

REPLACEMENT OF DIESEL IN TELECOM SECTOR

The Indian telecom sector is the second largest in the world has increased exponentially over the past decade. India had 919.17 million mobile subscribers and 4,00,000 telecom towers in 2012 which form the backbone of its telecom market. 40% of the total telecom towers are located in urban areas whereas the rest are situated in rural or semi-urban areas. This ratio is assumed to be constant over the years. Presently, rural telecom towers are powered by grid electricity supply for 12 hours a day and the rest by diesel generators; urban telecom towers run on grid electricity supply for 20 hours a day and 4 hours a day on diesel generator. This analysis factors rate of conversion of telecom towers from diesel support to electricity/clean energy solutions, with similar number of towers in all levels. (All the numbers indicated here are for 7.4% CAGR GDP Growth rate assumption).

| Levels | Clean Energy Solutions Penetration in 2047 (Rural) | | | |
|---------|--|------|-----------|----------|
| | Solar | Wind | Bioenergy | Hydrogen |
| Level 1 | 10% | 0% | 0% | 0% |
| Level 2 | 40% | 3% | 3% | 0% |
| Level 3 | 70% | 5% | 6% | 3% |
| Level 4 | 75% | 10% | 10% | 5% |

| Levels | Clean Energy Solutions Penetration in 2047 (Urban) | | | |
|---------|--|------|-----------|----------|
| | Solar | Wind | Bioenergy | Hydrogen |
| Level 1 | 10% | 0% | 0% | 0% |
| Level 2 | 40% | 3% | 3% | 0% |
| Level 3 | 50% | 5% | 5% | 3% |
| Level 4 | 50% | 7% | 7% | 15% |

LEVEL 1

This is a pessimistic scenario where we assume that no regulations have been enforced and the present energy consumption scenario continues. Only solar solutions are considered feasible in this scenario. The percentage of diesel operated telecom towers replaced by off-grid solar in 2047 is assumed to be 10% in rural areas and urban areas.

LEVEL 3

The penetration rate of off-grid solar plants is assumed to increase to 70% in rural areas and 50% in urban areas in 2047, whereas Wind power solutions replaces 10% in rural areas and 7% in urban areas. Bioenergy solutions contributes to replacement of 6% in rural and 5% in urban telecom towers and Hydrogen kicks in after 2022 replacing 3% rural and urban telecom towers.

LEVEL 2

Higher solar penetration rate i.e. 40% in rural areas and urban areas is assumed by 2047. Higher electrification rate and penetration of renewables helps to reduce diesel consumption. Wind power solutions replaces 3% in rural areas and urban areas. Bioenergy solutions contributes to replacement of 3% in rural and urban telecom towers and Hydrogen fuel cells is not considered a commercially feasible option.

LEVEL 4

This is the most aggressive scenario where all government regulations are met, and satisfactory quality of electricity supply is assumed for the country. Telecom towers run on grid supply and clean energy solutions, both in urban and rural areas. The percentage of diesel operated telecom towers replaced by off-grid solar in 2047 is assumed to be 75% in rural areas and 50% in urban areas; whereas Wind power solutions replaces 10% in rural areas and 7% in urban areas. Bioenergy solutions contributes to replacement of 10% in rural and 7% in urban telecom towers and Hydrogen replaces 5% in rural and 15% in urban telecom towers.