COAL POWER STATIONS

At the end of the 11th Five Year Plan (2012), coal based power generation contributed over 134 GW i.e. 56% of India's total capacity and 66% of electricity generation. India's low per-capita electricity consumption of around 900 kWh (1/3rd of the world average) and low levels of electricity access (68% of the population) demands significant addition in electricity supply. In the last decade, coal based power generation capacity was doubled. This source of power generation grows as Levels are chosen from 1 to 4, and draws coal from domestic supplies as per the chosen Level (choice to be made separately). The balance is pulled from imports.

Level 1

Coal based power generation within India is discouraged due to increasing fuel prices, import dependence, pressure to reduce carbon emissions and impetus towards renewable energy. This is the most pessimistic scenario hence no new build capacity is introduced after 2017 and the cumulative installed capacity reduces to 98 GW by 2047. Plant load factor (PLF) of power plants remains 73% up to 2032 and improves to 74%, thereafter. As a result, total electricity generated in 2047 from coal-fired power plants would be 612 TWh, compared to 772 TWh in 2012.

Level 2

Level 2 projections are in line with the Planning Commission's projections for the next decade, with a reduced growth rate thereafter. Installed capacity will grow rapidly to 297 GW in 2027, and then grow slowly to 333 GW in 2047 due to increasing coal prices, increasing import dependence and increasing pressures to reduce emissions. PLF is assumed to improve to 75% for the next two decades and to 76% thereafter. Electricity generated from coal-fired plants in 2047 would be 2141 TWh.

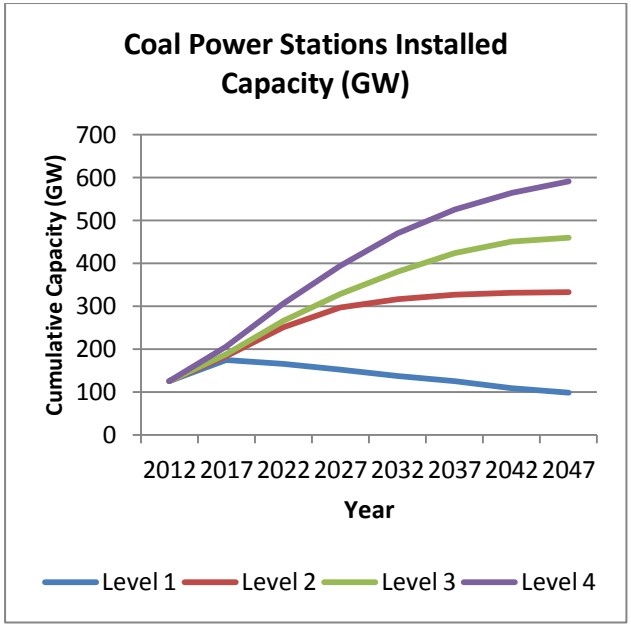
Level 3

Level 3 assumes capacity addition at a slightly lower level than what is assumed for the 8% GDP growth scenario, in the interim report of the Expert Group on Low Carbon Strategies for Inclusive Growth until 2032. The growth rate of capacity addition is assumed to reduce subsequently. In this scenario, installed capacity will grow to 381 GW by 2032, and then slow down to reach 459 GW by 2047. Current PLF will improve to 77% for the next two decades and to 78% for further 15 years, resulting in total generation of 3051 TWh in 2047.

Level 4

Level 4 assumes a high coal based capacity, yet lower than what is assumed for the 9% GDP growth scenario in the interim report of the Expert Group on Low Carbon Strategies for Inclusive Growth until 2032. The growth rate of capacity addition is assumed to further reduce thereafter. Under this scenario, installed capacity will grow to 591 GW in the next 35 years due to improved domestic coal supply, softening of imported coal prices and availability of more carbon space to countries like India. Current PLF will improve to 79% for next two decades and to 80% for the further 15 years, resulting in electricity generation of 4038 TWh in 2047.

Hence, coal based generation basically offers an answer to India's high import dependency, should there not be robust development of other fuels. However, a fine balance is called for as very high Levels of generation would require large imports of coal, too. Moreover, coal generation would have implications on land (coal mining), water and CO2 emission.



Note: Please see detailed documentation for references.