



BULLETIN

No. 68 (521), 24 June 2013 © PISM

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India's Energy Thirst: Opportunities for Poland

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The growing demand for energy in India creates vast market opportunities on which Poland could capitalise. Despite the obvious differences in scale, both countries face similar challenges in their energy policies, including the necessity to strike a balance of between traditional and green energy sectors, such as the sustainable, efficient use of coal parallel with the development of clean technologies and increases in renewable energy sources in their energy mixes. This gives the potential for market cooperation in the coal sector, especially, together with joint projects on clean-coal technologies, energy efficiency, and the deployment of renewable energy.

Growing Energy Needs in India. Although India was the world's third highest energy consumer (669 Mtoe in 2009), a quarter of its population (289 million) still has no access to electricity, with per capita energy consumption (0.58 toe/person) at only 7.4% of the OECD average. For example, ownership of motor vehicles was 18 per 1,000 people, compared to 508 in Poland, or 802 in the U.S. This low starting point, coupled with fast economic growth (8% in the last decade on average), a rapidly rising population, growing urbanisation and improving quality of life mean that the thirst for energy in India will rise dramatically. According to International Energy Agency (IEA) estimates, energy demand may increase by five times within two decades, while the consumption of coal and gas will more than triple, and oil will more than double. Moreover, as the massive blackout in northern India in 2012 illustrated, the needs for energy resources and grid development are already acute.

The primary energy supplies of India consist mainly of fossil fuels (coal 42%, oil 24%, and gas 7%), as well as biomass (25%). The share of hydrocarbons will stay pretty much the same until 2035, according to the business as usual scenario predicted by the IEA, although the share of biomass (used mainly in rural areas) is assumed to decrease to 15% due to urbanisation. Although India is developing nuclear energy and renewables, IEA assumes that the share of nuclear energy will rise from just 0.7% in 2009 to 3.3% in 2035 and renewables other than biomass from 1.7% to 2.4%. The country's dependence on imported crude oil is set to rise from 75% to 92% by 2035 and for gas, from 21% to more than 40%, adding an extra burden on the country's balance of payments. To sustain its economic growth, India needs to secure a stable energy supply, continue to reform its energy sector, develop renewable energy and encourage more investments. The total needs for investment on overall energy infrastructure is estimated at \$2.306 billion between 2011 and 2035, much of which must come from the private sector, though some also from abroad. This creates huge market opportunities for foreign companies. For Poland, the largest ones are in coal and mining and green technologies.

Fossil Fuels Back to the Future. In 2012, coal was the source of nearly 70% of India's generated electricity. India was the world's third largest coal producer and consumer in 2011, after China and the U.S., and is expected to become second by 2025. At the same time, despite having the third largest hard coal reserves in the world, the poor quality of domestic coal, rising electricity demand, underdevelopment of the sector, and more competitive global coal prices have turned India into a coal importer. While in 1990 only 2.2% of total demand was met by imports, that figure rose to 11.1% by 2011 (coming mainly from Indonesia, Australia and South Africa), and the IEA estimates it will rise to 34% by 2035. Moreover, most of the coal in India is being recovered from open-pit mining and India will need to acquire machines and technology for underground mining to get to the 40% of its coal reserves that are located 300m or farther below the surface.

Coal mining is in fact the one area in which Poland has competitive advantages. It has been present on the Indian market for decades, with Polish mining companies (such as Kopex) well-known there and appreciated. Poland's unique expertise in underground mining can offer comparatively cheaper, easy-to-use machines and technologies for the extraction industry. It also can offer equipment for coal-fired power plants. Poland also has the world's 10th largest reserves of coal, and major Polish coal companies have recently begun increasing exports to foreign markets. Moreover, Polish academic institutions may also help India train engineers in the mining industry and jointly develop new technologies.

In addition to this, depending on their investment portfolio, some Polish energy companies could also invest in the extraction sector, not only in coal but also in minerals (KGHM), oil, and gas (PGNiG, Lotos and Orlen). Other firms, such as Geofizyka Torun, have been involved in gas exploration in India for many years.

A stable regulatory framework for licensing, improved fiscal policy, and better geological data would encourage more investments in India. On the other hand, Poland could be an interesting destination for the exploration of hydrocarbons by Indian companies operating abroad, i.e., Reliance Industries and the state-run company, GAIL. They already have shares in several blocks of shale gas in the U.S., and GAIL is among the first firms to secure contracts for the import of shale gas to India from 2017. Moreover, as India is also said to have recoverable shale gas resources (up to 3,000 bcm) both countries could cooperate on developing indigenous technology for shale gas extraction.

Getting Greener. Although per capita greenhouse gas (GHG) emissions place India at 133rd in the world, India remains overall the third largest global GHG emitter. At the same time, environmental concerns, the need to improve energy independence, and international pressure have pushed India to dedicate more attention to the development of low-carbon energy sources. Since 2003 the government has introduced incentives for private investments in renewables in the form of a preferential electricity tariff and a mandatory renewable purchase obligation for power utility companies. Moreover, after launching in 2008 the National Action Plan on Climate Change, the government of India invested directly in expanding solar power infrastructure (Nehru National Solar Mission programme) and in the development of wind power and geothermal energy generation. However, to green the Indian energy sector will require increasing energy efficiency, mostly in the coal sector, and expanding distributed energy resource systems, with the parallel development and deployment of clean technologies.

As a post-socialist state, Poland faces similar challenges and shares India's interests in energy and climate policy. It has to balance ambitious EU climate targets with the reality of the significant share of coal in its energy mix (59% of the primary energy supply). Therefore Poland is developing environmental technologies that can be of interest to India, especially coal technologies and increasing biomass efficiency. Some of these have already been promoted in India through the Green Technology Accelerator (GreenEvo) project by the Ministry of Environment. This initiative should also facilitate forming joint ventures in the field to fulfil the Indian requirement of local content. At the same time, bilateral cooperation may focus on innovative solutions in clean coal technologies available abroad (such as integrated gasification combined cycle, coal refining, or carbon capture and storage). Poland could also follow the example of other countries (such as the U.S., Germany and also Hungary) and set up a joint technology fund for R&D in the sector.

Towards a Poland-India Energy Partnership. Due to the large number of reasons cited, the energy sector has the potential to emerge as a priority area of Polish-Indian cooperation. Both India and Poland are coal-based economies that need to deploy more low-carbon technologies to sustain economic growth without an adverse impact on the environment. Having relatively low per capita GHG emissions, they will continue to rely on fossil fuels to meet their energy demand in the coming years, but will need to increase investments in low emission sources.

This opens an opportunity for a comprehensive partnership encompassing cooperation in traditional, unconventional and renewable energy. In the short term, the largest potential for Poland lies in the coal and mining sector (export of coal and lignite, machinery, development of underground mines, scientific and technological cooperation). However, exploration and extraction of oil and gas (including shale gas) and joint development of green technologies offer rising opportunities. To facilitate trade and investment, both governments should prioritise the dialogue on energy and create platforms for contacts between energy officials, companies and experts (for example, through annual energy summits, sectoral trade missions, etc.). It seems also a credible idea to set up a joint energy fund to give a boost to research in conventional and clean energy technologies.