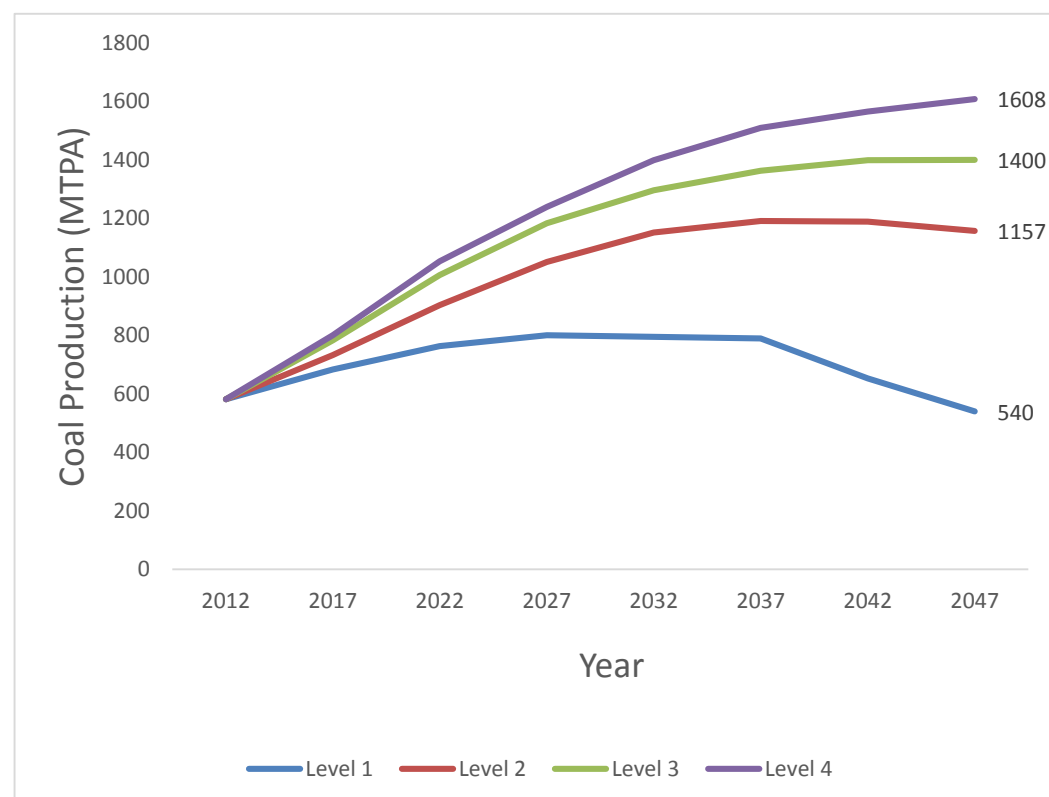


DOMESTIC COAL PRODUCTION

Coal contributes over half of India's primary commercial energy, and it is likely to remain India's most important source of energy for the next 2 decades. After nationalization of coal mines in 1973, coal production improved significantly. However, presently there is continued shortage and imports have increased meeting nearly 25% of demand. Finally while official numbers of coal resources and reserves have been published every year with an average increase of almost 2.5 % per year for last two decades, the quantity of actual techno-economically mineable coal reserves in the country is still not clear. In the present analysis, the 4 Levels examine the likely coal supply from domestic sources up to 2047. The likely factors/levers herein are improved outlook on reserves, growth in coal based power capacity, speedy statutory approvals and deployment of technology/private capital.



LEVEL 1

Level 1 assumes that only the currently operating, on-going and planned coal mining projects by CIL (437 MTPA) and SCCL (41 MTPA) and currently allocated captive blocks (43 billion ton geological reserves) will come online. Production from current (non-captive) mines will reduce by 17% every 5 years (consistent with mine life of 30 years) due to closure of mines. Production from captive blocks will start reducing from 2027 onwards as most of the currently producing captive blocks are new. Coal reserves and mineability of all reserves will remain at present values. In this scenario, coal production gradually increases from 582 MTPA in 2011-12 to peak of 801 MTPA in 2027 and then it will start declining and reach 540 MTPA in 2047. About 80% of the mineable coal reserves will have been extracted by 2047 in this scenario as no new reserves are added and there is no improvement in mineability. Also, only OC mining, which is easier and cheaper, will be encouraged whereas the UG mining will be discouraged. So, the UG % will reduce from current 9% level to 6.4% in 2047.

LEVEL 3

Level 3 is consistent with the optimistic scenario projections till 2022 in the 12th Five Year Plan, tempered by slower-than-expected increase in production. The rate of increase of production reduces slightly going forward. Proved coal reserves will grow at about 1.3% p.a. and there would also be further improvement in mineability. With these positive conditions for coal based energy supply, coal production will be 1400 MTPA in 2047. About 55% of mineable coal reserves would have been extracted by 2047. UG mining will also be encouraged progressively to tap deeper coal reserves and its share will increase to 10.7% in 2047 from the current 9%.

LEVEL 2

Level 2 projections are consistent with realistic (business as usual) projected scenario based the 12th Five Year Plan till 2022. Given that the production for 2012-13 fell about 18 million tons short of the target of 575 million tons, we assume that the total shortfall from the target in 2017 would be 50 million tons. This results in an annual production increase of about 5% per annum up to 2017, and about 4% up to 2022. Proved coal reserves will grow at a reduced pace of 1% p.a. as most of the prognosticated coal bearing area (75%) has been explored. There would be some improvement in mineability due to technological improvement. In this scenario, coal production will grow to peak at 1191 MTPA in 2037 and decline marginally by 2047 to 1157 MTPA. About 62% of mineable coal reserves would have been extracted by 2047. OC mining will be encouraged but UG mining will not be paid much attention. So, UG mining's % will increase just slightly from current 9% to 9.3% in 2047.

LEVEL 4

Level 4 is the most optimistic, assuming full encouragement for coal based energy supply. Proved coal reserves will grow at 1.5% p.a., production will reach about 1400 MTPA in 2032 as anticipated in the Integrated Energy Policy document, and mineability will increase better than in other levels. In this scenario, coal production will increase to about 1608 MTPA in 2047, almost consistent with the high-case scenario of global coal production as per Global Coal Production Outlook. In this scenario, about 48% of mineable coal reserves would have been extracted by 2047. UG mining will be emphasised significantly along with technological advancements but its share will increase only to 12.3% in 2047 from 9% in 2012 due to geological constraints.