially China and India. Energy demand is projected to grow annually by 1% to 2% over the next 20 years. This is partly because of growing population but mainly because of rising incomes in the developing countries which have started from a very low base of per capita energy consumption. Virtually all the incremental demand for energy will come from China, India and other developing countries, according to the BPEO projections.

India's energy policy has to be seen in this global context, with two India-specific factors in mind: resource endowments and energy security. India remains heavily dependent on vast reserves of coal, which is also the dirtiest fuel. But switching from coal to cleaner oil or gas poses a security risk since India is heavily dependent on imports for these fuels. Hence, India's long-term strategic interest requires a radical shift from fossil fuels to renewables, including hydropower. But other supporting strategies are required over the medium term. A strategic energy policy menu could thus include:

**Renewables:** India should move towards maximum dependence on renewables, given its vast potential for completely clean, radiation-safe and strategically riskless solar and wind power. Instead of subsidizing power prices and distorting energy markets to achieve this goal, tax incentives should be used to maximize investment in renewables. They can turn India's barren deserts and other non-cultivable land into vast energy generation fields. However, the share of renewables being very low at present, this long-term strategy will entail continuing dependence on other energy sources over the medium term.

**Coal:** Heavy dependence on coal will continue for years, but it should be gradually reduced. Meanwhile, large tax concessions could incentivize investment in clean coal technologies that can significantly reduce carbon emissions from coal-based power plants.

**Oil and gas:** The shift from coal to oil and gas will further increase India's import dependence and energy security risk. To minimize this risk, import sources should be diversified further while incentivizing domestic exploration for oil, especially gas reserves.

**Nuclear power:** Though a clean fuel with large expansion possibilities, it carries a high risk of disastrous accidents as seen in Russia, Japan and the US. Given India's relatively weak regulatory environment, it is best to draw on nuclear power only to meet gaps in supply from other sources.

**Hydropower:** This is a clean, renewable energy source, though usually not treated as such. Its share of energy supply has declined from nearly 54% at independence to only 11% today. This neglect is inexplicable since only 35% of hydropower potential has been utilized and "run of the river" projects do not require large ecologically damaging reservoirs that also displace people. This readily available energy source is a low hanging fruit that should be exploited to the maximum and at the earliest.

*Sudipto Mundle is an economist.*