



A CAG Initiative

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Educating & Informing Stakeholders on Energy, Environment & Thermal Power Plants

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INDIA'S COAL-BASED THERMAL POWER PLANT MOST INEFFICIENT IN THE WORLD: CSE REPORT

Indian coal-based thermal power plants are some of the most inefficient in the world, noted a two-year-long research study by the Centre for Science and Environment (CSE). Conducted under CSE's Green Rating Project (GRP), the study is the first of its kind done for this industrial sector by evaluating its environmental performance and compliance.

Explaining the study released by M.S. Swaminathan, the 'father' of India's Green Revolution, here on Saturday, CSE director general Sunita Narain said: "The objective of the study was to give a clear picture of the environmental performance of the sector."

"Our finding is that in India, where the demand for power is increasing, power plants are performing way below the global benchmarks. Given the rapid increase in coal-based power projected by the government, stress on precious resources like water and land will increase and air and water pollution will worsen, unless corrective measures are taken by the industry and policy-makers," she noted.

Also present at the release was Union Ministry of Environment, Forests and Climate Change secretary Ashok Lavasa, and chief economic advisor Arvind Subramanian.

The plants were rated on around 60 parameters covering everything from coal and water use and plant efficiency to air and water pollution and ash management. Local community views and impact on them were given due weightage along with the plants' compliance record and environment policies. The ratings involve comparing the performance of the plants against the best practices.

Priyavrat Bhati, programme director of CSE's Sustainable Industrialisation team (which is behind the project), said:

"The most striking part of the ranking is that 20 plants did not get a single leaf, which is a reflection of their particularly poor environmental performance. Some of the plants did not want to participate. Yet, we assessed them on the basis of field-level surveys and publicly available data." He added: "We were encouraged by the transparency shown by a number of State-owned plants that disclosed data despite being inefficient and highly polluting."

(Hindu, Feb 22, 2015)

<p>NO MORE GREEN</p> <ul style="list-style-type: none"> 47 plants spread over 16 states selected for rating Sector scores poorly on all parameters getting a mere 23 per cent score compared to 60 per cent that a plant following all best practices can get Use of inefficient resources and technological backwardness leading to high levels of pollution Plants operating at 60-70 per cent capacity only West Bengal-based plant comes out at the top. Delhi-based NTPC/Badliapur plant one of the most polluting in the country 	<p>SCORECARD</p> <ul style="list-style-type: none"> The sector's overall score was mere 23 per cent. The average efficiency of the plants in the study was 32.8 per cent, one of the lowest among major coal-based power producing countries. Average CO2 emission was 1.08 kg/kWh, 14 per cent higher than China. The top performers were West Bengal-based CESC-Budge Budge, followed by JSW, Toranagalu (Karnataka), Tata-Trombay (Maharashtra) and JSW-Ratanagiri (Maharashtra). They scored between 45-50 per cent. Tata-Mundra (Gujarat) received an award for having the highest energy efficiency, while Gujarat Industries Power Company Ltd (GIPCL), Surat, won an award for lowest water use. A disappointing 40 per cent of the plants in the study received less than a 20 per cent score. 	<ul style="list-style-type: none"> India's thermal power plants withdraw around 22 billion cubic metres of water, which is over half of India's domestic water need. Even the plants with cooling towers use an average of 4 m³/MWh; the average water consumption in Chinese plants is 2.5 m³/MWh. Fifty-five per cent of the units were violating air pollution standards which are already extremely lax - particulate matter (PM) norms are at 150-300 mg/m³ (milligram per normal metre cubed) compared to Chinese norms of 30 mg/m³. Fly ash disposal remains a major problem. Presently, only about 30-60 per cent of the 170 million odd tonnes of fly ash generated by the sector is "utilised"; the remaining is dumped into poorly designed and maintained ash ponds. Currently, about a billion tonnes of these toxic ashes lie dumped in these ponds, polluting land, air and 	<ul style="list-style-type: none"> water. By 2025-22, the sector will produce 300 million tonnes of fly ash every year. Ash slurry which has toxic heavy metals, was found in river and reservoirs of 20 plants. Test done found that nearly 40 per cent of the plants did not meet the basic total suspended solid (TSS) norms for effluents discharged by them. 60 percent plants had not installed effluent and sewage treatment plants Thirty-six of the 47 plants were unable to meet the MEP's mandated target of utilizing 90 per cent of the solid waste (ash) generated - average use was only 54 per cent. The performance of the NTPC Ltd, the largest coal-power producing company in India, was found to be below par. NTPC did not disclose its data, and hence was rated based on a primary survey and publicly available information. The six plants of NTPC that were rated received scores of 35-28 per cent.
<p>THE WAY AHEAD</p> <ul style="list-style-type: none"> National norms for PM are weak and need to be brought in line with global standards. National norms for SO₂, NO_x and mercury are absent and need to be established with short breathing room to install new abatement technologies. Monitoring by regulators should be strengthened - they 	<ul style="list-style-type: none"> should be given more powers to enforce compliance. Ash policy should support higher usage of ash. Coal washing capacity needs to be doubled to meet increased use. Regulations/incentives to ensure improvement in capacity utilisation. Approvals for new capacities 	<ul style="list-style-type: none"> should be only for supercritical/ ultra supercritical plants. Old inefficient plants should be closed at an aggressive pace. Efficiency improvement schemes like Perform, Achieve and Trade (PAT) should be strengthened with ambitious targets and more thorough analysis of plants' performance. The dispatch order (i.e. the 	<ul style="list-style-type: none"> sequence in which plants are asked to supply power) should ensure polluting plants are not called first because they are the cheaper. Clearances given to new capacities should be based on best achievable water consumption practices and levels. Water tariffs should be increased to curb excessive use.
<p>BEST PERFORMING COMPANIES</p> <ul style="list-style-type: none"> CESC Ltd, Budge Budge JSW Energy Ltd, Toranagalu The TATA Power Company Ltd, Trombay 	<p>VARIOUS PARAMETERS INVOLVED</p> <ul style="list-style-type: none"> Energy (24) Air Pollution (19) Water Use (16) Ash Handling (15) Water Pollution (8) Green House Gas (5) 		
<p>PLANT EFFICIENCY FOR 2010-13 (IN %) SAMPLE BEST</p> <ul style="list-style-type: none"> Tata, Mundra (38.1) SAMPLE WORST JSER, Patnata (23.4) 	<p>INDIA'S RATING IN EFFICIENCY FOR 2011</p> <ul style="list-style-type: none"> India (32.8) China (35.7) USA (35.8) Japan (40.5) 		

BUDGET 2015: INDIA RAISES COAL CESS; ELECTRICITY TARIFF TO GO UP BY 4-6 PAISE PER UNIT

The government proposed to raise levies on greenhouse gas-emitting coal, a move that will increase electricity tariffs while strengthening India's position at upcoming global climate change negotiations.

"I propose to increase the clean energy cess from Rs.100 to Rs.200 per tonne of coal, etc. to finance clean environment initiatives," finance minister Arun Jaitley announced in budget speech. The cess, which applies to coal mined in India as well as imported coal, will result in a tariff increase of 4-6 paise per unit.

This comes in the backdrop of India working on a plan to reduce borrowing costs and improve the viability of solar and wind power projects by extending hedging support for foreign loans, leveraging the National Clean Energy Fund.

India, the world's third largest emitter of greenhouse gases, is among the few countries in the world to have introduced a carbon tax. Of India's installed power generation capacity of 255,681.46 megawatts (MW), around 60%, or 154,170.89MW, is coal-based. The cess at current levels aggregates to Rs.6,000 crore every year.

With mining activity expected to pick up in the country after the coalfield auctions, the annual collection is expected to substantially increase.

"Also, for the 75th year of independence, there will be 60 million houses to be built. These houses will have 24x7 electricity—this will give a huge boost to the electricity sector consumption. Coupled with a push for Make in India, going forward the demand for electricity will grow in excess of 7% per annum," said Debasish Mishra, Deloitte Touche Tohmatsu India Pvt. Ltd.

India has substantially revised an earlier solar energy target of achieving 20,000MW of capacity by 2022 to 100,000MW. It plans to put in place 60,000MW of wind power capacity by then. While India has set up a green energy target of 1,75,000MW by 2022, green energy has a share of 12.42%, or 31,692.14MW. The country's National Action Plan on Climate Change recommends that the nation generate 10% of its power from solar, wind, hydropower and other renewable sources by 2015 and 15% by 2020.

"The general emphasis on renewable energy and restating of the MNRE (ministry of new and renewable energy) target to 175GW by 2022, comprising 100GW of solar, 60GW of wind and 15GW of other technologies is not adequate to make capacity creation happen in reality. Prima facie, we have not seen any concrete measures in the budget for renewable energy," said Anish De, KPMG.

"Given this, any funds from tax-free bonds will now have to come out of the general pool of infrastructure bonds. Also, the proposals for the utilization of funds from the increased coal cess are yet to be spelt out. It would have been better to propose specific allocations and measures for renewable energy, especially on availability of low cost funds for the renewable energy sector," De said.

"The intent to drive new investment in generation through 20GW UMPP and 175GW of renewable energy by 2022 is welcome and necessary, but to continue to attract investors its necessary to revive the distribution sector and its abil-

ity to pay," added Kameswara Rao, leader energy, utilities and mining at PwC India.

Power to all

As part of the government's energy security efforts, the finance minister announced setting up five new ultra mega power projects (UMPPs) at an investment of Rs.1 trillion. UMPPs are India's attempt to create large power generation capacities at a single location. It has had its share of problems, weighed by ecological concerns and local resistance.

UMPPs follow competitive tariff-based bidding, and special purpose vehicles (SPVs) are set up to reduce risk perception and to increase investor confidence. These SPVs take care of regulatory requirements such as land acquisition and environmental clearance, and transfer these to the winning bidder. The United Progressive Alliance (UPA) government had plans to set up 16 UMPPs, but only four have been awarded.

This comes in the backdrop of 300 million Indians lacking access to electricity with per-capita electricity consumption being one-fourth of the world's average.

"Electrification, by 2020, of the remaining 20,000 villages in the country, including by off-grid solar power generation," Jaitley promised.

"As environmental degradation hurts the poor more than others, we are committed to make our development process as green as possible. Our de facto 'carbon tax' on most petroleum products compares favourably with international norms. With regard to coal, there is a need to find a balance between taxing pollution, and the price of power. However, beginning this year, I intend to start on that journey too," Jaitley said.

[Livemint](#), Feb 28, 2015

Switch to LED flashlights.

*With a lifespan of almost
100 000 hours, this lamp
will serve you for dozens
of years without producing
any waste or pollution!*

EU LAUNCHES ENERGY UNION STRATEGY

The European Commission on Wednesday unveiled its ambitious plan to unite the power markets of member states into an Energy Union.

European Commission Vice President Maros Sefcovic says the Energy Union is "the most ambitious European energy project since the Coal and Steel Community."

European Commission Vice President Maros Sefcovic and Energy Commissioner Miguel Arias Cañete presented the Commission's new strategy for the Energy Union on Wednesday.

The EU's principles for an internal energy market are reflected in the announcement. An Energy Union, said the Commission, is about secure, sustainable and affordable energy. Specifically, the project will "allow a free flow of energy across borders and a secure supply in every EU country, for every citizen. New technologies and renewed infrastructure will cut household bills and create new jobs and skills, as companies expand exports and boost growth. It will lead to a sustainable, low carbon and environmentally friendly economy, putting Europe at the forefront of renewable energy production and the fight against global warming."

For these reasons, said Sefcovic, the Energy Union is "the most ambitious European energy project since the Coal and Steel Community."

Added Cañete, "After decades of delay, we will not miss another opportunity to build an energy union."

This is seemingly the best timing for the Commission to pursue its energy agenda. Leading German daily Sueddeutsche Zeitung reported yesterday that plans are afoot in Brussels to break Russia's dominance by

coordinating the energy policies of member states in the new Energy Union that would strengthen the EU's negotiating position with its powerful eastern neighbour.

Although, the Russian factor cannot be ignored and is indeed triggering the EU bloc to think and plan differently, there is no doubt it also provides the Commission with a great excuse to push towards its market-dominated energy agenda.

This isn't the first time the Commission has attempted to do so. In 2007, the Commission proposed, among other things, the full structural unbundling of the transmission networks from the other parts of the energy business in an effort to promote the development of an internal energy market, achieve lower electricity prices and promote investment. Some member states endorsed the Commission's proposals but others, such as Germany and France, fiercely opposed it. From that point onwards there was an interesting political game, which lasted for almost two years and ended in June 2009 with the adoption of the Third Legislative Package, which makes electricity networks unbundling voluntary.

The lesson is that some countries favour the energy sector's segmentation into national markets out of fear of opening their energy incumbents onto pan-European competition. The European Commission fully understands this very well and has now found the perfect timing to pursue its interests, which build on the expansion of the single market,

the EU's core principle. It remains to be seen who will win the game.

Commenting on today's EU announcement, Frauke Thies, policy director at the European Photovoltaic Industry Association (EPIA), commented: "Now the Commission should follow up words with action. Europe



needs an adapted energy market that boosts rather than hampers the energy transition and empowers consumers to access and control affordable, clean and secure energy."

Frederik Dahlmann, assistant professor of global energy at the Warwick Business School in Coventry, England, added, "The process of further market integration will inevitably challenge established companies and their business strategies, but it also opens up the possibilities for innovation and new competitors. These are sorely needed to translate the high-level policy efforts into tangible benefits for European consumers, economies and the environment."

The following months and years will see a high level policy game unfolding, involving lobbying interests from all major energy stakeholders. Hopefully, the renewable energy's voices will also be heard and the need for further competition will prevail.

[PV Magazine](#), Feb 25, 2015

Energy Union is "the most ambitious European energy project since the Coal and Steel Community."

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Established in 1985, Citizen consumer and civic Action Group (CAG) is an advocacy and campaigning group that works towards protecting citizens rights in consumer and environmental issues and promotes good governance processes including transparency, accountability and participatory decision-making.

US ELECTRICITY GENERATION BY SOURCE ([NREL YEARBOOK](#), 2013)

U.S. Electricity Generation by Source

	Coal	Petroleum Liquids	Petroleum Coke	Natural Gas	Other Gases	Nuclear	Renewables	Other	Total Generation (GWh)
2000	51.6%	2.7%	0.2%	15.8%	0.4%	19.8%	9.4%	0.1%	3,807,955
2001	50.8%	3.1%	0.3%	17.1%	0.2%	20.5%	7.7%	0.3%	3,745,745
2002	50.0%	2.0%	0.4%	17.9%	0.3%	20.2%	8.9%	0.3%	3,867,498
2003	50.7%	2.6%	0.4%	16.7%	0.4%	19.6%	9.1%	0.4%	3,892,115
2004	49.7%	2.5%	0.5%	17.8%	0.4%	19.8%	8.8%	0.4%	3,979,023
2005	49.5%	2.5%	0.6%	18.7%	0.3%	19.2%	8.8%	0.3%	4,062,458
2006	48.9%	1.1%	0.5%	20.1%	0.3%	19.3%	9.5%	0.3%	4,071,962
2007	48.4%	1.2%	0.4%	21.5%	0.3%	19.4%	8.5%	0.3%	4,164,748
2008	48.1%	0.8%	0.3%	21.4%	0.3%	19.5%	9.3%	0.3%	4,127,019
2009	44.4%	0.7%	0.3%	23.3%	0.3%	20.2%	10.6%	0.3%	3,956,990
2010	44.7%	0.6%	0.3%	23.9%	0.3%	19.5%	10.4%	0.3%	4,133,854
2011	42.2%	0.4%	0.3%	24.7%	0.3%	19.2%	12.6%	0.3%	4,112,181
2012	37.3%	0.3%	0.2%	30.3%	0.3%	18.9%	12.4%	0.3%	4,067,551
2013	38.9%	0.3%	0.3%	27.3%	0.3%	19.4%	13.1%	0.3%	4,074,457

REGULATIONS AND CASES

- EU, Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe click [here](#)
- MOEF & CC, Office Memorandum : dated 31-12-2014 regarding simplifying procedures for Consent Management, Categorization of Industries (Red, Orange and Green) and issues relating to third party Inspections. Click [here](#)

PUBLICATIONS

- International Energy Agency (IEA), CO2 Emissions From Fuel Combustion Highlights 2014, 2014. click [here](#)
- EU, Cases of implementing resource efficient policies by the EU industry (2014), EU. click [here](#)

MISCELLANEOUS

- MIT video series, How to Think about Energy and Climate: A MITEI Energy Colloquium with George Shultz videos, 2014. click [here](#)
- ENERGY STAR Publications, Energy Posters, US Government, click [here](#)