

DOMESTIC OIL PRODUCTION

India has 26 sedimentary basins out of which 15 sedimentary basins have been surveyed. The prognosticated hydrocarbon resource estimated by Directorate General of Hydrocarbons (DGH) for 15 sedimentary basins is about 28 billion tonnes (oil + oil equivalent of gas (O and OEG)). Out of this, 9.8 billion tonnes of initial in place (IIP) reserves have been established as of 2012. The share of oil IIP is 6.13 billion tonnes (62%) and that of gas is 3.71 billion tonne (38%). The recovery factor (R/F) currently is in the range of 28-30%. The growth in IIP reserve (O and OEG) from 2004 to 2012 has been at compounded annual growth rate (CAGR) of about 2.4%. At this growth rate, the reserves establishment would be of the order of 22.4 billion tonnes in 2047. The share of oil reserves would be 8.9 (40%) billion tonnes and that of gas 13.4 billion tonnes (60%). This would be common across the 4 scenarios. This analysis examines the domestic crude supply at different levels of production and recovery factors from the same level of reserves.

Level 1

Level 1 assumes no improvement in R/F, and no new fields come into production, barring the ones for which investment decisions have been taken. It considers 13 DOCs/FDP approved by MC/DGH and 6 fields under development stage. PVT/JVs numbers are available with DGH up to 2020, beyond which, various growth rates have been considered based on historical trend since 1995. The growth rates assumed are - ONGC (- 0.5%), OIL (1.4%), PSC Regime (1%). The production in the year 2047 would be about 34.49 million tonne.

Level 2

A number of IOR/EOR schemes are underway to enhance production. ONGC would monetise their reserves in the marginal fields. This is also rendered possible by approval of the proposal to exempt the production from these fields, from contributing to under-recoveries of the

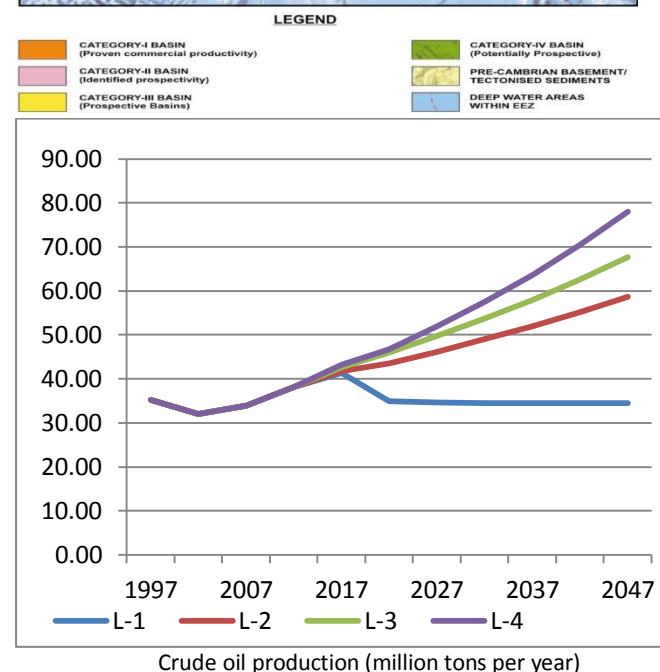
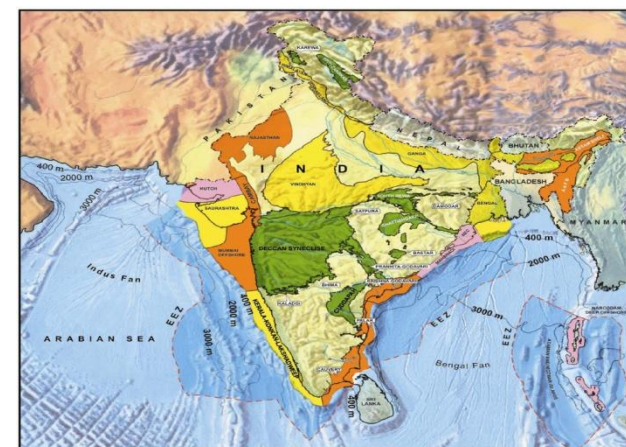
downstream companies. Additionally about 35 discoveries which are under various stages of DOC approvals, approved FDPs/ appraised discoveries have been considered to start production after 2021. Based on the above assumptions, the growth rates are - ONGC (1%) OIL (1.7%) and PSC Regime (1.5%). This regime will have recovery factor of 30%, helping achieving crude production of about 58.60 million tonnes in 2047.

Level 3

Under this scenario, a number of oil discoveries which are awaiting appraisal and development are found to be commercially viable. Marginal fields would supplement the production. EOR/IOR schemes would be taken up aggressively. Further, new discoveries from already awarded NELP blocks, and future OALP acreages would commence production after 2021. About 50 oil discoveries are under various stages of approval with DGH. Keeping above prospects in consideration, following growth rate has been considered: ONGC 1.0% growth from 2014-15, and 1.5% from 2017 onwards; OIL 2% from 2017 onwards and under PSC Regime 1.5% from 2017 onwards. Level 3 assumes recovery factor of 35% and production level of 67.7 million tonnes by 2047.

Level 4

This envisages NOCs registering a continuous growth in oil production. Share from tight oil and shale oil has been taken into account. However, this scenario includes technological alliance with super majors, better R/F, deep-water exploitation of reserves and no rig availability problems for deep-water development. Ideal conditions exist for production. The growth rate of production for ONGC: 1.5% growth from 2014-15 and 2.0% from 2021-22 onwards, OIL (2.5%) from 2017 onwards and PSC Regime (2.0%)- from 2017 onwards. The R/F would be 40% giving rise the crude oil production of around 78 million tonnes by 2047.



Note: Please see detailed documentation for references.