THE INDIA FORUM
A JOURNAL-MAGAZINE ON CONTEMPORARY ISSUES

April 20, 2026

Why India Must Electrify Cooking and Transport

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India's energy security, especially in gas, has shown a fragility following the war on Iran. Accelerating the shift to electricity for both cooking and transport offers a practical remedy. With stable electricity prices this transition can reduce costs and strengthen energy security.

The American-Israeli attack on Iran, which began on 26 February 2026, has caused major disruptions in the global supply of oil and gas, dealing a major shock to the global economy whose adverse impact is being felt across the world. According to the International Energy Agency (IEA), this has been the worst disruption in energy supply the world has seen.

At the time of writing, a ceasefire is in place but talks in Pakistan have failed. Given the huge gap between the public postures of the United States (US) and Iran, and the extreme attitude and actions of Israel, the achievement of a lasting, stable peace in the Middle East remains subject to considerable uncertainties and risks.

India has been hurt in a manner and on a scale that had not been expected. One of the major achievements of the last decade had been the provision of clean cooking energy-Liquefied Petroleum Gas (LPG)-under the Ujjwala Yojana to all households in the country, to migrant labour, and to all establishments serving cooked food to the general public. The sudden disruption in LPG supply has resulted in long queues, black marketing of cylinders at many times the normal price, and a rush to buy induction stoves to cook using electricity.

Industries began cutting back production. The crisis became so acute that there were reports of migrant workers returning to their villages. With the return of peace and normal energy supplies, difficulties should gradually abate. However, the restoration of gas supplies from Qatar could take quite some time, as damage to gas supply facilities in that country has been extensive.

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This shock calls for an urgent review of our short- to medium-term energy policies and an acceleration of the shift away from imported energy. The share of imports in our oil and gas consumption has been steadily rising as demand increases with economic growth. We now import about 87% of our crude oil and 60% of our gas requirements.

In the absence of any significant increase in domestic production, this trend of rising imports will continue. We should clearly reduce our vulnerability. This means reducing the share of oil and gas in our energy consumption to the extent possible, without adversely affecting our economic development momentum. How to do this then becomes the critical question.

In the wake of the crisis, consumers who can afford it have shown the way forward by buying induction stoves and discovering that food can be conveniently cooked with electricity. This is not a major discovery-many countries have long used only electricity for cooking. The quality and variety of electric stoves available in the Indian market has been increasing, and electric pressure cookers as well as rice cookers are now widely available.

It turns out that cooking with electricity is cheaper than with LPG, even when the cost of electricity is taken at eight rupees a unit. The bulk of households pay far less. For domestic connections, rates are quite low for lifeline consumption and rise in slabs with increasing consumption. Some states provide a free supply of 200 to 300 units per month.

PM Surya Ghar: Muft Bijli Yojana, a rooftop solar programme, provides 300 units of electricity per month to 10 million households. If cooking in all such homes were done with electricity alone, these households would actually save money. There is, therefore, a strong case for the state to promote this transition as a public welfare measure.

To begin with, effective and sustained communication in all languages and across all modes should be undertaken. Building a critical mass of awareness, followed by a change in consumer choice, takes time and effort-but once an inflection point is reached, the transformation is quite swift.

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We have the experience of the extraordinary success of the programme launched 12 years ago to replace incandescent light bulbs with LEDs across the country. Energy Efficiency Services Limited (EESL) of the Power Ministry partnered with state electricity distribution companies (discoms) in an innovative manner to reach every consumer. EESL undertook competitive bulk procurement of LEDs in a single tender. The bid size grew from an initial 600,000 bulbs to 50 million.

As a result of these huge volumes, the price of an LED bulb kept falling, and in the last tender of 50 million pieces it became one tenth of the then retail price. The discoms distributed these to consumers and recovered the cost in instalments set at the level of savings on the electricity bill, since LEDs consume only a fraction of the electricity of an incandescent bulb.

This programme required no subsidy. It was commercially viable, with EESL taking loans that it repaid. The transition was completed for the whole country in four years-a global record.

Drawing on this experience, the way forward would be to use bulk procurement to bring down prices and distribute induction stoves to consumers in easy instalments through discoms. As with the LED programme, this should require no government subsidy.

In addition, the government could lower Goods and Services Tax (GST) rates on induction stoves and other electrical cooking devices-electric pressure cookers, rice cookers, electric kettles, and microwaves-to reduce prices further. These should also be brought under the Star labelling programme for energy efficiency of the Bureau of Energy Efficiency (BEE). Demand for cooking gas would then decline and could even end altogether. Consumers would save money, and ordinary people would no longer be vulnerable to external shocks.

The increase in demand for electricity would be around 20% if all cooking were done with electricity. Fortunately, India is well placed to meet this additional demand. However, a few measures would need to be undertaken to ensure reliable, uninterrupted supply. The demand for cooking would be more or less simultaneous across the country and would result in sharper spikes in demand. It would be prudent to project these and incorporate them in the demand projections of each discom, which should make satisfactory arrangements.

The Plant Load Factor (PLF) of thermal power plants in the country is presently ranging between 65% and 70%. This can be easily raised to over 75%. The extra generation can be stored in Battery Energy Storage Systems (BESS), whose prices have been falling with each successive bid, making battery storage now cost-effective. Solar power with battery storage can now provide round-the-clock electricity at a cost lower than that of electricity from a new thermal power plant. BESS take only about a year to install.

Then there are hydro pump storage projects, of which development of about 80,000 megawatts (MW) has already been initiated. The immediate way forward would be to rapidly create storage, increase thermal power generation, store it, and use it to supply the peaks in cooking demand. Around 30 gigawatts (GW) of new thermal power plants are under construction, and renewable energy capacity is rising rapidly. With storage, this can provide all the electricity when needed.

There are parts of India where uninterrupted round the clock power supply is still a work in progress though household electrification was completed in the country some years back. While generating capacity at the macro national level is adequate, the local distribution network does need investment in many places to be able to provide reliable supply. This needs to be given higher priority by the state governments and the central Power Ministry. For the switch over to electricity for cooking and the use of EVs this becomes more important.

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For batteries and solar panels, forward planning is needed, with policies and programmes to ensure state-of-the-art recycling and disposal once their useful life is over. India needs to move speedily towards becoming a circular economy with industrial waste disposal meeting global standards. The pace of creation of new thermal and renewable power capacity and storage can be increased to the extent needed without any difficulty.

Our electricity supply system has the distinct advantage of providing stable prices, based on long-term power purchase agreements (PPAs) arrived at through a competitive bidding process. This has been a major achievement of the last two decades. De-risking the

ability to sell all that is produced at a profitable price has resulted in lower prices than expected.

Private developers of power projects-thermal, solar, wind, and now storage-have been able to raise both equity and debt without difficulty in domestic as well as international markets. The competitive industry structure that has emerged has led to innovation and cost reduction, resulting in lower prices. Solar power in India is the cheapest in the world. This unique system has emerged after the Electricity Act 2003.

"Reformers" guided by faith in the superiority of the "free" unregulated markets of the West have been trying to push India to do away with the centrality of the discom and its responsibility to supply electricity on demand to all consumers in its licence area at regulated tariffs. They want to introduce retail competition by separating the supply business from the wires business.

This would leave no discom to enter into long-term PPAs for new investments in generation-the very PPAs that have given us the confidence that, with competitive private investment, all the electricity capacity needed can go on being created. It should be noted that many supply companies in the UK went bankrupt after the spike in deregulated energy prices following the Ukraine war, sanctions on Russia, and the resulting spike in gas prices. The government had to provide cash to low-income households to help them survive, and then impose windfall profit taxes on energy companies whose profits increased many times over with no real change in their business volumes or internal costs.

India simply cannot afford this. The bulk of our population needs affordable electricity at stable prices-and is getting it. For India, the ability to attract all the investment needed in generation through competitive private investment would also be lost. One can only hope that "reform" for reform's sake is not hastily undertaken without understanding its real implications at our stage of development.

It may be recalled that towards the end of the last decade, the West was pushing for an end to the use of coal to meet the challenge of global warming. Carbon emissions per unit of electricity generated from coal are higher than from gas, making gas a cleaner fuel. There was a consensus that no new coal-fired power plants should be built, and that they would not be financed.

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At the 26th Conference of the Parties (COP26) in Glasgow, the UK as host country tried hard for a formulation committing countries to giving up coal. India resisted successfully, along with China, and faced considerable criticism. But it was the right thing to do.

We have, however, taken a decision to increase the share of gas in our energy mix from 6% to 15%, with gas promoted as a clean intermediate fuel on the journey to net zero. This needs to be reviewed and given up. The right approach should be to minimise imports to reduce vulnerability.

The supply of Compressed Natural Gas (CNG) for vehicles and piped city gas for cooking should not be expanded further. Supply for industrial needs should continue to receive the highest priority and should be the last category to face curtailment. There is a strong case for a uniform single price for gas supply so that all users receive the correct price signal. The cost advantage of using electricity instead of gas would lead to a decline in demand for gas for cooking and transport.

Transport can be largely insulated from external supply and price shocks by accelerating the transition to electric mobility. The Railways have almost fully switched to electricity for traction in place of diesel, substantially reducing their costs. At one stage, two thirds of their energy costs went into diesel for one third of their movement of goods and passengers, whereas electricity cost one third and accounted for two thirds of their movement. The cost reduction has been huge.

Using electricity for road transport is now considerably cheaper, and consumers are discovering this. Electric vehicles (EVs) are gaining market share. This can be accelerated by the government announcing that from a prospective date-say, the beginning of the next financial year-all new commercial vehicle registrations would be issued only for EVs. Commercial vehicle users would save money and should welcome this. Private consumers would continue to have freedom of choice. As all car companies, including Suzuki (at long last), have EV models in the market, they too should not object.

The decline in demand for petrol and diesel would be steep. Since commercial vehicles have a normal useful life of not more than seven years, demand for petrol and diesel for commercial vehicles would come down to near zero within seven years. The increase in demand for electricity would be over 20% over this period and would keep rising as the number of vehicles and their total kilometres

of usage grow with gross domestic product (GDP) growth.

An exception for heavy-duty trucks would be required, as electric versions are not yet available. Development work is in progress. Hydrogen-powered heavy-duty trucks are available and are being promoted under the Hydrogen Mission, but it will be some years before they are ready for large-scale use.

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The commissioning of the electrified Delhi-Mumbai High Speed Freight Corridor has created the possibility of the Railways increasing their share of total goods movement. This is considerably cheaper and improves the competitiveness of production by reducing logistics costs. The Railways, on their own or through the government's Gati Shakti programme, need to ensure the rapid construction of spur lines or expressway connectivity to large production units such as car plants and manufacturing zones. Railway lines to textile mills were the norm a hundred years ago.

Further, automated loading and unloading of containers and even loaded trucks would create the tipping point for a surge in the Railways' share of goods traffic. For business, time is more valuable than some saving in cost-and this was the rationale for building the High Speed Freight Corridor. Success would reduce oil usage in transport and insulate logistics costs from the inflationary impact of spikes in crude oil prices in the international market, a goal worth pursuing.

The shift to electricity for cooking, in place of gas, and for transport, in place of petrol and diesel, would reduce costs across the board. Households would have more money to spend, and reduced transport costs would improve the competitiveness of domestic production.

In addition, this shift would reduce the inflationary impact of spikes in international crude oil prices of the kind seen in recent weeks. The transition can be completed in about five years at no cost to the government. India needs to pursue this in mission mode and with a sense of urgency.

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