



# US-India Energy Partnership

## *Finding Common Ground*

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### **BACKGROUND**

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India is the second-largest energy consumer and energy importer in the Indo-Pacific region. Growth in energy demand and imports has peaked in China, the world's largest energy consumer and importer. But growth in India's energy demand is expected to continue for the next three decades, making trade and cooperation with India in the energy sector extremely important. India's strategic vectors in the energy context are resilience or the ability to adapt to changing markets, independence or low reliance on external technologies and resources, and identity as a responsible, reliable regional and global partner. India's domestic goals in the energy sector, including self-reliance for strategic autonomy, economic wealth maximization for material power projection, and social justice for the provision of affordable energy, temper its strategic vectors. The success of India's energy partnerships with the US, like those with countries on every continent, have depended on the bilateral relationship promoting India's strategic agenda without compromising its domestic goals.

### **AID AS THE MEANS TO ENERGY COOPERATION**

In the 1980s and early 1990s, India's energy production and distribution assets were mostly government-owned, and energy prices were strictly regulated. There was little scope for external intervention, and India-US energy partnerships consisted predominantly of aid-driven technical assistance. In the 1980s, the United States Agency for International Development (USAID) supported installation of coal washeries in Dipika and Korba, which paved the way for adoption of cyclone washers for high-ash non-coking coal in India.<sup>1</sup> The underlying logic for the US was that improvement in Indian coal quality would reduce pollution and promote the use of steam turbines manufactured by US companies. But coal washing did not take off in India, partly because of its impact on affordability of electricity. India continued to employ domestically manufactured turbines that were designed to use its own high-ash coal.

After economic reforms were initiated in the 1990s, USAID continued to channel aid to programs for improving energy efficiency. Some of the energy initiatives between the government of India and USAID created lasting efficiency improvements in energy generation, such as the 1995 program to reduce greenhouse gas emissions released per unit of power generated from coal-based power plants, and to encourage the use of biomass fuel from the sugarcane industry.<sup>2</sup> Today, power plants of the National Thermal Power Corporation, which was the Indian counterpart in the program, are among the most efficient in India. The US-India Bilateral Project initiated in 2000 for energy conservation and commercialization (ECO) helped set up the Bureau of Energy Efficiency (BEE), to implement the country's Energy Conservation Act of 2001. BEE is now the leading energy efficiency and decarbonization program in India.

The Distribution Reform, Upgrades, and Management (DRUM) program was launched in 2004 after India enacted the Electricity Act 2003 (EA 2003) to deregulate and reform the power sector.<sup>3</sup> The partnership between the Indian Ministry of Power and USAID under DRUM aimed to accelerate power distribution reforms in India, but the program had limited success. USAID's failure to grasp the difficulty of increasing electricity prices in India, and the political economy behind it, undermined the initiative. Offers of free or subsidized electricity are instruments of socioeconomic and political transformation in India, and discounts in electricity tariffs feature in election manifestos even today.

Aid was the primary instrument of USAID-supported programs, but the end was trade, as most of the programs were tailored to move energy technologies to the marketplace and commercialize market-driven energy products, services, and technologies. The trade gains for the US were less than those for India. Following implementation of EA 2003, power generation was opened to the private sector and foreign direct investment, but American companies were outcompeted by companies from developing countries, including China, in supplying plants and equipment to private power generators. For India, the gains were significant, though unanticipated. The BEE is now one of the most important institutions in promoting efficiency of energy use and in mediating reduction in the carbon-emission intensity of India's economy. Reducing carbon intensity of emissions by 45 percent from 2005 levels by 2030 is among three of India's quantitative targets in its upgraded nationally determined contribution (NDC) to the Paris agreement on climate change. India also seeks to increase cumulative installed capacity for power generation from nonfossil fuels to 50 percent and create additional carbon sinks of three billion to five billion tons of CO<sub>2</sub> equivalent through additional forest and tree cover.

## **DIPLOMACY AS THE MEANS TO ENERGY TRADE**

Since 1963, when India and the US signed the peaceful nuclear energy cooperation agreement, the two countries have engaged in civil nuclear cooperation continuously, except for two interruptions by sanctions when India tested explosive nuclear devices. In 2005, India and the US signed the civil nuclear cooperation initiative, a framework that lifted the three-decade-old US moratorium on nuclear energy trade with India. Then, in

2008, a landmark nuclear cooperation agreement was signed. Civil nuclear cooperation has continued to feature in all India-US energy partnership agreements since then.<sup>4</sup>

Nuclear energy should be central to energy cooperation between India and the US, but the partnership has not delivered anticipated gains. The growth rate of nuclear power generation capacity in India was lower after signing the nuclear agreement with the US, though capacity utilization improved as India was able to access the international market for nuclear fuel. US nuclear companies, for their part, are unable to invest in India because of a fundamental incompatibility between international conventions and India's civil liability law.

In contrast, globally traded energy commodities like oil and gas, of which the US is among the largest producers, have yielded to US diplomacy. By the late 2000s, India emerged as the third-largest consumer of energy after China and the US as well as the third-largest importer of oil. Oil and gas became a part of the US-India energy dialogue launched in 2005 to strengthen energy security and promote stable energy markets. In 2014, the US became a net exporter of natural gas, and it capitalized on India's aspiration to increase the share of natural gas from about 6 percent of its primary energy basket to over 15 percent by 2030.

The market mediates liquified natural gas (LNG) purchases on commercial terms, but competition from LNG exporters in the Middle East and Africa, two of India's largest sources of LNG, made US energy diplomacy in the late 2010s vital in securing long-term gas-supply contracts. Today, the US is India's third-largest LNG supplier after the Middle East and Africa. The US became a net oil exporter in 2018 and in just four years it emerged as the fourth-largest source of crude oil supply to India, displacing veteran suppliers like Iran, Venezuela, and the United Arab Emirates.<sup>5</sup> Though sanctions against Iran and Venezuela helped to make this possible, India would have easily found alternative suppliers closer to home but for US energy diplomacy that successfully gained market share in the growing Indian market for crude oil. The decision to accommodate US crude gains significance given the fact that India is an extremely price-sensitive oil market and US crude is expensive. In general, decisions on crude oil purchases are influenced more by refinery-level economics than by state-level geopolitics, which explains India's ongoing purchases of Russian oil at a discount of over \$30/barrel. Affordable crude controls inflation and protects the poor, whose per-capita incomes are about a thirtieth of that of the US.<sup>6</sup>

In the 2020s, India-US partnerships are more likely to pivot around renewable energy (RE) for decarbonizing the energy sector to address the challenge of climate change. In this context, the US-India Partnership to Advance Clean Energy (PACE), signed in 2009 for research and deployment of RE, gains significance.<sup>7</sup> The goals of the PACE initiative are aligned to support India's ambitious RE capacity target of 175 GW by 2022. So far, overseas investment in RE capacity growth in India comprises less than 20 percent of total investment, and the US share is a small part of it.

RE has shifted the strategic advantage from ownership of concentrated energy stocks such as coal, oil, and gas to technologies that can harness dispersed solar, wind, and other renewable forms of energy. In this regard, the US holds a significant advantage, as it was the second-largest RE patent holder, after Japan, in 2010–19.<sup>8</sup> China’s dominance in the RE supply chain shows that technological advantage must be combined with manufacturing prowess to achieve cost-reducing scale advantages. Policies that stimulated market growth, primarily economies of scale from China’s sprawling manufacturing base for solar panels, accounted for a greater share of the exponential decline in cost—better than 97 percent over three decades—than government-funded research and development. India presents a unique opportunity to the US as a potential industrial base for the low-cost production of fuels such as green hydrogen, which is essential for decarbonizing heavy industry. Unlike the solar and battery manufacture sectors dominated by China, there is no incumbent leader in green hydrogen manufacture, which makes India very attractive for US investment. US policy needs to look beyond private sector equity investments in the clean energy sector in India. Equity investments invariably focus on economic returns. But if the goal is to build supply chains to challenge China, long-term strategies that include financial investment, technology support, and state-level coordination are necessary.

Deeper US engagement in India’s RE sector is unlikely to have a downside, as climate change is equalizing vulnerability and forcing a convergence of interests of rich and poor countries. The partnership will be the first to acknowledge that climate change may not remain subject to the prevailing geopolitical winds, driven by security and trade concerns, but will become a force that actively shapes geopolitics.

## NOTES

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### **LYDIA POWELL**

Lydia Powell has been with the Observer Research Foundation for over twenty years, working on energy policy issues in the Indian context. Her current interests include energy access, electricity sector reform, carbon constraints on energy use, and energy security via clean coal and natural gas.

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