Efficiency of Coal Power Stations

Around 75% of total power plants in Andhra Pradesh (in 2015) are based on sub critical technology. Recently, Damodram Sanjeevaiah, Painampuram and Vizag thermal power stations with a combined capacity of 2.3 GW were commissioned which are based on super critical technology. This lever analyzes the coal requirement under different scenarios of adoption of new efficient technologies like super-critical, ultra super-critical technology etc. Based on these, users can estimate the quantity of coal required to meet the desired level of power supply. The factors/levers are ease of accessing technology, policy drivers, power markets and availability of high grade coal.

Level 1

Level 1 assumes that subcritical capacity addition will stop only after 2030, ultra supercritical technology will be introduced only in 2030 and IGCC (Integrated Gasification Combined Cycle) is introduced in 2040. Share of super critical, ultra-super critical and IGCC technologies in the coal based capacity addition during 2045-50 would be 40%, 30% and 30%, respectively.

Level 2

Level 2 assumes that subcritical capacity addition will stop after 2020. Ultra super critical technology would be adopted by 2025 and IGCC will be commercialized by 2035. IGCC will contribute 50% of the capacity addition during 2045-50, ultra super critical will have a share of 40% and super critical technology will contribute to only 10% of capacity addition.

Level 3

Level 3 assumes a faster adoption rate of new and efficient technologies. Only existing sub critical plants which are under construction will be commissioned by 2020 and thereafter no new subcritical plants will be added. Ultra super critical technology would be adopted by 2025 and IGCC will be commercialized by 2035. Share of super critical plant in additional capacity during 2045-50 will decrease to 5% and share of IGCC's would increase to be 65%. Remaining 30% plant will be from ultra super critical technology.

Level 4

Level 4 is the most aggressive scenario which assumes that new technology deployment will be aggressively promoted. Only existing sub critical plants which are under construction will be commissioned by 2020 and thereafter no new subcritical plants will be added. IGCC will contribute 80% of the capacity addition during 2045-50 and remaining 20% will be of ultra super critical technology.

Technology penetration by 2050