

DOMESTIC GAS PRODUCTION

India has 26 sedimentary basins out of which 15 sedimentary basins have been surveyed to some degree of satisfaction. The prognosticated hydrocarbon resource (oil + oil equivalent of gas) estimated by DGH for the 15 basins is about 28 billion tonnes. Out of this, 9.8 billion tonnes of initial in place (IIP) reserves have been established as of 01.04.2012. The share of oil IIP is 6.13 billion tonnes (62%) and that of gas is 3.71 billion tons (38%), the share of gas rising in the recent years. The Gas recovery factor is currently in the range of 55-60%. With the growth in O+OEG reserves from 2004 to 2012 at a CAGR of 2.4%, total IIP reserves is projected to be 22.4 billion tonnes in 2047. The share of oil and gas IIP would be 8.9 (40%) billion tonnes and 13.4 billion tonnes (60%), respectively. The four Levels of likely gas production leading upto 2047 are based on rising recovery factors (R/F) and production of unconventional sources of gas.

Level 1

Level 1 incorporates only future production from the current discoveries of conventional gas and CBM (not from new discoveries). Historical production has been taken into account. It does not include any production of shale or Underground Coal Gasification (UCG). Domestic gas supply reaches about 82 BCM in 2047. This Level assumes R/F of 55%. The share of PVT/JVCs in the total production would be 40% as compared to 56% of NOC (ONGC-42% & OIL 14%)

Level 2

Level 2 assumes moderate development of CBM achieving peak production of 5 BCM in 2032 and remains static thereafter. Shale gas makes its debut at end of the 13th Five Year Plan (FYP) i.e. 2021-22. It assumes no UCG production. This Level assumes continuation of the present gas price and utilization policies, which are perceived as restrictive by International Oil Companies (IOCs). This takes into account new gas production of NOCs/Private, as new fields get appraised and go into commercial production. Level-2 assumes R/F of 60%. The domestic gas supply would reach a level of 137 BCM in 2047. The share of PVT/JVCs in the total production of natural gas

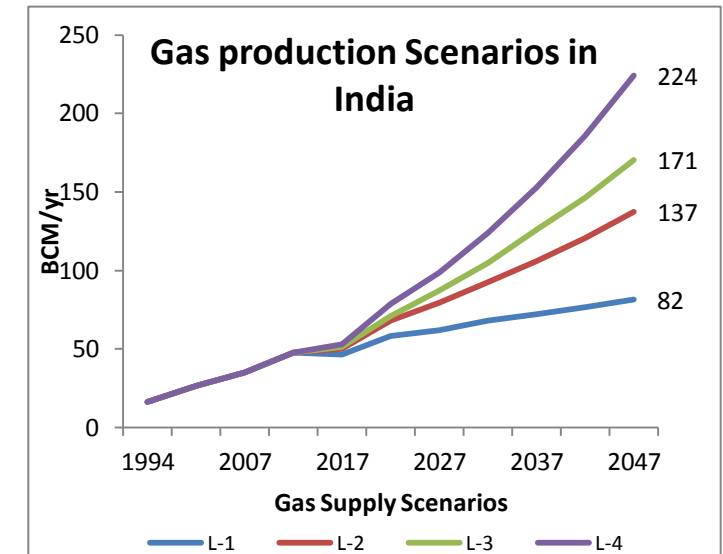
would be 36% as compared to 58% of NOCs (ONGC-48% & OIL 10%) and rest of unconventional share from shale gas and CBM.

Level 3

Level 3 envisages additional policy inputs to spur the growth of natural gas sector. It assumes attractive fiscal regime for exploration, and price/utilization approvals are no longer required as the gas market has completely evolved in India. CBM will achieve a peak production of 8 BCM in 2032 and will remain static thereafter. It assumes shale gas production starting from middle of the 13th FYP. It also assumes gas production coming from Underground Coal Gasification (UCG) of 2 BCM/annum from 2027 onwards (15th FYP). It assumes R/F of 70% from the existing fields. Gas supply would reach about 171 BCM by 2047. The share of PVT/JVCs in the total production would be 33% as compared to 59% of NOCs (ONGC-49% & OIL 10%) in natural gas, and rest share of shale gas, CBM and UCG.

Level 4

Level 4 assumes a globally competitive upstream regime wherein IOCs find it attractive to invest in India and free gas market has set in. It assumes an aggressive conventional gas scenario and CBM exploitation, a moderate shale gas production and commencement of UCG from 15th FYP but maximum supplies from UCG is about 5 BCM/ annum. Even the un-assessed 11 sedimentary basins may come under production in the later decades. This scenario finds support from a carbon reduction drive of the Government, too. Level-4 assumes R/F of 80% which would safely sustain production level of 224 BCM/year in the year 2047 with establishment of conventional gas resources of 10.7 billion Tonnes of Oil equivalent of gas. India holds 933 TCF of has hydrate reserves (source: DGH) however, no commercial production has been established yet. Based on technological breakthrough by Japan for first gas hydrate production in March, 2013 at pilot scale, Indian estimates of 933 TCF of gas hydrate production may come into reality. Taking 10% R/F, we may consider the resource of about 93 TCF (total of about 2.63 TCM) only, as there is no assurance of commercial establishment of production from gas hydrates. The share of PVT/JVCs in the total natural gas production would be 32% as compared to 54% of NOCs (ONGC-46% & OIL 8%) and rest unconventional share would be about 12% including shale gas, CBM, UCG and gas hydrates.



Note: Please see detailed documentation for references.