Obama's Clean Power Plan Could Have Lessons For India – OpEd

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On 3 August, President Obama launched the enhanced version of the Environmental Protection Agency (EPA)'s original proposed Clean Power Program. This sets ambitious targets for reducing greenhouse gas emissions and pollution from the US power sector. The plan has many features that could be of interest to India, and perhaps even more relevant in the context of emission reductions.

The basic features of Obama's plan may be summarized as follows – (1) New national carbon pollution standards for the first time for power plants, aimed at cutting carbon and particulate emissions (2) Reduction (over 2005 levels) from the power sector of oxides of Carbon (32 percent), Sulphur (90 percent) and Nitrogen (72 percent) (3) Transition to cleaner sources of energy, especially to renewable energy. The projected economic benefits of the plan are Climate related benefits ($20 billion), Health related benefits ($14-34 billion), and avoiding each year 3600 deaths, 1700 heart attacks, 90,000 asthma attacks and loss of 300,000 work and

school days due to illness.

The plan is based on (1) close partnerships between the Federal government and State governments (2) separate standards for coal/oil and natural gas based plants (3) State level targets in terms of CO2 per kilowatt hour (kWH) of power, and total CO2 emissions. (4) State level incentives for clean and renewable energy (5) Flexible mechanisms for implementing plans. .These targets are to be met singly or in combination with other states (including through emissions trading etc.) during 2022-2029. The mechanisms offer flexibility to the States which are required to submit final plans by September 2016.

The flexible mechanisms bear some similarity with the Clean Development Mechanisms of the Kyoto Protocol at the international level, where states can work together to meet carbon emission targets.

The US power sector has a total capacity of 1060 Gigawatts (GW) (2013), and the mix is thermal/fossil (72%), Nuclear (9.3%), Hydro (7.5%), and Wind (5.7%). The total electrical energy generated in 2013 was 4113 Tera Watt Hours (TWH), with major contributions from Coal/oil (39%), Gas (27.7%), Nuclear (19.2%), Hydro (6.5%), Wind (4.1%) and other renewable sources (2.1%).

The US is giving high priority to renewable energy. By 2013 12.9 % of energy production came from renewables, up from 9% in 2002. Despite lower availability of sunlight, US solar photovoltaic power generation has shot up from 1 TwH in 2011 to 16 TwH in 2014 and is set to grow at high rates. The growth rates may accelerate further given rapid advances in technology.

This mix of power generated by source is comparable to that of India. India has total power generation capacity of 272 GW (2015), which comes from Coal/Oil (61.1%), Gas (8.5%),Nuclear (2.1%), Hydro (15.2%), Other renewable sources (13.2%). The coal and other renewable sectors have shown high growth rates in recent years. It is planned to add 84 GW more capacity from coal/gas powered plants in the next two years. India, being a rapidly growing economy naturally will need to have high growth in power generation to sustain this growth rate.

There are some aspects of the Obama plan that may be relevant to the Indian situation. Standards on emission levels for coal and gas based plants would be useful for India. Being a federal democracy like the US, state level targets and flexible mechanisms including emissions trading among states could also be relevant for India. Reliance on coal as the main source has disadvantages. The quality of Indian coal is lower and the average production of power from Indian coal is 0.7 kg/kWH, while for the US it is 0.45 kg/kWH. Dependence on imported coal is likely to increase leading to pressures on balance of payments and energy insecurity. Thus India has to move out of coal based power production in the long term.

Indian natural gas based power plants which have greater efficiency and lower carbon emissions, are suffering from a shortage of natural gas. The dependence on natural gas via LNG or pipelines through neighbouring countries will increase, again leading to energy insecurity. Fossil fuels, including coal and gas are a depleting resource and represent only a tiny fraction of solar energy trapped over millions of years. The nuclear power scenario is also not encouraging, with very high capital costs, long gestation periods, and issues of safety, security, and radioactive waste management. Therefore India has no choice but to go in for renewable energy on a large scale.

In the renewable sector, solar power in particular offers great promise. India receives per year some 5 million TwH of solar energy, compared to only 938 TwH of total electricity consumption in 2014. The US has already achieved a levelized tariff of 4 cents (Rs 2.6) per kWH for solar power, which could make it competitive in India. Solar power can be generated in a decentralized mode, requiring less investment in transmission and distribution systems. There is rapid advance in technology in the direction of making photovoltaic cells more

efficient and cheaper to manufacture. Tapping solar power in a big way would create jobs, skills and boost economic development, besides strengthening energy security, price stability, and access to energy for all. It would be a boon for the rural sector and scattered communities.

Besides solar power, wind energy and hydro power especially from the North East and Bhutan offer promise. These sources are actually derived from solar energy. India has already added considerable wind energy capacity of 23 GW and can add more in future.

It follows that any Indian approach to clean power will have to provide incentives for renewable energy. Incentives could be in the form of carbon credits, higher feed in tariffs, better tax and depreciation regimes, lower cost credit, etc. A vast untapped capacity exists in the area of small solar power at household level. To unlock this resource, a smart grid using net metering combined with incentives will be needed.

Under an approach similar to the Obama plan, Indian states could go ahead with any or all measures to tap renewable energy in a large way. Many forms of energy such as coal, oil, gas, hydro, and wind are actually derived from solar energy. So why not go to the root and tap it ? This could strengthen India's economy and also meet international commitments to improve energy intensity in GDP, as part of the global effort to reduce climate change.